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6.3.2.

Percentage of teachers provided with financial support to attend conferences/workshops and towards membership fee of professional bodies during the last five years

List of Teachers provided with Financial Support

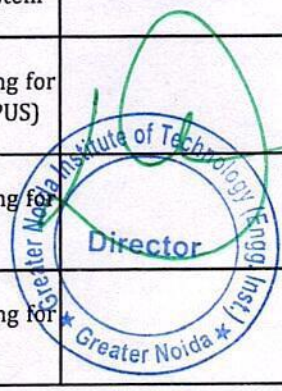
Greater Noida Institute of Technology (Engg. Institute) * Director

Greater Noida Institute of Technology (Engg. Institute)

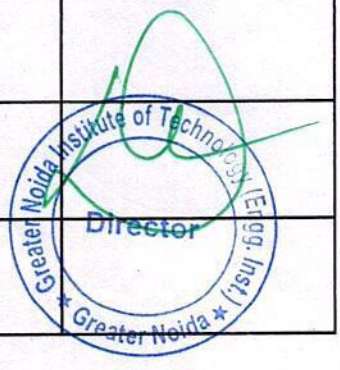
Plot No. 7, Knowledge Park II, Greater Noida
Uttar Pradesh 201310 India

6.3.2 Percentage of teachers provided with financial support to attend conferences/workshop and towards membership fee of professional bodies during the last five years

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2021-22	Arvind Kumar	Enhancement in properties of concrete by Silica fumes.	
2021-22	Shreeja Kacker	Study of Bond Ash Properties of Concrete utilizing Fly Ash, Marble and Granite Powder	
2021-22	Shreeja Kacker	Design of Road & Transportation System in Surjkund Area (Faridabad)	
2021-22	Shreeja Kacker	Optimum Replacement of Coarse Aggregate by Steel Slag and Fie Aggregate by Waste Glass Powder	
2021-22	Anuj Sharma	Effect of Steel Fibre and Marble Dust on the Mechanical Properties of High Strength Concrete (HSC)	
2021-22	Anuj Sharma	Design & Development of Maglev Girder Bridge & Vehicle	
2021-22	Tabish Quadri	Manufacturing of Bricks with Solid Waste	
2021-22	Saurav Yadav	A Study on Plastic Waste for Replacement of Coarse Aggregate with Soft and Hard Plastic in Concrete	
2021-22	Bhuvnesh Khokhar	Load Frequency Control of a Multi-Microgrid System Incorporating Electric Vehicles	
2021-22	Mukesh Kumar Ojha	Detection of SSVEP Frequency component using Filter Bank Approach for EEG Based BCI System	
2021-22	Dhiraj Gupta	Detection of SSVEP Frequency component using Filter Bank Approach for EEG Based BCI System	
2021-22	Priyesh Tiwari	Detection of SSVEP Frequency component using Filter Bank Approach for EEG Based BCI System	
2021-22	Mukesh Kumar Ojha	Cuckoo Search Constrained Gamma Masking for MRI Image Detail Enhancement (SCIE, SCOPUS)	
2021-22	Dhiraj Gupta	Cuckoo Search Constrained Gamma Masking for MRI Image Detail Enhancement	
2021-22	Priyesh Tiwari	Cuckoo Search Constrained Gamma Masking for MRI Image Detail Enhancement	



Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2021-22	Priyesh Tiwari	Relative Result and Design Analysis of SPV Tracking System on Simulink Platform	
2021-22	Preety Verma	Predicting Carbon Residual in Biomass Wastes Using Soft Computing Techniques	
2021-22	Indradeep Verma	Service Providers for Home Appliances	
2021-22	Iqbal Ahmend Khan	Green Manufacturing: An Insight	
2021-22	Shiv Narain Gupta	A new CMOS compatible high performance first-order all-pass filter realisation	
2021-22	Shiv Narain Gupta	First Order Mixed Mode MOS-C All-Pass Frequency Selective Analog Network with Electronic Tuning	
2021-22	Shiv Narain Gupta	CMOS Transistors based First-Order Voltage-Mode All-pass Filter with Tunable Transformation Possibility	
2021-22	Ajay Kumar Sahu	Treatment of thyroid disease through machine learning predictive model	
2021-22	Shivani Dubey	Treatment of thyroid disease through machine learning predictive model	
2021-22	Shivani Dubey	Analysis of Stock Market Prediction by using PSO Algorithm Optimizing LS- SVM	
2021-22	Amit kumar agrawal	Analysis of Stock Market Prediction by using PSO Algorithm Optimizing LS- SVM	
2021-22	Shivani Dubey	Implementation of IoT based Automatic Street light illumination by using IR sensor	
2021-22	Shipra Srivastava	Case Study: An Efficient Survey on Security Analysis of Social Networking	
2021-22	Syed Qaisar Husain	Production of Ethanol From Jaggery	
2021-22	Syed Qaisar Husain	A survey on Crane wire rope Failure	
2021-22	Avinash Ravi Raja	A survey on Crane wire rope Failure	



Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2021-22	Syed Qaisar Husain	Design and Analysis on Crane wire ropes by Using FEA methods	
2021-22	Avinash Ravi Raja	Design and Analysis on Crane wire ropes by Using FEA methods	
2021-22	Preeti Sharma	MIMO Antennas: Design Approaches, Techniques and Applications	
2021-22	Preeti Sharma	Dual-band trident shaped MIMO antenna with novel ground plane for 5G applications	
2021-22	Akshika Jain	Automated Health Monitoring System Using GSM and IOT	
2021-22	Pooja Sharma	Emotions specified Automatic Report Generator for Psychiatrist	
2021-22	Shivani Dubey	Implementation of IoT based Automatic Street light illumination by using IR sensor	
2021-22	Shivani Dubey	Automated Irrigation System for monitoring the Soil Moisture Content via Automatic Watering by using Microcontroller Node MCA ESP8266	
2021-22	Vijay Shukla	Multi-Resolution based Singular Value decomposition approach for Breast Cancer Image Classification	
2021-22	Mukesh Ojha	Design and Optimization of 4-Bit Array Multiplier with Adiabatic Logic Using 65 nm CMOS Technologies	
2021-22	V. K. PALLAW	X-Ray Image Authentication Scheme Using SLT and Contourlet Transform for Modern Healthcare System	
2021-22	Bhuvnesh Khokhar	A Novel adaptive intelligent MPC scheme for frequency stabilization of a microgrid considering SoC control of EVs	
2021-22	Sonam Sirohi	Smart Chatbot	
2021-22	Anil Kumar Debey	Removal of Error by finding deffect in RGB image	

Director

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2021-22	Shiv Narain Gupta	Face Mask Detection	
2021-22	Shiv Narain Gupta	Plant Disease Detection Using Machine Learning	
2021-22	Anil Kumar Debey	AI Based Chess Engine	
2021-22	Anil Kumar Debey	Real-Time Face Recognition using openCV	
2021-22	Sushant Kumar	ROAD SAFETY PLAN FOR HAIRPIN CURVES	
2021-22	Shreeja Kacker	Seismic Response study of multi-storied reinforced concrete building with fluid viscous dampers	
2021-22	Dr. Kirti	MHD FLOW OF DUSTY VISCOUS FLUID THROUGH A POROUS MEDIUM BOUNDED BY AN OSCILLATING POROUS PLATE IN SLIP FLOW REGIME	
2021-22	Dr. Dhiraj Gupta, Nikhil Gupta	Energy Meter	
2021-22	Aneep Kumar	GSM Based Smart Home Appliances	
2021-22	Dr. Dhiraj Gupta, Nikhil Gupta, Aastha Dixit	Bill Board Wifi Based Bill Board Led Display	
2021-22	Dr. Dhiraj Gupta, Nikhil Gupta	Comparative Performance Analysis of MPPT Techniques For Solar Power Extraction Using Zeta Converter	
2021-22	Dr. Dhiraj Gupta, Nikhil Gupta	Scrolling Display GSM based Messages Crolling Led Display	
2021-22	Dr. Dhiraj Gupta	LED DISPLAY SCROLLING BOARD BASED ON GLOBAL SYSTEM FOR MOBILE COMMUNICATION	
2021-22	Nikhil Gupta	GSM BASED MESSAGE SCROLLING LED DISPLAY	

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2021-22	Mr. Rahul Kumar Dwivedi	Inculcating Universal Human Values in Technical Education(FDP)	
2021-22	Dr. Jitendra Sharma	Inculcating Universal Human Values in Technical Education(FDP)	
2021-22	Dr. Mukesh Kumar Ojha	Time-Frequency Signal Processing and Applications	
2021-22	Dr. Mukesh Kumar Ojha	Healthcare Robotics and Drone applications	
2021-22	Dr. Mukesh Kumar Ojha	"Artificial Intelligence and Data Science in Healthcare"	
2021-22	Dr. Mukesh Kumar Ojha	AI & Machine Learning for IoT/EDA	
2021-22	Dr. Mukesh Kumar Ojha	"Emerging Technologies with applications in Electronics	
2021-22	Dr. Monika Dixit	Integration of WSN &IOT for agriculture	
2021-22	Dr. Monika Dixit	Artificial Intelligence	
2021-22	Dr. Monika Dixit	Incorporating Universal Human Values in Education	
2021-22	Mr. Shiv Narain Gupta	Applications of Remote Sensing and GIS/AICTE Training and Learning(ATAL) at Inderprastha Engineering College	
2021-22	Mr. Shiv Narain Gupta	Prototyping with Xilinx tools/Greater Noida Institute of Technology, Greater Noida	
2021-22	Mr. Shiv Narain Gupta	Emerging Technologies with applications in Electronics and Communication/IMS Engineering College, Ghaziabad, Uttar Pradesh,	
2021-22	Mr. Shiv Narain Gupta	Theory & Simulations in Applied Robotics and Automation/AICTE Training and Learning(ATAL) at Noida Institute of Engineering & Technology	

Director

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2021-22	SONAM SIROHI	Emerging technologies with applications in electronics and communication-2022	
2021-22	SONAM SIROHI	Use of tools and techniques in research based project	
2021-22	SONAM SIROHI	Indo-US VAJRA course on Fundamental of Electromagnetics (EMF-22)	
2021-22	SONAM SIROHI	Advances in Applications of Remote Sensing and GIS	
2021-22	Mr. Harvinder Kumar	Artificial Intelligence	
2021-22	Mr. Harvinder Kumar	Including Universal Human Values in Technical Education	
2021-22	Bhawna Sachdeva	Integration of WSN &IOT for agriculture	
2021-22	Bhawna Sachdeva	Artificial Intelligence	
2021-22	Bhawna Sachdeva	Incorporating Universal Human Values in Education	
2021-22	ABHISHEK KAUSHIK	APPLICAtions of Remote Sensing and GIS/AICTE Training and Learning(ATAL) at Inderprastha Engineering College	
2021-22	ABHISHEK KAUSHIK	Emerging Technologies with applications in Electronics and Communication/IMS Engineering College, Ghaziabad, Uttar Pradesh,	
2021-22	ABHISHEK KAUSHIK	Theory & Simulations in Applied Robotics and Automation/AICTE Training and Learning(ATAL) at Noida Institute of Engineering & Technology	
2021-22	ABHISHEK KAUSHIK	Artificial Intelligence	
2021-22	Mr. Sushant Kumar	Future Learning Aspects of Mechanical Engineering (FLAME 2022), Proceeding of springer conference	
2021-22	Dr. Iqbal Ahmed Khan	IEOM India,NIT, Warangal, India,	
2021-22	Mr. Girendra Bhati	(RIACT 2022) School of Mechanical Engineering, VIT Chennai	

Greater Noida Institute of Technology (Engg. Inst.) Director Greater Noida

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2021-22	Mr. Girendra Bhati	(RIACT 2022) School of Mechanical Engineering, VIT Chennai	
2021-22	Mr. Girendra Bhati	ICATP, VIT-AP University	
2021-22	Mr. Girendra Bhati	ICETMIE-2022, NorthCap University, Gurugram	
2021-22	Dr. Vivek Gupta	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE-2022)	
2021-22	Dr. Mukesh Kumar Ojha	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE-2022)	
2021-22	Mr. Priyesh Tiwari	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE-2022)	
2021-22	Dr. Amit Kumar	International Conference on Devices, Circuits and Systems (ICDCS-2022)	
2021-22	Dr. Mukesh Kumar Ojha	International Conference on Devices, Circuits and Systems (ICDCS-2022)	
2021-22	Dr. Dhiraj Gupta	International Conference on Devices, Circuits and Systems (ICDCS-2022)	
2021-22	Mr. Shiv Narain Gupta	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE-2022)	
2021-22	Mr. Priyesh Tiwari	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE-2022)	
2021-22	Dr. Mukesh Kumar Ojha	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE-2022)	
2021-22	Dr. Dhiraj Gupta	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE-2022)	
2021-22	Mr. Priyesh Tiwari	4th International Conference on Intelligent Engineering and Management (ICIEM-2022)	

Greater Noida Institute of Technology (Engg. Inst.) Director Greater Noida

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2021-22	Dr. Mukesh Kumar Ojha	4th International Conference on Intelligent Engineering and Management (ICIEM-2022)	
2021-22	Dr. Dhiraj Gupta	4th International Conference on Intelligent Engineering and Management (ICIEM-2022)	
2021-22	Mr. Shiv Narain Gupta	4th International Conference on Intelligent Engineering and Management (ICIEM-2022)	
2021-22	Mr. Priyesh Tiwari	Studies in Computational Intelligence, vol 1007. Springer, Singapore.	
2021-22	Mr. Shiv Narain Gupta	Studies in Computational Intelligence, vol 1007. Springer, Singapore.	
2021-22	Dr. Vivek Gupta	Studies in Computational Intelligence, vol 1007. Springer, Singapore.	
2021-22	Mr. Shiv Narain Gupta	International Conference on Innovation and Application in Science and Technology (ICIAST-2021)	
2021-22	Mr. Priyesh Tiwari	International Conference on Innovation and Application in Science and Technology (ICIAST-2021)	
2021-22	Dr Moti Singh	66th DAE - BRNS Symposium on Nuclear Physics	
2021-22	Dr. Shivani Dubey	FICR International Conference on Rising Threats in Expert Applications and Solutions	
2021-22	Dr. Ajay Kumar sahu	Book Chapter	
2021-22	Ms Preeti Sharma	Wireless Antenna and Microwave Symposium (WAMS), IEEE	
2021-22	Dr. Arun Kumar Singh	2022 International Conference on Computational Intelligence and Sustainable Engineering Solutions (CISES)	
2021-22	Mr.Harendra Singh	in Proceedings of NCETADI	
2021-22	Mr.Harendra Singh	'Rapid Miner'	
2021-22	Mrs.Shalu Mall	in Proceedings of NCETADI	
2021-22	Dr. Jitendra Sharma	PIICON-2022	
2021-22	Dr. Jitendra Sharma	ONCON-2022	

Greater Noida Institute of Technology (Engg. Inst.) Director Greater Noida

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2021-22	Dr. Mukesh Kumar Ojha	International Conference on Signal Processing and Communication (ICSC-2022)	
2021-22	Dr. Dhiraj Gupta	International Conference on Signal Processing and Communication (ICSC-2022)	
2021-22	Dr. Pooja Saxena	International Conference on Signal Processing and Communication (ICSC-2022)	
2020-21	Moti Singh	Rigid Triaxial Rotor Model Description of yy-Band in Some Even Nuclei	
2020-21	Taranpreet Kaur	Using Waste Polymer for Soil Stabilization	
2020-21	Arvind Kumar	Soil Stabilization Using Plastic Chips, Granules & Sugarcane Bagasse Ash Mixture	
2020-21	Anuj Sharma	Comparison of Concrete made through TSMA using Metakaolin and GGBS vs Normal Concrete made through NMA	
2020-21	Anuj Sharma	Dynamic Analysis of G+15 Multi-storied RCC Commercial Buildings with Different Plan Configuration in Seismic Zone V using ETABS 2018	
2020-21	Tarun Kumar	Evaluation on Risk Assessment on Indoor Air Pollution: A Case Study of Delhi-NCR Region	
2020-21	Rajesh Kumar Sharma, Saurav Yadav	Influence of Incorporating Industrial Byproducts/Wastes on Mechanical Properties and Durability Characteristics of Self-Consolidating Concrete: A Review	
2020-21	Bhuvnesh Khokhar	Load frequency control of a microgrid employing a 2D Sine Logistic map based chaotic sine cosine algorithm	
2020-21	Gagan Varshney	An Application of Analytical Hierarchy Process in Selection of Coating Material Composition in Lost Foam Casting Process	
2020-21	Syed Qaisar Husain	An Application of Analytical Hierarchy Process in Selection of Coating Material Composition in Lost Foam Casting Process	
2020-21	Avinash Ravi Raja	An Application of Analytical Hierarchy Process in Selection of Coating Material Composition in Lost Foam Casting Process	

Director

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2020-21	Girendra Bhati	An Application of Analytical Hierarchy Process in Selection of Coating Material Composition in Lost Foam Casting Process	
2020-21	Syed Qaisar Husain	Application of thermal spraying process in advancement of welding Technology	
2020-21	Gagan Varshney	Application of thermal spraying process in advancement of welding Technology	
2020-21	Girendra Bhati	Application of thermal spraying process in advancement of welding Technology	
2020-21	Avinash Ravi Raja	Application of thermal spraying process in advancement of welding Technology	
2020-21	Avinash Ravi Raja	Estimation of temperature during TIG welding of titanium	
2020-21	Anuj Dixit	Estimation of temperature during TIG welding of titanium	
2020-21	Syed Qaisar Husain	Estimation of temperature during TIG welding of titanium	
2020-21	Gagan Varshney	Estimation of temperature during TIG welding of titanium	
2020-21	Alok Manas Dubey	High-efficiency thermodynamic cycles for Kalina power generation systems: A comprehensive review	
2020-21	M S Rawat	Optimization of FDM 3D printing process parameters using Taguchi technique	
2020-21	Kapil Kumar	Optimization of FDM 3D printing process parameters using Taguchi technique	
2020-21	Kumar Rishi Singh	Optimization of FDM 3D printing process parameters using Taguchi technique	
2020-21	Avinash Ravi Raja	Heat Transfer Analysis And Optimisation Of 2 Wheeler Engine Cyclinder Head Fins Using FEA	

Greater Noida Institute of Technology (Engg. Inst.) Director ★ Greater Noida ★

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2020-21	Shipra Srivastava	Designing E-learning Portal: How Academics come efficiently into Practice	
2020-21	Shipra Srivastava	Lightweight Cloud Storage Auditing With Deduplication Supporting Strong Privacy Protection	
2020-21	Ramveer Singh	Used car price prediction	
2020-21	Shipra Srivastava	Used car price prediction	
2020-21	Shipra Srivastava	Next Generation AI based Virtual	
2020-21	Shipra Srivastava	GANAKA: WEB BROWSER	
2020-21	Shipra Srivastava	Security and Automation using Raspberry Pi and Arduino for Home	
2020-21	MUKESH kUMAR OJHA	A Novel Approach Based on EMD to improve the Performance of SSVEP Based BCI System	
2020-21	Shiv Narain Gupta	An explicit output current-mode quadrature sinusoidal oscillator and a universal filter employing only grounded passive components-A minimal realization	
2020-21	Anuranjan Misra	Big Data Security Problem and Its Solution	
2020-21	Anuranjan Misra	Importance of Security in Big Data Log Files on Cloud	
2020-21	Shikha Srivastava	Queing Theory: Effective and Efficient Tool to Reduce the Waiting Time in Hospital	
2020-21	Renu Kaushik	Queing Theory: Effective and Efficient Tool to Reduce the Waiting Time in Hospital	
2020-21	Renu Kaushik	IMPACT OF COVID – 19 ON INDIAN EDUCATION SYSTEM: A STUDY WITH SPECIAL REFERENCE TO GREATER NOIDA SCHOOLS AND COLLEGES	
2020-21	Shikha Srivastava	IMPACT OF COVID – 19 ON INDIAN EDUCATION SYSTEM: A STUDY WITH SPECIAL REFERENCE TO GREATER NOIDA SCHOOLS AND COLLEGES	

Greater Noida Institute of Technology Engg. Instt. Director Greater Noida

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2020-21	Renu Kaushik	EFFECT OF QUEUING THEORY APPLICATION: WITH SPECIAL REFERENCE OF BANKING SECTOR	
2020-21	Navin Kumar	Study of mechanical properties of pultruded Jute-glass reinforced unsaturated polyester bio-composites with hybrid filler loading	
2020-21	Navin Kumar	Tribological characterization of pultruded hybrid glass-jute fibre reinforced plastic composites from room tempearture to 75.C	
2020-21	Kapil Kumar	parametric optimization of friction stir processing on micro hardness of Al/B4C composite	
2020-21	Navin Kumar	Scheduling in Fog Computing: A Survey	
2020-21	Dipti Bharti	Study on Effect of variation of Goographical and Climatic Conditions on Chemical Constituents and Biological Activity of Emblica officinalis	
2020-21	Anuj Sharma	PM2.5 AND PM10: EXISTANCE, TREATMENT AND PROBLEMS	
2020-21	Dr. Dhiraj Gupta, Nikhil Gupta	Semiconductor devices	
2020-21	Nikhil Gupta	Vehicle Accident Spotting and Rescue System using Internet of Things	
2020-21	Mr. Vivek Gupta	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)	
2020-21	Dr. Tarun Kumar	ICGEC 2021: Proceedings of Indian Geotechnical and geoenvironmental engineering conference, Springer. ISBN 978-981-19-4731 https://doi.org/10.1007/978-981-19-4731-5_7	
2020-21	Ms. Shreeja Kacker	Proceedings of 4th National Level IEEE Conference 'Technovation 2021' in January 2022	
2020-21	Dr. Rakhi Bhardwaj	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)	
2020-21	Mr. Shiv Narain Gupta	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)	
2020-21	Mr. Priyesh Tiwari	International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)	

Director

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2020-21	Dr. Rakhi Bhardwaj	7th International Conference on Signal Processing and Communication (ICSC-2021)	
2020-21	Mr. Shiv Narain Gupta	7th International Conference on Signal Processing and Communication (ICSC-2021)	
2020-21	Mr. Shiv Narain Gupta	4th International (Online) Conference on Recent Trends in Communication & Electronics (ICCE-2020)	
2020-21	Dr. Mukesh Kumar Ojha	Modern Electronics Devices and Communication Systems: Select Proceedings of MEDCOM 2021	
2020-21	Dr. Mukesh Kumar Ojha	International Conference on Microelectronics Communication Systems Machine Learning and Internet of Things(MCMI-2021)	
2020-21	Dr. Mukesh Kumar Ojha	International Conference on Microelectronics, Computing & Communication (MCCS-2021)	
2020-21	Mr. Shiv Narain Gupta	3rd International Conference on Advances in Computing, Communication Control and Networking (ICAC3N–21)	
2020-21	Mr. Vivek Gupta	3rd International Conference on Advances in Computing, Communication Control and Networking (ICAC3N–21)	
2020-21	Mr. Priyesh Tiwari	3rd International Conference on Advances in Computing, Communication Control and Networking (ICAC3N–21)	
2020-21	Mr. Girendra Bhati, Mr. Vaibhav Gangwar	TAME-2021	
2020-21	Mr. Gagan Varshney & Mr. Vaibhav Gangwar,	TAME-2021	
2020-21	Dr. Avinash Ravi Raja & Mr. Vaibhav Gangwar,	TAME-2021	
2020-21	Dr. Anil Kumar Dubey	International E-Conference on "Cutting Edges in Mechanical Engineering" (CEME 2020), 20th February 2021, Greater Noida, India	
2020-21	Shiv Narain Guta	In 2021 7th International Conference on Signal Processing and Communication (ICSC) (2021)	
2020-21	Dr Anuranjan Misra	International E- Conference on"Advanced Emerging Applications in Big Data and Machine Learning	

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Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2020-21	Dr Anuranjan Misra	International E- Conference on"Advanced & Emerging Applications in Big Data and Machine Learning	
2020-21	Dr. Deepak Kumar Verma	International Conference on Trends in Electronics and Health Informatics (TEHI-2021)	
2020-21	Dr. Deepak Kumar Verma	Int. conf. on computational intelligence and communication technologies (CCICT)	
2020-21	Dr. Vinod Kumar	International Conference on Computational Research and Data Analytics	
2020-21	Mr. Rajesh Kumar	Advancement in wireless communication and signal processing leaping towards 5G	
2020-21	Dr. ANIL DUBEY	FDP- "RECENT TRENDS ON MICROWAVE AND ANTENNA TECHNOLOGIES"	
2020-21	Dr. ANIL DUBEY	ATAL FDP -"Internet of Things (IoT)"	
2020-21	Dr. ANIL DUBEY	ATAL FDP-"Control Systems & Sensors Technology"	
2020-21	Dr. ANIL DUBEY	ATAL FDP- "Lab on Chip"	
2020-21	Mr. Shiv Narain Gupta	Introduction to Industry 4.0 and Industrial Internet of Things/ NPTEL-AICTE(Funded by the Ministry of HRD. Govt. of India)	
2020-21	Mr. Shiv Narain Gupta	Introduction to the Internet of Things/ NPTEL-AICTE(Funded by the Ministry of HRD. Govt. of India)	
2020-21	Mr. Shiv Narain Gupta	a2z of NBA Accreditation Process/ Department of Electronics & Communication Engineering under the aegis of Internal Quality Assurance Cell (IQAC).	
2020-21	ABHISHEK KAUSHIK	ATAL FDP- "SMART CITIES"	
2020-21	ABHISHEK KAUSHIK	ATAL FDP -"Internet of Things (IoT)"	
2020-21	Mr. Harvinder Kumar	Recent advancements in RF & Microwave	
2020-21	Mr. Harvinder Kumar	Data Science	
2020-21	Mr. Harvinder Kumar	Online Teaching & Learning Technologies	
2020-21	Gaurav Singh	Workshop on ML & AI	
2019-20	Shelly Garg	Linearization of Photonic Link Based on Phase-Controlled Dual Drive Dual-Parallel Mach–Zehnder Modulator	
2019-20	Vivek Gupta	Cooperative Spectrum Sensing Optimization Using Meta-heuristic Algorithms	
2019-20	Vivek Gupta	Bio – Inspired Optimal Weighted Fusion in Cooperative Spectrum Sensing For Cognitive Radio	
2019-20	Vivek Gupta	Conventional Combining Scheme in Cooperative Spectrum Sensing	

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2019-20	Shelly Garg	Third Order Intermodulation Power Variations Of Radio Over Fiber Link By Employing Mzm And Dd-Mzm Modulator	
2019-20	Shelly Garg	Dynamic Range Measurement Of Radio Over Fiber Link By Employing 120° Phase Shift Method	
2019-20	Shelly Garg	Analysis And Implementation FPGA Implementation For Image Processing Algorithm.	
2019-20	Shelly Garg	Performance Comparison Of High Speed And Low Power Forward Error Correction (Fec) Through Viterbi Decode Communication Channel Through Xilinx.	
2019-20	Shelly Garg	Implementation of PID Controller Using An FPGA	
2019-20	Bhuvnesh Khokhar	A Novel Hybrid Fuzzy PD-TID Controller for Load Frequency Control of a Standalone Microgrid	
2019-20	Bhuvnesh Khokhar	A novel fractional order proportional integral derivative plus second-order derivative controller for load frequency control	
2019-20	Bhuvnesh Khokhar	A Robust Cascade Controller for Load Frequency Control of a Standalone Microgrid Incorporating Electric Vehicles	
2019-20	Dhwani Agrawal	Nuglets: A Virtual Currency	
2019-20	Abhishek Singh	Nuglets: A Virtual Currency	
2019-20	Dhwani Agrawal	A Survey on Various Machine Learning	
2019-20	Abhishek Singh	A Survey on Various Machine Learning	
2019-20	Dipti bharti	Removal of crystal voilet from aqueous solution using iron based metal organic framwork	
2019-20	Navin Kumar	A Study on Coal Ash Slurry Flow at Higher Solid Concentrations in Pipeline	
2019-20	Girendra Bhati	Optimization of process parameters of A-359 aluminium alloy in EPS-assisted-investment casting process using Taguchi method	
2019-20	Dipti Bharti	Antimicrobial Potential of Some Selected Medicinal Plants Collected from Himachal Pradesh	
2019-20	Shipra Srivastava	Post Quantam Cryptography: A Literature	
2019-20	Shipra Srivastava	A study and Comarative analysis of some advanced symmetric Block Cipher Techniques	

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2019-20	Anuranjan Misra	A Prototype for Data Integrity in Cloud Environmen	
2019-20	Anuranjan Misra	Blockchain Enabled E-Voting System	
2019-20	Anuj Sharma	A Comparative Study on the Seismic and Cost Analysis of RCC and Composite Structure in India	
2019-20	Mr. Shiv Narain Gupta	4th National Conference on Recent Trends in Electronics and Electrical Engineering (NCRTEEE-2020)	
2019-20	Mr. Priyesh Tiwari	4th National Conference on Recent Trends in Electronics and Electrical Engineering (NCRTEEE-2020)	
2019-20	Dr. Rakhi Bhardwaj	International Conference on Computational Intelligence and Data Science (ICCIDS 2019)	
2019-20	Dr. Anil Kumar Dubey	S &T E-HACKTHON-2020	
2019-20	Dr. Shelly Garg	4th International Conference on Intelligent Computing and Communication (ICICC - 2020)	
2019-20	Mr. G.S.Bhati	ISFT-2020	
2019-20	Ms. Uma Tomer	International Conference on Smart Electronics and Communication (ICOSEC), Scopus Indexed	
2019-20	Ms. Uma Tomer	International Conference on Smart Electronics and Communication (ICOSEC), Scopus Indexed	
2019-20	Mr. Kapil Kumar	CEME 2020	
2019-20	VIBHA OBEROI	September 11-12, 2020	
2019-20	VIBHA OBEROI	December 16-17,2020	
2019-20	Neha Yadav	28-30 July 2020	

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2019-20	Dr. Bhuvnesh Khokhar	PIICON 2020	
2019-20	Dr. Bhuvnesh Khokhar	PIICON 2020	
2019-20	Dr. Mukesh Kumar Ojha	"Artificial Intelligence and Machine Learning in Healthcare	
2019-20	Dr. Mukesh Kumar Ojha	Computational Techniques in Image and Signal Processing	
2019-20	Dr. ANIL DUBEY	FDP-"AI-ML AND ITS APPLICATION"	
2019-20	Dr. ANIL DUBEY	FDP- Design Challenges in Low Power VLSI Design	
2019-20	Mr. Shiv Narain Gupta	Analog IC Design: Specification to Chip/ Sponsored by TEQIP-III and Organized by Department of Electronics Engineering, National Institute of Technology, Uttarakhand, Srinagar.	
2019-20	Mr. Shiv Narain Gupta	Data Science/ AICTE Training and Learning(ATAL) at Indian Institute of Information Technology(IIIT Nagpur)	
2019-20	Mr. Shiv Narain Gupta	Scilab/ Spoken Tutorial Project, IIT Bombay	
2019-20	Mr. Shiv Narain Gupta	AI & ML and its Application/ Organized by Department of ECE, NIT Patna and GNIOT, Greater Noida under Electronics and ICT Academy, NIT Patna.	
2019-20	Mr. Shiv Narain Gupta	Research Trends in VLSI Design/ Organized by Electronics and Communication Engineering Department NITTTR, Chandigarh	
2019-20	Mr. Shiv Narain Gupta	Robotics/ AICTE Training and Learning(ATAL) at University Institute of Engineering and Technology, Kurukshetra University, Kurukshetra	
2019-20	Mr. Shiv Narain Gupta	Skill Enhancement using Free & Open Software Tools/ Organized by Curriculum Development Centre Department NITTTR, Chandigarh	
2019-20	Mr. Shiv Narain Gupta	Nanoelectronics Devices and Circuits Design/Organized by Electronics and Communication Engineering Department NITTTR, Chandigarh	
2019-20	Mr. Shiv Narain Gupta	Digital & Analog IC Design Using Cadence Virtuoso/ Department of Electronics & Communication Engineering, Inderprastha Engineering College, Ghaziabad	
2019-20	Mr. Shiv Narain Gupta	Internet of Things (IoT)/ AICTE Training and Learning(ATAL) at Sri Sairam Engineering College.	
2019-20	Mr. Shiv Narain Gupta	Internet of Things (IoT)/ AICTE Training and Learning(ATAL) at Indian Institute of Information Technology Allahabad	

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2019-20	Mr. Shiv Narain Gupta	Internet of Things (IoT)/ AICTE Training and Learning(ATAL) at Inderprastha Engineering College	
2019-20	Mr. Shiv Narain Gupta	Microelectronics: Devices To Circuits/ NPTEL-AICTE(Funded by the Ministry of HRD. Govt. of India)	
2019-20	Mr. Harvinder Kumar	Data Science	
2019-20	Mr. Harvinder Kumar	Online Teaching & Learning Technologies	
2019-20	Mr. Harvinder Kumar	Advance Communication Engineering	
2019-20	ABHISHEK KAUSHIK	TRANSFORMING EDUCATION WITH INDUSTRY 4.0	
2019-20	ABHISHEK KAUSHIK	ROLE OF TECHNOLOGY & AUTOMATION	
2019-20	ABHISHEK KAUSHIK	DIGITAL LEARNING WITH MULTIDISCIPLINARY APPROACHES(DLMA)	
2019-20	ABHISHEK KAUSHIK	NEW PERSPECTIVE IN THE ERA OF AI/ML	
2019-20	ABHISHEK KAUSHIK	AI & ML and its Application/ Organized by Department of ECE, NIT Patna and GNIOT, Greater Noida under Electronics and ICT Academy, NIT Patna.	
2019-20	ABHISHEK KAUSHIK	ROLE OF ENERGY MANAGEMENT IN SMART CITY	
2018-19	Dr. Shelly Garg	In2019 5th International Conference on Signal Processing, Computing and Control (ISPCC) 2019 Oct 10 (pp. 125-133)	
2018-19	Dr Moti Singh	64th DAE - BRNS Symposium on Nuclear Physics	
2018-19	Dr Moti Singh	64th DAE - BRNS Symposium on Nuclear Physics	
2018-19	Dr Anuranjan Misra	IEEE:INDIACom-2019-6th International Conference on "Computing for Sustainable Global development	
2018-19	Dr Anuranjan Misra	IEEE:INDIACom-2019-6th International Conference on "Computing for Sustainable Global development	
2018-19	Mr. Ankit Gupta	PEEIC 2019	
2018-19	Dr. Pooja Saxena	IEEE 5th International Conference for Convergence in Technology (I2CT)	
2018-19	Tabish Quadri	Air Quality Index Analysis and Solutions for High Traffic, Industrial and Residential Regions in Delhi/NCR	
2018-19	Shelly Garg	SFDR Enhancement of 120o Phase Angle Based RoF Link by using Linear Polarizers	
2018-19	Shelly Garg	Mitigating the effects of non linear distortion using polarizers in microwave photonic link	

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2018-19	Shelly Garg	SNDR Optimization of Linearized Mach Zehender Modulator For Multi-Tone RoF System	
2018-19	Shivani Kaul	Intercultural Competence In Lahiri's 'Hell Heaven'	
2018-19	YATIN KUMAR AGARWAL	Ball Pen Ink level Indicator	
2018-19	YATIN KUMAR AGARWAL	Multiple Object Detection and Tracking	
2018-19	YATIN KUMAR AGARWAL	A Review: Cryptography and Steganography for data hiding in images	
2018-19	YATIN KUMAR AGARWAL	Online retreival and indexing of images using multi feature vectors	
2018-19	ARUN MITTAL	Systemetic analysis of semantic web search based on ontology modeling and its search engines	
2018-19	Divya Mishra	Self-optimization in LTE: An Approach to Reduce Call Drops in Mobile Network	
2018-19	Divya Mishra	Performance Enhanced and Improvised Approach to Reduce Call Drops Using LTE-SON	
2018-19	Divya Mishra	Fine tuning of MapReduce jobs using parallel K Map clustering	
2018-19	Shilpi Bansal	Automated Car Parking with Empty Slot Detection Using IoT	
2018-19	Dhwani Agrawal	A Review on Software Effort Estimation Techniques	
2018-19	Abhishek Singh	An Evolution on Software Effort Estimation Techniques	
2018-19	Reena Chaudhary	A Review on Software Effort Estimation Techniques	
2018-19	Rashmi Chaudhary	A Review on Software Effort Estimation Techniques	
2018-19	Rajiva Ranjan Divivedi	Prediction Analysis Techniques of Data Mining: A Review	
2018-19	Rajiva Ranjan Divivedi	Classification Technique for Heart Disease Prediction in Data Mining	
2018-19	Neha Kashyap	SARLA - A 3-TIER ARCHITECTURAL FRAMEWORK BASED ON THE ACO FOR THE PROBABLISTIC ANALYSIS OF THE REGRESSION TEST CASE SELECTION AND THEIR PRIORITIZATION	
2018-19	Amba	Audio Steganography using ASCII Code and GA	
2018-19	Navin Kumar	Development and comparison of tensile and compressive strength and percentage shrinkage of glass-jute hybrid fibre reinforced polymer composites	

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Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2018-19	Navin Kumar	Analyticalstudy onany gate logic function as a pull-up network of pMOS transistors and a pull down tetwork of nMOS transistors	
2018-19	Navin Kumar	Study on transistors transistors logic with reference to their circuits and noise margin	
2018-19	Navin Kumar	Role of Fe2O3 and MoO3 content on optical properties of lead borate glasses	
2018-19	Dipti Bharti	Synergistic Effects of Some Medicinal Plants and Transition Metal Ferrocyanides on Some Selected Fungus	
2018-19	Dipti Bharti	Adsorption of hazardous dye crystal violet from industrial waste using low cost adsorbent Chenopodium album	
2018-19	Anuranjan Misra	A Novel Cryptographic Data Security Approach for Banking Industry to Adopt Cloud Computin	
2018-19	Dr. ANIL DUBEY	FDP- Design Challenges in Low Power VLSI Design	
2018-19	Mr. Shiv Narain Gupta	Embedded System & Interfacing Hands-on/ Supported by Ministry of Electronics and Information Technology, Govt. of India and Organized by Sharda University, Greater Noida.	
2018-19	Mr. Shiv Narain Gupta	Robotics & AI/ Supported by Ministry of Electronics and Information Technology, Govt. of India and Organized by Sharda University, Greater Noida.	
2018-19	Mr. Shiv Narain Gupta	Design Challenge in Low Power VLSI Design/ Information Management and Coordination Department at Greater Noida Institute of Technology, Greater Noida.	
2018-19	Mr. Harvinder Kumar	Design Challenges in Low Power VLSI Design	
2018-19	Mr. Harvinder Kumar	ICT in teaching and Evaluation	
2018-19	Mr. Harvinder Kumar	Evolution of RF Technologies	
2018-19	ABHISHEK KAUSHIK	IOT APPLICATIONS & IOT SECURITY ASPECTS	
2018-19	ABHISHEK KAUSHIK	DESIGN CHALLENGES IN LOW POWER VLSI DESIGN	
2018-19	FIRASAT HUSAIN	"SOLAR ENERGY A SUSTAINABLE FUTURE"	
2017-18	Mr. Shiv Narain Gupta	2nd National Conference on Recent Trends in Electronics and Electrical Engineering (NCRTEEE-2018)	
2017-18	Mr. Vivek Gupta	Commission for Sci. & Tech. Term. (CSTT)	
2017-18	Mr. Priyesh Tiwari	Commission for Sci. & Tech. Term. (CSTT)	

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Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2017-18	Raveendra Kumar Bharati	International Conference on Disruptive Technologies:Path Ahead 2023 at Rukmini Devi Institute of Advanced Studies Delhi	
2017-18	Richa Bajaj	International Conference on Computational Intelligence and Data Science(ICCIDS 2018)	
2017-18	Dr Moti Singh	63rd DAE - BRNS Symposium on Nuclear Physics	
2017-18	Dr Moti Singh	63rd DAE - BRNS Symposium on Nuclear Physics	
2017-18	Shipra Srivastava	Dept. Of Computer Science Engineering IIMT COLLEGE OF ENGINEERING GNOIDA	
2017-18	Dr. Deepak Kumar Verma	2ndInt. conf. on Recent Advancements in Computer, Communication and Computational Sciences (RACCCS- 2018)	
2017-18	Dr. Deepak Kumar Verma	8thInt. conf. on Cloud Computing, Data Science & Engineering (Confluence-2018)	
2017-18	JAY SHANKAR PRASAD	Advances in Intelligent Systems and Computing	
2017-18	Rakhi Bhardwaj	Lead time for cities of Northern India by using multi parameter EEW algorithm	
2017-18	Sudhir Kumar	Experimental Investigation and Optimization of Process Parameters for Shear Strength of	
2017-18	Sudhir Kumar	Experimental Investigation and Optimization of Process Parameters for Impact Strength of	
2017-18	Sudhir Kumar	MICROSTRUCTURE EVALUATION, THERMAL AND MECHANICAL CHARACTERIZATION OF HYBRID METAL MATRIX COMPOSITE	
2017-18	Sudhir Kumar	Characterization and microhardness evaluation of A356/Mg joint produced by vacuum assisted sand mold compound casting process	
2017-18	Sudhir Kumar	Experimental Investigation and Evaluation of Joint Strength of A356/Mg Bimetallic Fabricated Using Compound Casting Process	
2017-18	Anjali Chaudhary	New Dynamic Metrics Suite To Measure Complexity Of Component Based Software	
2017-18	Monika Jain	An efficient algorithm for CBIR using clustering techniques for large dataset	
2017-18	Shilpi Bansal	Analysis and Impact of Social Media and it's Privacy on Big Data	
2017-18	Shilpi Bansal	Blockchain -the Technology of Crypto Currencies	

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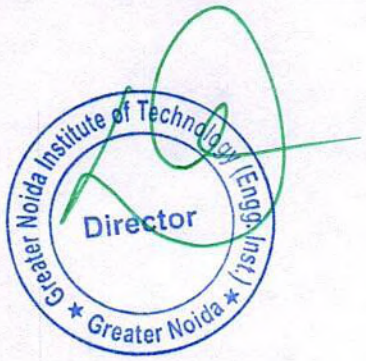
Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2017-18	Navin Kumar	Study and comparison of performance of Shell and Tube Heat Exchanger with Two Numerical Methods	
2017-18	Navin Kumar	A MIG welding testing on tensile and hardness using Taguchi method	
2017-18	Navin Kumar	Performance enhancement for scale-up of Gas hydrate forming reactors using stirred tank reactors	
2017-18	Dipti Bharti	A review on phytoconstituents and medicinal properties of Emblica officinalis	
2017-18	Mr. Ankit Gupta	PEEIC 2018	
2017-18	Dr. ANIL DUBEY	FDP- Energing trends in wireless communication	
2017-18	Mr. Shiv Narain Gupta	Artificial Intelligence & Machine Learning: Interdisciplinary Approach for Applications/ Sponsored by Dr. APJ Abdul Kalam Technical University, Lucknow and Organizing by ABES Institute of Technology, Ghaziabad.	
2017-18	Mr. Shiv Narain Gupta	Op-Amp Pratical Applications: Design, Simulation and Implementation/ NPTEL-AICTE(Funded by the Ministry of HRD. Govt. of India)	
2017-18	Mr. Shiv Narain Gupta	Optical Communication and Networks/ Funded by Dr. APJ Abdul Kalam Technical University, Lucknow and Organizing by Greater Noida Institute of Technology, Greater Noida.	
2017-18	Mr. Shiv Narain Gupta	Emerging Trends in Wireless Communication/ Sponsored by AICTE-ISTE and Organizing by Greater Noida Institute of Technology, Greater Noida.	
2017-18	ABHISHEK KAUSHIK	EMERGING TRENDS IN WIRELESS COMM.	
2017-18	ABHISHEK KAUSHIK	OPTICAL COMMUNICATION AND NETWORKS	
2017-18	ARUN KUMAR RAI	LaTeX and Its Applications	
2017-18	FIRASAT HUSAIN	SUSTAINABLE GREEN MANUFACTURING AND ITS APPLICATIONS	
2017-18	Mr. Gagan Varshney	Sustainable Green Manufacturing and its Application	
2017-18	Mr. Girendra Bhati	Sustainable Green Manufacturing and its Application	

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided
2017-18	Jitendra Kumar Tripathi	Robotics and Mechatronics	
2017-18	Dr. Moti Singh	Universal human values and professional ethics	
2017-18	Dr. B.S.Chauhan	Universal human values and professional ethics	



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Enhancement in properties of concrete by Silica fumes.

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Abstract – *The usage of pozzolanic materials is a traditional art of concrete construction. Long time age, it was conceded that the suitable pozzolans used in acceptable and suitable quantity, modify certain properties of fresh and hardened mortars and concretes.*

It has been abundantly demonstrated that the simplest pozzolans in optimum proportions mixed with hydraulic cement in order to enhance many qualities of concrete.

- *The low heat of hydration and thermal shrinkage is required and preferred.*
- *Water tightness should be increased;*
- *Diminish the alkali- aggregate reaction;*
- *To attack by sulphate soils and sea water, enhance the resistance;*
- *Enhance extensibility;*
- *Lower susceptibility to dissolution and leaching*
- *Improve workability;*
- *Lower costs.*

Pozzolanic materials are siliceous or siliceous and aluminous materials, which in themselves possess little or no cementitious value, but will, in finely divided form and within the presence of moisture, chemically reacted with lime liberated on hydration, at ordinary temperature, to make compounds, containing cementitious properties.

Key Words: Silica fume; Workability; Split tensile strength; Compressive strength; Flexure strength.

1. INTRODUCTION.

Concrete Beton may be a combination of clay, fine aggregates, coarse aggregates and water. In the plastic process it are often shaped in any shape. The relative number of components tested the wet and hardened stages of the concrete output.Two or three decades ago, in fact, without looking at the future of concrete structures, using OPC to produce concrete for construction can easily get the concrete composition regardless of quality. Nowadays, with recent investigations conducted by engineers and scientists over the past two to thirty years, with the structural stability of the structure, high quality concrete is needed while improving strength, durability and other characteristics. The need for these properties led to the search for complementary cement materials. Look for any suitable material in terms of local replacement of cement in order to achieve global sustainable development and reduce impact on the environment. Concrete cement is the majority of building materials today. It can be said that we live in a concrete era. Beton is straightforward to manufacture, but concrete may be a complex material, actually . It is a matter produced in the field because, because of the usage of other natural materials than cement, its consistency, efficiency because output will significantly improve. Medium standard and lower value cement also are widely used for the accelerated growth of the country's infrastructure. A common usage of agricultural materials will also conserve resources and prices, beyond following environmental protection requirements. The most viable manufacturing component was found to be silica volcanic ash which could be used as a part-alternative to cement in concrete. In India and abroad, many experiments are being undertaken to research the impact of replacing cement with such pozzolan products, and the findings are promising. Adding silica smoke to concrete has numerous benefits, such as strong power, good resilience and decreased production of cement.

2. Blending of silica fume in concrete

Silica fume and fresh concrete-:

Two different results occur: the development becomes more uniform with no leakage from the bottom . Although certain endorsers may find this to form it easier to position and finish the concrete, they're simply benefits for fresh and hardened concrete.

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Study of Bond Properties of Concrete Utilizing Fly Ash, Marble and Granite Powder

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Department of Civil Engineering, Greater Noida Institute of Technology, Greater Noida, India[2]

ABSTRACT: Nowadays in India, If we analyse the whole situation, we came to know that there is not a proper planning for the road development and construction in order to fulfil the criteria. As we know that infrastructure plays a tremendous role in the development of country and it has not developed in order to serve the people in the most efficient method it can. Population in India is increasing day by day and India is 2nd largest in population, because of this number of vehicles also increasing on road flexible and rigid pavement are not enough to giving the better results as formation of potholes and propagation of reflective crack occurs due to wheel load. The population for which roads are planned and designed are not providing adequate performance to withstand excessive load of traffic especially in metropolitan cites like Bangalore Delhi Mumbai etc.

In order to overcome this present situation there is a need to turn the focus on composite pavement from rigid and flexible pavements. The design life of composite pavement is more than fexible and rigid pavements.the overlay of bituminous concrete over cracked mortar or asphalt mix has placed a efficient and economical method to meet the problem of riding surfaces which get deteriorated due to high traffic load .laying of biruminous mix layer over cracked surface is a much better solution but the reflective cracks propagation over the surface of overlaid layer from underlying cracked surface is a huge matter of concern. Various studies have been done to retard the propagation of reflectives crack using additives like plastic waste, steel neeting ,geogrid ,fibres and other alternatives. In this study we are cusing a glass fibres as an additive and compare thw condition of roads with or without using glass fibres. Various types of tests are done to cement, aggregates, mortar, marshal stability and other test in order to study the road reflective cracks.

Glass fibres provide inherent compatibility and excellent mechanical properties which allow it to be used in modification of bituminous mortar mix. The study was done to investigate the performance behavior of fibre modified bituminous mortar and its characteristic comparison with plain bituminous mix used as an overlay over cracked mortar surfaces. Samples of bituminous mortar mix were prepared with and without Glass Fibre and were tested for volumetric and mechanical properties and other properties such as fatigue life, skid resistance and rutting. The optimum dosage of glass fibre was found to be 0.3% with consideration of economy and performance which is the most crucial factor for designing with an optimum binder content of 5.5% in bituminous mortar layer. Apart from the comparative testing of plain and Glass Fibre modified bituminous mortar mix. The conclusions drawn from the study shows that the use of Glass Fibre as an additive in overlaying BC layer showed a tremendous improvement in the performance of mix. The stiffness of bituminous mix increased along with resistance to permanent deformation, indirect tensile strength also improved by 7.8%. The rut depth was also found to be 39% less at 45oC in Glass Fibre modified bituminous mortar as compared to plain bituminous mix. The skid resistance of modified pavement increased by 8.85 in dry and 11.76% wet condition . An increase of 40% was observed in the fatigue life of beam casted with Glass Fibre

KEYWORDS: Fly Ash, Marble and Granite Powder.

I. INTRODUCTION

Mortar, the world's single most commonly used construction material, has a heterogeneity consisting of combinations of easily accessible fundamental building elements including mortar, water, coarse aggregates, fine aggregates and, in certain instances, admixtures, natural fiber or other additions as required. If these components are combined together, they create a liquid mass which is readily formed. Over time, if adequately cured, the cement creates a hard matrix that links the other components together creating a stone-like, durable, mortar substance.

The reason why mortar is used enormously in the building industry rests in its flexible, dependable and sustainable character, thanks to its strength, stiffness, durability, moulding capacity, efficiency and economy.

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Design of Road and Transportation system in Surajkund Area (Faridabad)

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ABSTRACT

The role of transport is to provide goods, services, and information to a large population. Isolation is reduced by improvement in transportation. People need a variety of goods, and services for their productive, economic, and social life. The main purpose of transport is to improve the mobility of specific individuals and also improve the goods and services people need. Good transportation results in cheaper, faster, safer, and more comfortable travel for the population with less spoilage of products. Transportation can be done in many ways (airways, waterways & railways) but roadways provide maximum facility and services to the population. The social, economic, and cultural growth of a country is dependent on a speedy, safe, and efficient transportation system. The rural sectors didn't get the expected attention in past, the mega projects of Pradhan Mantri Gram Sadak Yojana (PMGSY) addressed this problem. During the development of infrastructure for rural connections, efforts are being made in working out the details of the design and construction of rural roads. The Indian Road Congress (IRC) has brought out Rural Road Manual (RRM) IRC 20:2002. One of the important aspects of the development of low-volume roads in rural areas is to aim at providing basic access at minimum cost.

Keywords: PMGSY, CBR, Compaction, Pavement Design, Geometric Design, Survey.

1. INTRODUCTION

Transportation could give maximum services to everyone, and everything is Road. Roads are the mode of transportation that gives maximum flexibility for traveling purposesregarding routes, time, speed of travel, etc. By using Road transportation, we can provide door-to-door service. The operational cost of Road Transport is much lesser than other modes of transportation. In this paper suggestions have been made for the geometric road design of a stretch in Surajkund Area based on SP 20:2001, IRC 37:2001 & IS 2720.

2. CLASSIFICATION OF ROADS

Roads are classified on various basis

2.1 Based on Utility

Roads can be classified into 2 categories, depending on the weather and atmospherically situation, depending on whether they can be used during different seasons of the year.

(a) All-Weather Roads and

(b) Fair Weather Roads.

2.2 Based on the type of Carriage Way

(a) Paved Roads, if roads are provided with a hard pavement course which should be at least a water-bound macadam (WBM) layer.

(b) Unpaved Roads, if roads are not provided with a hard pavement layer as paved roads, they should at least with a WBM layer. Gravel roads and Earth roads come under Unpaved roads.

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OPTIMUM REPLACEMENT OF COARSE AGGREGATE BY STEEL SLAG AND FINE AGGREGATE BY WASTE GLASS POWDER

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[2]*Assistant Professor, Dept. of Civil Engineering, GNIOT, Greater Noida, U.P, India*

Abstract - *Glass is one of the world's oldest and most commonly used materials. Glass has a fairly short shelf life in its current condition. Reusing this waste in construction materials is one alternative for safe environmental and economic disposal. The waste glass will be used to substitute fine aggregate in the following proportions: 0%, 10%, 20%, 25%, 30%, 40%, and 50%. This study will go over properties such as compressive strength. Another attempt was made to replace coarse aggregate with steel slag because there is a growing interest in using waste materials as alternative aggregate materials and significant research is being conducted on the use of many different materials as aggregate substitutes such as coal ash, blast furnace slag, and steel slag aggregate. By altering the quantity of steel slag, different concrete mixtures were created Steel slag is to be substituted for coarse aggregate in the following proportions: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, and 90%. Compressive strength of concrete to be reviewed, as well as another attempt at combined replacement by replacing both fine aggregate and coarse aggregate with waste glass powder and steel slag, while maintaining the optimum replacement of glass powder constant and varying the percentage replacement of steel slag with coarse aggregate in proportions of 0%,10%,20% up to 80%, and thus finding the combined optimum replacement of coarse and fine aggregates with steel slag and waste glass powder in terms of compressive strength of concrete.*

Key Words: Steel slag, Waste glass powder, compressive strength, Super plastisizer, Partial replacement, Combined replacement.

1. INTRODUCTION.

Today, concrete is the most often utilised construction material. In all fields of modern construction, concrete has risen to the rank of a key building material. It's difficult to think of another construction material that is as versatile as concrete. When strength, durability, impermeability, fire resistance, and absorption resistance are necessary, concrete is the ideal material to use.

Concrete is made from a combination of cement, sand, coarse material, and water. Today, global warming and environmental destruction have become obvious problems in recent years, and concern about environmental concerns, as well as a transition from the past's mass-waste, mass-consumption, and mass-production culture to a zero-emanation society, is regarded as crucial. Glass does not normally affect the environment since it does not emit pollutants, but it can hurt humans and animals if not handled safely, and it is less environmentally beneficial because it is non-biodegradable. As a result, the development of new technologies was necessary. Glass encompasses a wide range of chemical variations, including soda-lime silicate glass, alkali-silicate glass, and borosilicate glass. Steel slag might also be utilised as a partial substitute for coarse aggregate. By effectively using these by-products, which would otherwise be discarded, good environmental conditions will be achieved. Because of its mechanical strength, stiffness, porosity, wear resistance, and water absorption capacity, steel slag particles are already employed as aggregates in asphalt paving road mixtures. The feasibility of using steel slag as a replacement for traditional concrete is being researched. When compared to ordinary concrete, the test findings for workability levels and strength are also the same.

1.1 Literature Review

Waste glass powder

One of the oldest man-made materials is glass. It is made in a variety of forms, including packaging or container glass, flat glass, and bulb glass, all of which have a limited life in their manufactured forms and must be recycled to be reused in order to prevent environmental concerns caused by stockpiling or disposal in landfills. The building sector has demonstrated outstanding forms such as package or container glass, flat glass, and bulb glass, all of which have benefited from the recycling of industrial by-products and garbage, including waste glass resources. Quantities of waste glass have increased rapidly in recent decades due to rapid industrialization and significant improvements in living standards; however, the majority of these waste quantities are not recycled but rather abandoned, causing serious problems such as waste of natural resources and environmental pollution.

Steel slag

Aggregates account for around 70-75 percent of the overall volume of concrete. To fulfil the worldwide need for

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Effect of Steel Fibre and Marble Dust on the Mechanical Properties of High Strength Concrete (HSC)

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Abstract - *Using cement, coarse aggregates, and fine aggregates raises construction costs. Leaving trash outside can cause environmental problems. Thus,* ***recycling*** *is encouraged. Many industries produce waste materials that, due to their nature, can be used to partially replace fundamental resources. Concrete producers are continually looking for solutions to reduce solid waste disposal. Steel fibres are employed because concrete is weak in stress. There are experimental reuse and recycling alternatives for this industrial by product. These wastes are disposed nearby, destroying the soil's natural fertility. We discuss wastes' physical, mechanical, and chemical qualities.*

The research is done on ***M60*** *grade concrete with 0%, 15%, 30%, 45%, and 60% marble dust replacing sand and 0.8% steel fibres added to increase compressive, flexural, and split tensile strengths.*

Based on feasibility, replacing up to 45% marble powder and 0.8% steel fibres in concrete is appropriate. After 15% replacement, compressive strength and spilt tensile started falling.

1. INTRODUCTION

After food and water, humans use concrete. It has cement, fine, coarse, and water aggregates. River sand is fine aggregate. Cement dominates concrete. Cement, fly ash, and slag bind the aggregates. Aggregates include fine and coarse gravel, limestone, and granite. Many admixtures have unique properties. Water makes the dry combination firm and strong. Hydration strengthens and hardens. Water and cement combine to produce stone. Concrete needs reinforcements because it compresses well but stretches badly.

Concrete cracks from shrinkage and tension. Durable, fire-resistant, and increasing strength with time, it's great for building. Admixtures make high-strength concrete cost-effective and efficient.

Flexible concrete. Originally conceived as a steel cover, it's now a structural part. Concrete is strengthened by adding steel. Normal concrete is weaker than steel. High-strength concrete eliminated this problem (HSC).

Modern admixtures and concrete technologies can achieve 50 MPa in 12 to 18 hours and 70 MPa in 28 days.

MPa in 12 to 18 hours & 70+ MPa in 28 days.

1.1 Marble Dust

New technologies using artificial and waste materials minimise the load on natural resources. Replace concrete with sand to increase its mechanical characteristics. Marble dust is utilised instead. Marble dust is a construction material. Marble cutting and shaping creates it. Dumping causes pollution. Utilizing garbage reduces environmental problems. This research investigates utilising marble dust to substitute sand in concrete.

Marble dust has been utilised in construction since prehistoric times. Every year, the globe produces 7,000,000 tonnes of marble, of which 25% is transformed into dust or powder, a large amount whose disposal is a worry. Using discarded marble dust to increase the strength and other attributes of concrete by adding steel fibres solves the disposal problem and is beneficial

1.2 Steel Fibers Reinforced Concrete

Fibers-reinforced concrete is a mixture of four distinct systems, including cement, water, coarse particles, fine aggregates, and steel fibre dispersion. It is also possible to add admixture and pozzolans to the system of conservative concrete. Under ASTM guidelines, all admixtures suitable for usage in Steel Fiber-reinforced concrete are added to concrete (SFRC).

2. LITERATURE REVIEW

2.1 Compressive Strength

- **Dhawale et al. (2014)** researched concrete compression.
- These experiments were done using compression testing machines (CTM) utilising cubes with varied marble dust-to-sand ratios.
- 50% marble dust to sand produces stronger compressive strength than 100%.

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Design & Development of Maglev Girder Bridge & Vehicle

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Abstract: *A high-speed maglev vehicle is an innovative transportation technology that uses a magnetic levitation and propulsion system, and its guideway design is an important feature of this project that accounts for around 60-80 percent of the original infrastructure development expenses. Under external forces, the allowable variations of such structural parts are extremely minimal. It is critical to be able to precisely estimate the guideway response to the action of high-speed maglev vehicles in order to control the magnitude of guideway displacement and vibration. The vehicle and guideway form a linked system, resulting in precisely defined guideway stiffness needs. To evaluate a wide range of guideway designs for varied operating situations, a reliable simulation technique for the dynamic interaction system must be developed. The major goal of this research is to investigate the dynamic properties of the maglev guideway and to create a reliable numerical approach for simulating the coupled maglev system. External actions on maglev guideways have been summarized as well. The possibilities of modelling the vehicle/guideway interaction system that is influenced by high-speed loadings are then explored. In MATLAB/Simulink, a method to the dynamic response of the coupled system is devised. Five numerical models with varying degrees of precision are built. A series of simulations are run based on these models to investigate the dynamic characteristics of the maglev system. In Simulink, a surface roughness model is constructed to analyze the impact of guideway irregularity, and in Midas/Civil, finite element models matching to the first three numerical models are created. The goal of developing a FE model like this is twofold. On the one hand, the finite element method will be utilized to validate Simulink numerical models. Midas' accuracy in analyzing dynamic properties of guideways under high-speed vehicles, on the other hand, can be validated.*

Key Word: *Maglev; Neural Networks; NARX; MATLAB/Simulink; MSE; MIDAS/CVIL; Autoregressive; FE;*

I. INTRODUCTION

The maglev technology relies heavily on guideway design. The infrastructure for Maglev development is projected to cost between 60 and 80 percent of the initial investment. As a result, guideway design is a crucial cost-cutting area. When a maglev vehicle's speed is increased to 300-500 km/h, or a guideway is made lighter and more flexible to save money, dynamic interactions between vehicles and guideways become a significant issue. It will play a key role in determining vehicle suspension requirements and specifications such as guideway stiffness, length, and other factors. The major goal of this project is to talk about the issue of guideway design and modelling vehicle/guideway interactions. To simulate the dynamically coupled system, a numerical approach to simulating a complicated coupling system is created. The first section will provide an overview of the maglev guideway's development at the Emsland Test Facility during the last twenty-five years. For an optimum structural design, the benefits and drawbacks of experience are critical. Following that, three types of guideways utilized in the Shanghai and Munich projects are examined, which are thought to represent the state of the art in maglev guideway design at this time. Following that, we'll research and design complex loading instances on guideways in accordance with industry standards. Using the software MATLAB/Simulink, five numerical models for vehicle/guideway interaction analysis will be built at different degrees of precision. A series of numerical simulations are run based on them to investigate the dynamic properties of the maglev system. A surface roughness model is also produced in Simulink to mimic guideway irregularity and evaluate its impact on guideway displacement and vehicle acceleration, as well as finite element models using the software Midas/Civil to investigate the guideway's dynamic response. The goal of creating a FE model like this is to validate the numerical models that have been created in Simulink. Midas' accuracy while evaluating the guideway dynamic

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Manufacturing of Bricks with Solid Waste

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ABSTRACT : There has been a massive increase in solid waste creation as a result of urbanisation. In addition to polluting the environment, dumping and landfilling solid waste may also have an adverse effect on human health since it can cause ground water contamination via leaching. Using solid waste to recycle valuable materials and reduce trash volume, other pollutants, and disposal costs has grown increasingly viable in recent years. Bricks are a ubiquitous building and construction material all throughout the world. Since clay and ordinary Portland cement (OPC) concrete are the most common building materials used to make traditional bricks, their production has a significant environmental impact. Several nations throughout the world have already exhausted their natural resources for the production of conventional bricks. Efforts have been made to produce bricks from waste materials in order to protect the environment and promote sustainable growth. This document provides an overview of studies on the use of waste materials to make bricks. Bricks may be made from a broad range of waste materials using a number of techniques. Depending on the technique used to create bricks from waste materials, the study may be broken down into three broad categories: burning and cementing. Despite extensive research, the practical production of bricks built from waste materials is still limited. Bricks made from waste materials, the risk for contamination, the lack of standards and sufficient advice, and the sluggish adoption of waste materials-based bricks by industry and the general public are all plausible reasons for the problem. As a matter of fact, research and development are needed in a variety of fields, including the areas of technical, economic/environmental and public education.

KEYWORDS: Component, formatting, style, styling, insert.

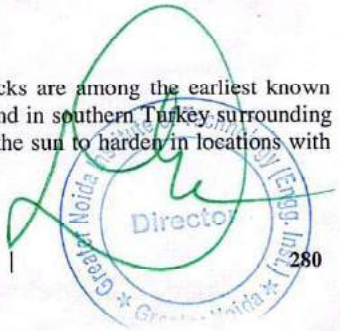
I. INTRODUCTION

For example, hollow, solid blocks and concrete bricks are all made from natural resources that are already present in the environment. As a consequence of the extensive investigation, the ecosystem is fragmented, and natural resources are depleted. It's not only carbon monoxide and other toxic compounds that are released into the open air during the production process, but also sulphur and nitrogen oxides, as well as suspended particles. These emissions have adverse effect on humans and well-being, since they have a harmful effect on the nature and disrupt the normal use of air quality, natural water resources, vast soils, and many plant, animal, and aquatic life species. As a consequence, the existing air quality may deteriorate as a result of shifting quantities in the environment. We have seen a rise in the importance of sustainability and environmental protection in our society in recent years. Sustainable, eco-friendly, low-cost and compact construction materials have been emphasised in civil works because of the growing need for environmentally-friendly, low-cost, eco-friendly, lightweight and compact building materials.

In current year's numerous sorts of secondary products, created from diverse origin such as hospitals, factories, domestic, public places, commercial etc. gathered in extremely significant amounts. As a result, the majority of the waste product is detrimental to the environment. As a result, these items cause a pollution explosion. Because of this, we must discover a method to turn all of the dangerous trash into a beneficial product that can be utilised without causing damage to the environment. To address the issue of environmental deterioration and the frequent dumping of significant amounts of solid waste. The novel idea in which solid waste is used in making bricks is explained and tested for heat resistance and other attributes of solidity in the current study. This presentation is based on the concept of "turning waste into value" in the building industry by employing a various types of waste materials in the casting process for making bricks.

1.1. Background and motivation

Brick has been used by humans from thousands of years to create structures. Bricks are among the earliest known construction materials, dating as far back as 7000 BC. Ancient settlements were found in southern Turkey surrounding the city of Jericho. The first bricks were made up of mud and bricks were dried in the sun to harden in locations with warm weather.



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A Study on Plastic Waste for Replacement of Coarse Aggregate with Soft and Hard Plastic in Concrete

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Abstract:- As the today in the fastest growing word the construction around the world is on the peak and as we know that in building construction concrete is the main constituent apart from that in today time. the plastic waste is one of the most dangerous pollutant for environment because to degrade plastic take throughout of the year. the idea behind this reachers is to overcome these plastic waste with the construction material in order to overcome the environmental problem that the word are facing .this paper aim to review the using to this plastic with replacement of course and fine aggregate and its effect on the property of concrete like workability, Tensile strength test and other tests are separated into compressive strength test and other tests. And on a partially replaced concrete specimen size (150mm X 150mm X 150mm) cube, the results were checked after 7 days, 14 days, and 28 days, and compared to a conventional concrete cube that had 0% percent plastic trash mixed in. Replacement of natural aggregates by recycled plastic aggregate can be as a sustainable development approach toward environmental friendly construction approaches and our test we verry the percentage of plastic 0 to 25% percent by the volume of concrete and adopt mixed design as IS and check its property.

Keywords:- *Recycle Aggregate, Plastic Waste, Construction Material.*

I. INTRODUCTION

Disposal of waste in environment is generally a big problem due to its low biodegradability and it will increase day by day and quantity increase .Plastic waste is increasing continuously specially in the form of throw away packaging such as polyethylene water bottle. Plastic disposal has a lower recyclability rate then other type of material such as glass and paper. Non load bearing concrete block for safe and efficient use can be manufactured using plastic flakes as a partially replacement with aggregate. therefore finding alternative method for disposing waste by using friendly method are becoming a major research issue. Plastic garbage dumped in the environment is seen as a major or significant problem. because of its limited biodegradability and large amount current industrial and urban applications Polypropylene and polyethelene, terephthalate waste are used to replace a portion of the traditional concrete aggregate. Polypropylene, polyethylene, terephthalate, and polystyrene make up the majority of plastic garbage. Waste reuse is essential from a variety of perspectives.

It help to save our sustainable nature resources that are not replenished. beside using of plastic waste material in concrete mix will not only be its safe disposal and dumping technique but may get improve the concrete properties like tensile strength chemical resistance drying, shrinking and creep and shorts and long term basis. Today sustainability has get top priority in construction industries. Recently Plastic work used to prepare the course aggregate . This provides a long-term solution for dealing with plastic waste. As a result, plastic trash recycling is an important topic to discuss in order to reduce pollution and resource waste. Polyethylene is a semi-crystalline plastic with exceptional chemical resistance, good corrosion resistance and good fatigue and wear resistance. It provide good resistance to organic solvent and strength with low moisture absorption.

II. LITERATURE REVIEW SURVEY

Dr. M Lokeshwari1, Nikunj Ostwal2, Nipun K H2, Prakhar Saxena2, Pracheer Pranay2 2019(1), according to all the reachers he tested property like compressive strength and conclude that both the fresh and hardness state property tends to decrease as the percentage replacement of plastic in concrete mix increases all curing ages.

Edmund T.S.J.*, Jun Hon C., F Hejazi and M. S. Jaafar 2018 (2), the main conclusion according to this can be dwawn that as we replace the aggregate by some percentage amount of coarce aggregate then compressive strength is significantly lower than the ordinary OR controlled concrete and also have some conclusion for the slump test also where higher percentage to irregular cutting shape of plastic, angularity as well as the smooth surface of the plastic used by the substitution.

Lhakpa Wangmo Thight Tamanges(3), In 2017 hi performed on plastic aggregate as coarse aggregatethey perform taste on mechanical property of concrete containing plastic aggregate with various proportion of 10% 15% and 20% and they found that decrease in strength of concrete with increase with plastic waste and he obtained optimum result at 15% of plastic replacement.

Ashwini Manjunath B T(4), In 2015, they employed e-plastic waste as a partial replacement for course aggregate in concrete. Plastic can be utilised to substitute course aggregate in concrete mixtures to some extent., this contributes to

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Load Frequency Control of a Multi-Microgrid System Incorporating Electric Vehicles

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CONTENTS

Abstract—Owing to high cost of conventional energy storage systems, battery of electric vehicles (EVs) is now being considered as their partial replacement to facilitate the demand side response. EVs can act as controllable bidirectional sources to restrain the frequency deviations in power system via vehicle-to-grid control. Consequently, this article proposes a load frequency control (LFC) scheme of a multi-microgrid (MMG) system incorporating EVs. A tilt integral derivative (TID) controller is enforced as the LFC controller in the proposed MMG system. To optimize the gains of the TID controller, a recently developed atom search optimization algorithm is implemented as a novel initiative. Diverse loading patterns that include random, sinusoidal, and pulse load disturbance patterns are considered in the MMG to establish the competence of the proposed control scheme. Simulation results reveal that the proposed LFC scheme enhances the dynamic responses of the MMG system in terms of attenuated

Detection of SSVEP Frequency component using Filter Bank Approach for EEG Based BCI System

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Abstract:

Steady state visual evoked Potential (SSVEP) is a periodic signal appeared into the recorded electroencephalography (EEG) signal. The presence of unwanted signal associated with recorded EEG Signal may deteriorate the performance of SSVEP BCI system. A good detection algorithm is essential to improve the performance of SSVEP- BCI system. In this Paper, the author employed a filter bank approach of Discrete Wavelet Transform to decompose the raw EEG signal into sub-bands of different center Frequency. Then, Power spectrum density analysis (PSDA) using Fast Fourier Transform (FFT) is employed on the selected sub-band to detect SSVEP frequency components from recorded EEG signal. The obtained finding compared with the detection of SSVEP frequency components from the whole band of recorded EEG signal using standard PSDA approach. The experimental result from four subjects demonstrates that the detection of SSVEP frequency components using Sub-band decomposition is improved as compared to detection of SSVEP frequency components from the whole band of recorded EEG signal.

Key words: Steady State Visual Evoked Potential (SSVEP), Power Spectrum Analysis (PSA), Brain Computer Interface (BCI), Electroencephalography (EEG), Discrete Wavelet Transform (DWT).

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Introduction

Brain computer interface (BCI) is a direct communication system that allows people to communicate with external world via user's brain activity [1-3]. The main aim of BCI system to develop the non-muscular channel that allows people to communicate with external devices such as computer, different assistive applications with the help of user's intention without involving the normal brain pathways [4]. It helps individuals to improve their quality of life and at the same it reduces the cost of intensive care.

The human brain's neural activity recorded non-invasively is Sufficient to control the external machine if different signal Processing methods are used to analyze and identify the brain Patterns over the recorded brain Signal [5-6]. In recent years, the objective of BCI system is to fill the gap between human brain and external machine by generating accurate command.

In the last few decades, many BCI paradigms are used to develop BCI inference systems such as motor imagery, P-300, SSVEP [6].

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Cuckoo Search Constrained Gamma Masking for MRI Image Detail Enhancement

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Keywords:
contrast enhancement, cuckoo search algorithm, wavelet transforms, masking, gamma correction, MRI image enhancement

ABSTRACT

Nature-inspired algorithms are widely applied in the arena of image enhancement for various optimization purposes. To address the optimization complexities in various image enhancement approaches, nature-inspired optimization algorithms play a vital role. Cuckoo search is one of the prominent nature-inspired performance algorithms that we employed in this work for the enhancement of magnetic resonance imaging (MRI). We proposed a wavelet-based masking technique employing a cuckoo search algorithm whose masking value is corrected by gamma function for the contrast enhancement of MRI images. The cuckoo search algorithm can inevitably fine-tune the relation of nest building using genetic operatives like adaptive cusp and alteration. The proposed contrast enhancement scheme is examined quantitatively for different types of MRI images. Extensive simulation results compared with quantitative values have revealed that the traditional nest building of cuckoo search optimization is improved by adaptive gamma correction. Comparative analysis with the existing works establishes the usefulness of the proposed methodology over the other standard approaches.

1. INTRODUCTION

Image enhancement is often useful in innumerable image processing applications like contrast improvement, denoising, edge enhancement, edge restoration, etc. Image enhancement techniques fall under two wide-range of classes, i.e., spatial and frequency domain enhancement approaches [1]. Spatial domain operations directly manipulate or modify the pixel values in the image plane itself, while frequency-domain techniques transform the image to the frequency domain for modification/manipulation.

In medical image processing, contrast improvement procedures are cast-off as a preprocessing module that enables enhancing the purity of prognosis. Usually, enhancement techniques are example-based and intensity-based [2]. Intensity-based improvement is further categorized as histogram-based, transform domain-based, filter-based, and masking-based. The histogram equalization is a standard assessment approach. Different histogram methods are employed for better results; like instinctive precise histogram specification, sections reliant on active multi histogram equalization and threshold optimized histogram equalization, etc. Wavelet transformation methods have found a lot of applications in image processing like compression, segmentation, and enhancement, etc. Fourier domain is another common and traditional method in transform-based signal and image processing.

Filtering is the process of removing unwanted signals while selecting the specified values of signals. In image processing, filter-based methods are primarily intended for the reconstruction and enrichment of the signal [3]. Unsharp masking is an enhancement process, during which the scaled value of the image is employed for mask formulation. Traditional masking methods exploit static measure values which are determined in the arbitrary range [4]. Numerous optimization algorithms are a nature-inspired example: ant colony optimization (ACO), particle swarm optimization (PSO), genetic algorithm (GA), cuckoo search algorithm (CSA) [5, 6], etc. Nature-inspired optimization algorithms (NIOA) play a critical situation in the arena of image processing. They reduce the noise and blurring of images and also enhances their quality. They also help in image restoration, image segmentation, image edge detections, generation of images, the fusion of images, recognizing the patterns from the images, thresholding, and so on [7]. These sets of optimization algorithms are called nature-inspired as scholars have established the underneath motivation of these algorithms from several natural phenomena. Counting on the various sources of motivation from nature, these NIOA are largely classified into:(a) Evolutionary Algorithms (EA), (b) Biology-inspired, or Bio-inspired algorithms, (c) Physics and Chemistry based algorithms [8, 9]. Several NIOAs have been used for various image processing applications in recent years.

Bhandari et.al used the Social Spider optimization method for image enhancement [10]. They also used the salp swarm algorithm for image enhancement [11]. Chen et al employed an artificial bee colony-based NIOA for contrast enrichment [12] whereas Nandan et al. implemented a gray wolf optimization method to fuse masked-based medical images [13]. Dhal et al. [14, 15] used an animatedly revised and biased bat algorithm to enhance the image properties as well as did a review on nature-inspired optimization procedures used in

Relative Result And Design Analysis of SPV Tracking System on Simulink Platform

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Abstract*: The paper describes a tracking mechanism that was implemented on the simulink stage. This review shows the distinctions in current and voltage for static and following Solar Photo Voltaic (SPV) power plants. This research also includes a comparative evaluation of alternative panel placements (static force plant). The study also included the whole model, including the tracking model of sun, static SPV model, sensor (like LDR) model, and direct current motor model. The main purpose of this research is to deconstruct the results of the static force plant. The static force plants on the tiltaion edges are 30°, 60°, and 90°. Simulation findings as well as the impact of the tiltation point are also included. The greater effectiveness as a result of the tracking approach is mentioned in the final comment.

***Keywords*: SPV System, Photovoltaic, LDR, Solar Board, Simulink Model, Solar Tracking System.**

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I. INTRODUCTION

Currently, everyone is interested on sustainable power sources because they are a non-polluting source of electrical energy. Photovoltaic cells based on the sun are playing an important role in converting light energy to electrical energy [1]. When the light pillars crash into the silicon sun-arranged cells setting the electron in the outskirts of the circle to be free. The light incident on the board surface, the electrons in the load related circuit will advance. The age of an electron is controlled by the proportion of light exuberance. It has been talked about in a few papers with respect with the impact of light force on sun-situated cells. The irradiance esteem is really corresponding to the current produced by a sun powered cell [2]. The yield current increments as the irradiance esteem increments, yet the voltage esteem diminishes when the temperature of sun-controlled cells rises. Thusly, when contrasted with June, the force made by the SPV power plant is more recognizable in November. Since the yield current is relative to the measure of daylight got, the sun tracker is fundamental for expanding SPV productivity. There are various papers [3-14] introduced by the creators, some of which clarify the dynamic sun global positioning framework and others which present the uninvolved global positioning framework; be that as it may, most of the creators suggest the dynamic global positioning framework since it is easy to keep up with and gives precise following of the sun position. Furthermore, the expense of developing a functioning global positioning framework is unobtrusive. Electromechanical frameworks are utilized in the Active Tracking System. The expression "electromechanical" alludes to both an electrical and mechanical framework. Stuff framework, steel structure, and bearing are on the whole pieces of the mechanical framework. Engine, control circuit, and LDR sensor are completely remembered for the electrical framework.

The alarming rate of fossil fuel depletion and the deterioration of the earth's health as a result of increasing power demand to use the most advanced technologies discovered to date has prompted us to uncover yet another technology known as SPV or Solar Photovoltaic Technology. This method, known as solar photovoltaic technology, is based on the photovoltaic effect, which uses solar energy. A functional solar photovoltaic module or panel is made up of a number of solar cells connected in series and parallel. The solar cell is thus the most important component of a solar panel (s).

The solar cell is the most important component of a solar photovoltaic system. Solar cells require pure silicon with good crystal quality. Impurities, or doping atoms, are injected into the crystal lattice of silicon to enable it to create electrical energy.

It's a gadget that converts solar energy into direct current electricity. A pn junction diode is formed by sandwiching two different doped Silicon transistors (n-type and p-type) together. A diode is what a solar cell is. When an n-type material is exposed to sunlight, the bulk of charge carriers are electrons.

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Research Article

Predicting Carbon Residual in Biomass Wastes Using Soft Computing Techniques

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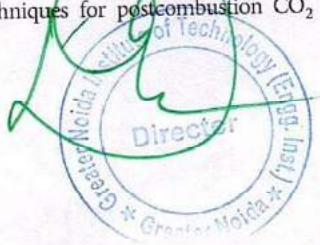
In recent decades, the development of complex materials developed a class of biomass waste-derived porous carbons (BWDPCs), which are used for carbon capture and sustainable waste management. It is difficult in understanding the adsorption mechanism of CO_2 in the air as it has a wide range of properties associated with its diverse textures, functional group existence, pressure, and temperature of varying range. These properties influence diversely the adsorption mechanism of CO_2 and pose serious challenges in the process. To resolve this multiobjective formulation, we use a machine learning classifier that maps systematically the CO_2 adsorption as a function of compositional and textural properties and adsorption parameters. The machine learning classifier helps in the classification of various porous carbon materials during the time of training and testing. The results of the simulation show that the proposed method is more efficient in classifying the porous nature of the CO_2 adsorption materials than other methods.

1. Introduction

To reduce CO_2 emissions, carbon capture and storage (CCS) has been widely accepted [1–4]. As the concentration of carbon dioxide (CO_2) in the atmosphere continues to rise [5], CCS has been regarded as an essential technique. Due to the expense of CO_2 capture [6], more than half of the entire CCS cost is still accounted for by CCS systems. Aside from precombustion and postcombustion, oxy-fuel combustion is the third most cost-effective method of CO_2 capture from industrial emission point sources [7, 8].

This technique, however, has a major barrier due to the low CO_2 concentration in postcombustion flue gases. Regenerative amine solution techniques for postcombustion CO_2 capture



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Dr. Indradeep Verma et al.

Service Providers for Home Appliances

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Abstract – In current time, each person might be very busy in a heavy work load as they're worried in a busy agenda of each day work manner of existence. They have no time for their family life. If any problem happens unexpectedly in our home appliances, it distracts from our daily routine and chooses over the work they have to accomplish primarily. So, it needs to make balanced with the family and professional life. Nobody want to live in homes or houses where there are leaks in pipes, damaged furniture's items, issues in wiring of the home etc. As now a day's technology is more demandable, it makes the human's life easy. By pressing the single click with the help of mobile phone or laptop application, to send the request to service provider for repair the home appliances at the home. Peoples don't need to go to the shop; service provider will come to your home gate and provide the best services in front of you. By using technology peoples can save the time also by booking the order for repairs the home appliances. We can book the time slot for service provider to come at your home and repairs equipment. So, technology plays an important role for solving these types of issues.

Key Words: Services, users, employees, Python, Django framework, MySQL, PyCharm, API.

1. INTRODUCTION

When a person desires help in a small and essential family home system the hassle arises we do not get skilled males and females for the services or the individual or any employer to whom we are able to consider effortlessly and resources services at any region and at any time or times. The small assignment of keeping the household home system emerges as disturbing assignment. In our platform for domestic systems, provider vendors inexperienced and exasperate loose way to remedy the home artwork.

Our intention is to provide most incredible solutions to all your private home tool issues in a green ease and majorly a sensitive contact. A unmarried click on tool allows in

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6.1 IMPACT FACTOR

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Research Article

A new CMOS compatible high performance first-order all-pass filter realisation

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ABSTRACT

A new realisation of an electronically tunable first-order voltage-mode all-pass filter enjoying the feature of low voltage and low power is proposed in this paper. The proposed realisation of filter employs only one active element namely differential voltage extra-x current controlled conveyor and one grounded capacitor. The use of minimal number of components makes the proposed structure simple and attractive from chip fabrication point of view. The performance of proposed structure is also discussed by considering the effects of parasitic and non-idealities of the used active element. Additionally, higher order filter realisation is also

included to enrich the presented work by exploring possible applicability aspects. The theoretical performance is validated at schematic level using 0.18 um CMOS

Trends in Sciences

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First Order Mixed Mode MOS-C All-Pass Frequency Selective Analog Network with Electronic Tuning

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Keywords: All-pass filter, First order, Mixed mode, OTA, MOS-C

ABSTRACT

This work is intended to present a novel MOS-C design of first order frequency selective analog structure that plays essential role in phase equalization. The proposed idea employs 2 electronically tunable operational trans-conductance amplifiers, 7 MOS transistors forming active resistors and 1 grounded capacitor. Substantial flexibility to work in all 4 possible mode of operation enriches the uniqueness of proposed frequency selective structure. Non-ideal scenarios along with parasitic effects are also incorporated to explore real time performance of proposed structure. The emphasis on design has been enhanced by studying the effects of capacitor variations through Monte-Carlo analysis and the effects due to the temperature variations. Typical 0.18 μm CMOS process parameters are utilized in the verification of presented theoretical aspects through PSPICE simulation. To make room for the practicability of the proposed circuit, the experimental realization using commercially available ICs is also explored and included.

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semiconductor (CMOS) transistors based
. The filter circuit employs six metal-oxide
mber of passive components, i.e., a resistor
a CMOS inverting amplifier with unity gain.
ures such as compact design, high input impedance and ability to provide non-inverting and inverting all-pass responses simultaneously. Additionally, it does not require any kind of passive element matching constraints. Furthermore, by replacing the passive resistor with an active negative channel metal-oxide semiconductor (NMOS) transistor, the proposed filter is enriched with the much-desired feature of tunability. The theoretical behavior is tested and demonstrated by carrying SPICE simulations using TSMC 0.18 μm level-7 CMOS process parameters.

This paper was recommended by Regional Editor Giuseppe Ferri.

Keywords: CMOS transistor ▪ all-pass filter ▪ first-order ▪ voltage-mode ▪ tunability

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Treatment of thyroid disease through machine learning predictive model

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***Abstract*---**The thyroid seems to be an part of the endocrine system that is placed toward the front of neck and produces thyroxine, which are essential for our overall health. If it fails, thyroid hormone production will either be insufficient or excessive. Machine learning techniques and data mining are critical in processing large amounts of data, particularly in the health care system, where there has been a massive amount of information and data need to be managed. In our

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Analysis of Stock Market Prediction by using PSO Algorithm Optimizing LS-SVM

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Abstract— Stock market prediction is the act of trying to determine the future value of a company stock or other financial instrument traded on a financial exchange. The successful prediction of a stock's future price will maximize investor's gains. In this paper we analyze a machine learning model to predict stock market price, where existing algorithm integrates Particle swarm optimization (PSO) and least square support vector machine (LS-SVM) are identified in which, the PSO algorithm is employed to optimize LS-SVM to predict the daily stock prices. The proposed model is based on the study of stocks historical data and technical indicators. PSO algorithm selects best free parameters combination for LS-SVM to avoid over-fitting and local minima problems and improve prediction accuracy. The proposed model was also applied and evaluated using thirteen benchmark financials datasets and compared with artificial neural network with Levenberg-Marquardt (LM) algorithm. The obtained results showed that the proposed model has better prediction accuracy and the potential of PSO algorithm in optimizing LS-SVM.

Keywords—Least Square Support Vector Machine, Particle Swarm Optimization, Technical Indicators and Stock Price prediction.

I. INTRODUCTION

Stock price prediction has been at focus for years since it can yield significant profits. Predicting the stock is not a simple task, mainly as a consequence of the close to random walk behavior of a stock series. Fundamental and technical analyses were the first two methods used to forecast stock prices. Artificial neural network (ANNs) is the most commonly used [1]. In most cases ANNs suffer from over-fitting problem due to the large number of parameter to fix and the little prior user knowledge about the relevance of the inputs in the analyzed problem [2]. Also, support vector machines(SVMs) had been developed as an alternative that avoids such limitations .Their practical success can be attributed to solid theoretical foundations based on VC theory [3]. SVM compute globally optimal solutions, unlike those obtained with ANNs which tend to fall into local minima [4]. Least squares –support vector machines (LS-SVM) method was reformulated the traditional SVM algorithm LS-SVM uses a regularized least squares function with equality constraints, leading to a linear system which meets the karush-kuhn-tucker (KKT) conditions for obtaining an optimal solution [5]. Although LS-SVM simplifies the SVM procedure, the regularization parameter and the kernel parameter play an important role in the regression system. Therefore, it is necessary to establish a methodology for properly selecting the LS-SVM must be robust against the influence of the free parameter values in the problem studies [6]. The perceived advantages of evolutionary strategies as optimization methods motivated some researcher to consider such stochastic methods in the contested of optimizing SVM. A survey and overview of evolutionary algorithms (EAs) found in [7]. Particle swarm optimization (PSO) is one of the most used (EA). PSO is a recently proposed algorithm by James Kennedy in 1995, motivated by social behavior of organisms such as bird in flocking fish schooling [8]. The optimizer which is used in the particle swarm optimization algorithm, while making adjustment towards "local" and "global" best particles is conceptually similar to the crossover operation used by genetic algorithm [9]. Neural network and wavelet DE noising for stock trading and prediction was introduced [10].the aim of this paper is to develop a machine learning model that hybrids the PSO and LS-SVM model. The performance of LS-SVM is based on the on the selection of free parameter (cost penalty), (insensitive-loss function) and (kernel parameter). PSO will be used to find the best parameter combination for LS-SVM.

II. LEAST SQUARE SUPPORT VECTOR MACHINE

Least squares support vector machine (LS-SVM) are least squares versions of support vector machines(SVM), which are a set of related supervised learning methods that analyze data and recognize patterns, and which are used for classification and regression analysis. In this version one finds the solution by solving a set of linear equations instead of a convex quadric programming (QP) problem for classical SVMs. Least squares SVM classifiers, were proposed by suykens and vandewalle [11].

Implementation of IoT based Automatic Street light illumination by using IR sensor

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Abstract: Smart led street lighting system aims for designing and executing the advanced development in IOT for energy saving of street light, the best solution for electrical power wastage is automation of street light, the manual operation of the lighting system is completely eliminate. A method for modifying street light illumination by using sensor at minimum electrical energy consumption ,when object presence is detected, street lights glow at their brightest mode, else they stay in the dim mode during night time Internet of things (IOT) is used to visualize the real time updates of street processing and notifying the changes occur. This shall reduce heat emissions, power consumption, maintenance and replacement costs and carbon dioxide emissions.

Keywords: ***Internet of things , Arduino , LDR , IR sensor.***

1. INTRODUCTION

The street lighting is one of the largest energy expenses for a city. An intelligent street lighting system can cut municipal street lighting costs as much as 50% - 70%. The existing system is like the lights will be switched on in the evening before the sun sets and they are switched off the next day morning after there is sufficient light on the outside . But the actual timing for these lights to be switched on are when there is absolute darkness. With this, "IOT based Automatic Street lightning system", the power that is wasted will be saved up to some extent. In sunny and rainy days, ON and OFF time differ which is one of the significant hindrances of the existing street lights systems. Also, the manual operation of the lighting system will be completely eliminated. The energy consumption in entire world is rapidly increasing due to population growth and economic development and the availability of energy sources remains woefully constrained. Resource augmentation and growth in energy supply has not kept pace with increasing demand and, therefore, continues to face serious energy shortages. Street lights are an integral part of any locality. They are present on all major roadways and in the suburbs too. Every day, street lights are powered from sunset to sunrise at full strength, even when there is no one around. On a global scale, millions of dollars are spent each day on street lights to provide the required electrical energy. The maintenance and replacement costs of conventional incandescent bulbs are immense. They consume a lot of electric power to function and their heat emissions are also quite high. All of this contributes to greater demand of electricity production and consequently, more carbon dioxide emissions from powerhouses.

It also causes unnecessary light pollution. The main aim of the project is to provide an "IoT based Automatic Street Lightning System" powered with solar energy during night time. We use the word "smart" because the system not only to provide power to the street lights but also to helps in detecting the direction of movement of the pedestrian and helps him by means of illuminating the path of movement till the near next street light. By integrating the entire street lights with Smart Street light system, it is possible to systematically help the pedestrian to reach the destination in the remote rural areas which are facing serious electric power supply problem. The same system can also be used in metropolitan cities as well. A simple and effective solution to this would be dimming the lights during off peak hours. Whenever presence is detected, the lights around it will glow at the normal (bright) mode. This would save a lot of energy and also reduce cost of operation of the streetlights. We can check the status of street light on internet using IOT (Internet of things) from anywhere in real time and solve the issues if happen during the processing [1].

2. BACKGROUND

S.Suganya et al have proposed about Street Light Glow on detecting vehicle movement using sensor isa system that utilizes the latest technology for sources of light as LED lamps. It is also used to control the switching of street light automatically according to the light intensity to develop flow based dynamic control statistics using infrared detection technology and maintain wireless communication among lamppost and control terminal using ZigBee Wireless protocol. It also

Transactions

The Electrochemical Society

Study: An Efficient Survey on Security Analysis of Social Networking

t Srivastava[1], Prateek Singhal[2], Shipra Srivastava[3] and Deepak Kanojia[4]

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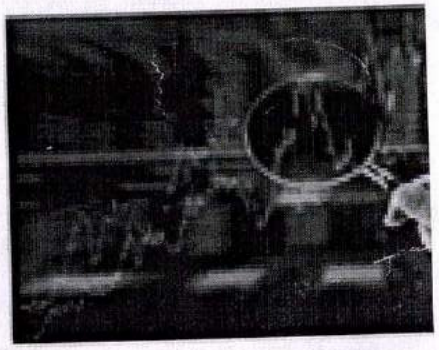

Abstract

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Production of Ethanol from Jaggery

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Abstract: ***This exploration depicts about the Development of Ethanol by Jaggery. We use Jaggery which assists us with creating the Ethanol. Ecologically maintainable energy sources are called for because of contemporaneous advancement in businesses alongside the fast speed of urbanization. Ethanol created from biomass can be thought as a spotless and most secure fluid fuel and an option in contrast to fossil and oil fills are they have given exceptional natural, key financial advantages. For as far back as decade, it has been seen that there is a rising pattern found in bioethanol creation which has made an upgrade to go for progression in bioethanol creation advancements. A few feed stocks have been utilized for the bioethanol creation yet the second-age bioethanol has focused on the lignocellulose biomass. Plenteous lignocellulose biomass on the planet can be tapped for Ethanol creation, yet it will require huge advances in the ethanol creation process from lignocellulose as a result of a few specialized and monetary obstacles tracked down in business scale. The principal objective of the ongoing task is to decrease the purposes of Fuel in the public arena since it isn't eco-accommodating for nature. Trial studies have been done to enhance the pre-treatment process for expanding the proficiency of bacterial hydrolysis, the effective transformation of glucose from Jaggery corrupting microorganisms and to change over sugars delivered to Ethanol by utilizing Maturation process. Processing, refining, aging and parchedness associated with the Creation of Ethanol. In the aging system, the yeast breaks down the glucose into sucrose and fructose. The Yeast Saccharomyces Cerevisiae was utilized for aging cycle, which helped in changing over the jaggery into sugar and isolated in refining process. This audit will incorporate the ongoing status of bioethanol creation. During the examination we got 250ml of Ethanol from 1kg of Jaggery blended in with 1liter of water. As far as their monetary and ecological practicality alongside some exploration holes as well as strategy ramifications.***

Keywords: Bioethanol, biomass, Lignocelluloses, Yeast, Jaggery;

I. INTRODUCTION

Ethanol (additionally called ethyl liquor, grain liquor, drinking liquor, or just liquor) is a natural substance compound. It is straightforward liquor with compound equation C_2H_6O. Its recipe can be likewise composed as CH_3-CH_2-Gracious or C_2H_5OH (an ethyl bunch connected to a hydroxyl bunch), and is frequently curtailed as EtOH. Ethanol is an unstable, combustible, boring fluid with a trademark wine-like smell and sharp taste. It is a psy drug, sporting medication, and the dynamic fixing in cocktails. Ethanol is normally delivered by the maturation of sugars by yeasts or through petrochemical cycles like ethylene hydration. It has clinical applications as a germ-free and sanitizer. It is utilized as a synthetic dissolvable and in the union of natural mixtures. Ethanol is a fuel source and furthermore can be dried out and to make ethylene, a significant compound feedstock. There are two sorts of Ethanol aged and manufactured. The significant source for modern ethanol are as a dissolvable and in substance combination. Some 60% of US modern interest goes to dissolvable applications in drugs, toiletries and beauty care products, cleansers and family cleaners, coatings and inks and handling solvents. Ethanol is likewise utilized as a synthetic halfway for the mfg. of ethyl acetic acid derivation, ethyl acrylate, acidic corrosive, glycol ethers and ethylamine, as well as different items. It is additionally utilized as an added substance to food and drinks. Notwithstanding, a lot bigger and developing source for ethanol is as a fuel, oxygenate added substance to lady and a lady extender. Universally, fuel ethanol represents 73% of creation, with refreshment ethanol at 17% and modern ethanol at 10%. Corn and sugarcane are normal feedstocks for aging ethanol, alongside grain, and sugar beet, while manufactured ethanol essential feedstock is ethylene. Engineered ethanol can't be used for fuel purposes.

There are two sorts of Ethanol aged and engineered. The significant source for modern ethanol are as a dissolvable and in compound blend. Some 60% of US modern interest goes to dissolvable applications in drugs, toiletries and beauty care products, cleansers and family cleaners, coatings and inks and handling solvents. Ethanol is likewise utilized as a substance halfway for the mfg. of ethyl acetic acid derivation, ethyl acrylate, acidic corrosive, glycol ethers and ethylamine, as well as different items. It is likewise utilized as an added substance to food and drinks. In any case, a lot bigger and developing source for ethanol is as a fuel, oxygenate added substance to lady and a lady extender.

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INTERNATIONAL JOURNAL OF RECENT TECHNOLOGY SCIENCE & MANAGEMENT

"A SURVEY ON CRANE WIRE ROPE FAILURE"

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ABSTRACT

If no corrosion, excessive heat, mechanical or chemical damage is involved, the rope is going to fail in the zone which has been subjected to the greatest amount of fatigue and abrasion. For many applications this means that the most likely zone where a rope failure is going to occur can be predicted. Steel wire rope inspections must be carried out at regular intervals in order to be able to discard the rope before it reaches an unsafe state. And still many accidents happen, either because the rope was inspected at the wrong locations or because the rope had failed from the inside out.

Key Words: *Rope, no corrosion, excessive heat, SMIB System.*

I. INTRODUCTION

Wire rope consists of one or more numbers of strands, laid spirally around one core of steel core. Itconsists of three basic components; the wires, strands and core. Wire ropes are identified byclassifications based upon the number of strands and nominal number of wires in each strand. Itallows the production of different design of wire rope for specific purposes or with specificcharacteristics [1]. The wire, for rope, is made from several materials such as steel, iron, and/orstainless steel. High carbon steel is the most widely used material, available in a variety of grades,each of which has the properties related to the basic curve for steel wire rope. Common defects ofthe wire rope are corrosion, excessive heat or chemical damage. However, most of the failure casehistory; the rope is going to fail in the zone, which has been subjected to the greatest amount offatigue and abrasion[2, 3, 4]. The wire rope has been operated on platform crane and failed on November 2013. It used tolift and lower materials and to move them horizontally. It is mainly used for lifting heavy things andtransporting them to other places beyond the normal capability of a human. The rope has a capacityto break at 60,000 lbs (261kN). The boom weight is less than 3 tonnes (30 kN). The wire ropeexamined in this analysis failed after it had performed one-fourth of its expected total service life.Detailed metallurgical tests were carried out on the failed wire rope, and the findings weresummarized in this case study.

Fig.1 wire rope

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INTERNATIONAL JOURNAL OF RECENT TECHNOLOGY SCIENCE & MANAGEMENT

"DESIGN AND ANALYSIS ON CRANE WIRE ROPES BY USING FEA METHOD"

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ABSTRACT

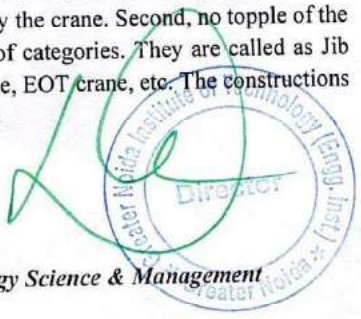
Wire rope applications and Advantages are studied, and failures in WR are also discussed. The objectives of the project were met as the analysis for failure of three WR with similar parameters has been done; comparative study between different properties has been done. By applying normal load FEA of all three Galvanized stainless steel 1*19 right lay wire rope were investigated here, with special concentration on different types of stresses and different types of deformation and strains, the contact type use here between the surfaces is bonded contact type. The results reveal that all three wire rope is deform almost equal amount of length on applying same load, this may be because the effective area of the wire ropes are almost same or all three wire ropes

Key Words: *Wire rope, WR, FEA, bonded.*

I. INTRODUCTION

1.1 EOT crane

Crane is a hoisting device use for lifting and lowering load with means of drum or lift wheel around which there will be rope or chain wraps. EOT crane is a mechanical devices used for lowering or lifting material, also used for making the material move vertically or horizontally. It will be useful when the task is beyond the human capacity to moving or lifting the loads. Crane is a special design structure equipped with mechanical elements for load by lowering or raising by manual or electrical operation. Applications of cranes are generally in the transport industries for unloading and loading of load, in construction industries for the materials movement; and in manufacturing industries for assembling of heavy equipments. This device decreases the cost of the production by increase the output, speed up the deliveries & improve quality. Due to increase in labour costs and issues related to labour management the utility of this device has further been increased. Crane is very much useful in increasing human comfort by picking up load from one point and transport the object from one place to another. In designing of cranes there are three major considerations. First, the weight of load must be lifted up by the crane. Second, no topple of the crane. Third, rupture should not be there in crane. Cranes are available in lot of categories. They are called as Jib crane, Telescopic crane, Tower crane, Gantry crane, Truck mounted, Aerial crane, EOT crane, etc. The constructions of EOT cranes are typically of two types, either single girder or in double girder.



sensors

MDPI

Review

MIMO Antennas: Design Approaches, Techniques and Applications

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Abstract: The excessive use of digital platforms with rapidly increasing users in the wireless domain enforces communication systems to provide information with high data rates, high reliability and strong transmission connection quality. Wireless systems with single antenna elements are not able to accomplish the desired needs. Therefore, multiple-input multiple-output (MIMO) antennas are getting more attention in modern high-speed communication systems and play an essential part in the current generation of wireless technology. However, along with their ability to significantly increase channel capacity, it is a challenge to achieve an optimal isolation in a compact size for fifth-generation (5G) terminals. Portable devices, automobiles, handheld gadgets, smart phones, wireless sensors, radio frequency identification and other applications use MIMO antenna systems. In this review paper, the fundamentals of MIMO antennas, the performance parameters of MIMO antennas, and different design approaches and methodologies are discussed to realize the three most commonly used MIMO antennas, i.e., ultra-wideband (UWB), dual-band and circularly polarized antennas. The recent MIMO antenna design approaches with UWB, dual band and circularly polarized characteristics are compared in terms of their isolation techniques, gain, efficiency, envelope correlation coefficient (ECC) and channel capacity loss (CCL). This paper is very helpful to design suitable MIMO antennas applicable in UWB systems, satellite communication systems, GSM, Bluetooth, WiMAX, WLAN and many more. The issues with MIMO antenna systems in the indoor environment along with possible solutions to improve their performance are discussed. The paper also focuses on the applications of MIMO characteristics for future sixth-generation (6G) technology.

Keywords: MIMO antennas; dual-band; circularly polarized MIMO antennas; isolation techniques; diversity parameters; 5G technology; 6G technology

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1. Introduction

Due to the usage of internet platforms in a variety of areas, wireless systems with high data rates and adequate channel capacity are in great demand. These requirements are usually incompatible with single-input and single-output (SISO) antennas. As a result, multiple-input and multiple-output (MIMO) printed antennas, a new form of antenna design, has emerged as a suitable candidate for high-speed communication technologies [1,2]. In such designs, two or more radiating elements are fed separately using a coplanar or strip line feeding technique to transmit and receive the data. However, the coupling between the ports is a major concern in MIMO design because it degrades the performance of MIMO antennas. As a result, several attempts have been undertaken to increase the isolation

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Regular paper

Dual-band trident shaped MIMO antenna with novel ground plane for 5G applications

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ARTICLE INFO

Keywords:
Trident-shaped patch
Arrow-shaped conducting strip
dual-frequency MIMO antenna
Group delay
5G applications

ABSTRACT

A trident-shaped dual-port high isolation MIMO antenna is proposed. The overall dimensions of the proposed design is 62 × 25.6 × 1.524 mm^3. By utilizing an arrow-shaped strip in between the U-shaped patch along with the defected ground plane, dual-band characteristics is achieved. This design demonstrates dual frequency bands varying from 2.99 to 3.61 GHz and 4.53 to 4.92 GHz with corresponding isolation ≤−25 dB and ≤−16 dB, respectively. The measured realized gain and radiation efficiency of the proposed design vary in the range from 2.96 to 3.14 dBi & 3.69 to 3.84 dBi and 72.68 to 80.24% & 85.22 to 84.64%, respectively. The important diversity parameters such as ECC, DG, MEG, CCL, TARC are studied to verify the practical applications of the design. The group delay analysis is also performed at two different orientations of the antenna. The CST microwave studio simulation software is utilized to theoretically model the MIMO design. Moreover, the prototype design is fabricated for practical validation. This antenna successfully covers the 5G and sub 6G n77/n78/n79 spectrum for high data rate communication.

1. Introduction

The usage of internet platforms has increased rapidly during the worldwide epidemic Covid-19. Excessive data transfer rates are causing new challenges for wireless technologies. The transmitting/receiving antenna needs to be modified to not only increase the data transfer rate but at the same time, the size should be small. In this view, the multiple-input multiple-output (MIMO) antenna has become a good alternative for high data communication systems. Printed MIMO antenna technology can satisfy the demands of such a huge number of users [1–3]. The need for compact antennas has grown but the mutual coupling in MIMO antenna systems has become a major source of concern. An interaction between the antenna components in MIMO antenna systems affects the current distribution and impedance in the MIMO system [4]. For compact MIMO antenna systems, we need to minimize the distance between radiating patches, resulting in a significant increase in mutual coupling and a significant decline in antenna performance. Many researchers have studied decoupling approaches to minimize the influence of mutual coupling by using defective ground structure (DGS) [5], neutralization line [6], electromagnetic bandgap (EBG) structure [7], and meta-surface [8]. A basic decoupling network made up of a defective ground plane is used to reduce mutual coupling between components that are near together. The impedance bandwidth is increased by using an F-shaped radiator and L-shaped open slots along with high isolation >20 dB [9]. The decoupling concept relies on the flowing currents being ejected between the two antennas [10]. Two port fractal MIMO antenna is reported in [11,12] working in UWB range. This design utilizes connected ground plane to achieve improved isolation. The split EBG structure provides good dual-band isolation as well as a high front-to-back ratio of radiation characteristics [13]. However, as the split EBG structure is arranged in the middle of the two antennas, as a result, there is a significant gap between antenna elements. In [14], two port MIMO antenna demonstrates the improved isolation >24.67 dB by implementing mushroom shaped and fractal shaped EBG as decoupling structure placed between the rectangular pateches. The MIMO design is excited with CPW feedline and a swastika-shaped slot is cut in the radiator [15] along with a metallic strip with a *T*-shaped structure in the ground plane to minimize the electromagnetic coupling between the patches. A novel construction for a dual-band MIMO antenna system with two rings covering the frequency bands 2.3–2.4 and 3.3–3.7 GHz

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Automated Health Monitoring System Using GSM and IOT

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ABSTRACT

The current hospital-centric healthcare becoming inefficient to treat those conditions that demand immediate treatment with the availability of 24 hours. like Comma or unconsciousness is the state wherein the patient cannot respond to any internal or external stimulus. In this situation, patients have no physical control over their entire bodies. Such cases require serious attention and continuous monitoring to save a patient's life. There is a very big issue to monitoring these patients by hospital nurses and there is also the availability of nurses is low for every patient. So in this paper, we propose an automated health monitoring system based on a global system for mobile (GSM) and IoT. We also introduce the GSM module in our health monitoring system to send an alert message to the prospective doctor. We measure patients heart rate and temperature using IOT sensors which are connected with the XBEE module.

Keywords : GSM, IoT, XBEE, Monitoring

I. INTRODUCTION

Coma or many heart diseases is a medical state wherein the patient cannot respond to any internal or external stimulus. Such cases require serious attention and continuous monitoring to save the patient's life. Thus, it is not an easy task to monitor every patient regularly. Nowadays, having someone to watch critically ill people is very costly and needs experienced staff. In Health Monitoring Systems, a surgeon can continuously monitor more than one patient, generally, doctors and nurses are facing two basic problems to monitor patients' health. The first problem is the need for health care providers to present bedside the patient, while the second one is the patient is restricted to bed and wired to large machines.

In this paper, we propose a health monitoring system based on the Global system for mobile (GSM) and Internet of things (IoT). Our system is continuously supervised patients and send SMS message about the health condition of the patient to the doctor or person in charge only when attention is needed or in any emergency cases. Wearable sensors are in contact with the human body which measures physical conditions. This will let the coma patient's family check their relative patient online without any need to stay in the hospital or call the doctor. We Develop a Graphical User Interface (GUI) for live monitoring of the heart rate and temperature of the patient and

Emotions specified Automatic Report Generator for Psychiatrists

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Abstract: **Human emotions are mental states of feelings that arise spontaneously rather than through conscious effort and are accompanied by physiological changes in facial muscles which imply expressions on the face. Some of the different emotions are happy, sad, anger, disgust, fear, surprise, etc. Facial expressions play a role in non-verbal communication which appears due to the internal feelings of a person that reflects on the face. Humans are completely dependent on non-verbal communication and facial expression is the most important part of it. This paper gives an overview of Facial Emotion Recognition (FER) techniques, datasets [1], and how we create an automatic emotions analysis-based Report using FER. It has been recognized for decades and it is a vital topic in the fields of computer vision and machine learning. This paper is aim to understand the basic principles of FER and Data Visualization and help to understand how Emotions can be analyzed using the Machine learning Techniques specifically about the Open CV and Data Visualization process using matplotlib, the library of python.**

Keywords: **Facial Expressions, Facial Emotion Recognition (FER), Data Visualization, Machine Learning, Emotion Analysis.**

1. INTRODUCTION

Emotion is the state of mind that is aligned with feelings, and thoughts usually directed toward a specific object. Emotion is a behaviour that reflects personal significance or opinion regarding the interaction with other human beings or related to a certain event. We can prevent suicides, and also it can be very helpful for medical organizations. More specifically, Psychiatrist and other medical staff of mental health need more meetings with patients tounderst and their medical mental history to analyze their emotions and stress level to reduce these types of problems and hopefully, this software helps the psychiatrists and medical staff to overcome the time needed during analysis and observation of the patient. Facial emotion recognition aims to help identify the state of human emotion (e.g., neutral, happy, sad, surprise, fear, anger and disgust) based on particular facial images that were present in the dataset. The challenge on facial emotion recognition is to automatically recognize facial emotion state and this should be overcome with the help dataset of images. The more the dataset is cleaned and specific, the higher is the accuracy of correct emotion prediction. The acronym for Facial Emotion Recognition (FER) is different in many papers, such as Facial Emotion Recognition and Facial Expression Recognition. In this paper, the acronym FER is refer to Facial Emotion Recognition. Generally, FER is split into three major stages as shown in Figure 1: (i) Face Detection, (ii) Feature Extraction, and (iii) Emotion Classification. At the initial stage, which is a preprocessing stage, a pictureof a face is detected and face components will be detected from the region. The facial components can be the eyes, brows, nose, and mouth. In the second stage, informative features will be extracted from different parts of the face. In the last stage, a classifier needs to be trained before being used to generate labels for the Emotions using the training data [1].

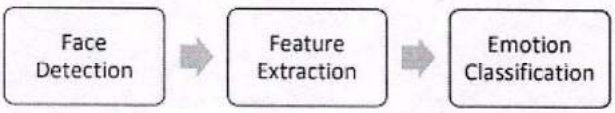

Fig.1: Facial Emotion Classification Stages

The emotion or expression recognition tools are proposed and developed before this research paper but no paper proposed the system that can help medical organizations for the treatment of patients and reduce the number of meetings h the patient with doctors. This Proposed system will help to analyze the emotion of the patient and calculate the level of stress and mind tiredness of the patient and at last, it will automatically generate the report according to the need of the doctor.

2. Literature / Background

Facial expressions is an important aspect in human communication and interactions. It is an important tool in behavioural studies and medical treatments. Facial emotion detection techniques provide a fast and practical. The purpose of the present study was to develop an intelligent system or we can say software for facial image-based expression /emotion classification using the OpenCV(library of Python) which has inbuilt Neural networks in itself. Emotion recognition has been broadly studied under the Computer Vision community. Mostly work focused on the analysis of facial expression to predict human emotions. Various techniques have

Implementation of IoT based Automatic Street light illumination by using IR sensor

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Abstract: *Smart led street lighting system aims for designing and executing the advanced development in IOT for energy saving of street light, the best solution for electrical power wastage is automation of street light, the manual operation of the lighting system is completely eliminate. A method for modifying street light illumination by using sensor at minimum electrical energy consumption ,when object presence is detected, street lights glow at their brightest mode, else they stay in the dim mode during night time Internet of things (IOT) is used to visualize the real time updates of street processing and notifying the changes occur. This shall reduce heat emissions, power consumption, maintenance and replacement costs and carbon dioxide emissions.*

Keywords: ***Internet of things , Arduino , LDR , IR sensor.***

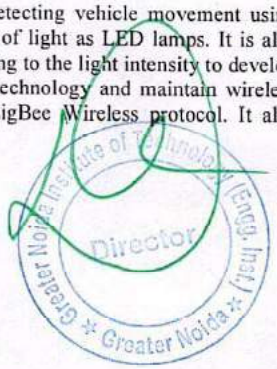
1. INTRODUCTION

The street lighting is one of the largest energy expenses for a city. An intelligent street lighting system can cut municipal street lighting costs as much as 50% - 70%. The existing system is like the lights will be switched on in the evening before the sun sets and they are switched off the next day morning after there is sufficient light on the outside . But the actual timing for these lights to be switched on are when there is absolute darkness. With this, "IOT based Automatic Street lightning system", the power that is wasted will be saved up to some extent. In sunny and rainy days, ON and OFF time differ which is one of the significant hindrances of the existing street lights systems. Also, the manual operation of the lighting system will be completely eliminated. The energy consumption in entire world is rapidly increasing due to population growth and economic development and the availability of energy sources remains woefully constrained. Resource augmentation and growth in energy supply has not kept pace with increasing demand and, therefore, continues to face serious energy shortages. Street lights are an integral part of any locality. They are present on all major roadways and in the suburbs too. Every day, street lights are powered from sunset to sunrise at full strength, even when there is no one around. On a global scale, millions of dollars are spent each day on street lights to provide the required electrical energy. The maintenance and replacement costs of conventional incandescent bulbs are immense. They consume a lot of electric power to function and their heat emissions are also quite high. All of this contributes to greater demand of electricity production and consequently, more carbon dioxide emissions from powerhouses.

It also causes unnecessary light pollution. The main aim of the project is to provide an "IoT based Automatic Street Lightning System" powered with solar energy during night time. We use the word "smart" because the system not only to provide power to the street lights but also to helps in detecting the direction of movement of the pedestrian and helps him by means of illuminating the path of movement till the near next street light. By integrating the entire street lights with Smart Street light system, it is possible to systematically help the pedestrian to reach the destination in the remote rural areas which are facing serious electric power supply problem. The same system can also be used in metropolitan cities as well. A simple and effective solution to this would be dimming the lights during off peak hours. Whenever presence is detected, the lights around it will glow at the normal (bright) mode. This would save a lot of energy and also reduce cost of operation of the streetlights. We can check the status of street light on internet using IOT (Internet of things) from anywhere in real time and solve the issues if happen during the processing [1].

2. BACKGROUND

S.Suganya et al have proposed about Street Light Glow on detecting vehicle movement using sensor isa system that utilizes the latest technology for sources of light as LED lamps. It is also used to control the switching of street light automatically according to the light intensity to develop flow based dynamic control statistics using infrared detection technology and maintain wireless communication among lamppost and control terminal using ZigBee Wireless protocol. It also



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Automated Irrigation System for monitoring the Soil Moisture Content via Automatic Watering by using Microcontroller Node MCA ESP8266

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Abstract: *Automation of farm activities can transform agricultural domain from being manual and static to intelligent and dynamic leading to higher production with lesser human supervision. In this paper we propose an automated irrigation system which monitors and maintains the desired soil moisture content via automatic watering. Microcontroller Node MCU ESP8266 platform is used to implement the control unit. The setup uses soil moisture sensors which measure the exact moisture level in soil. This value enables the system to use appropriate quantity of water which avoids over/under irrigation. IOT is used to keep the farmers updated about the status of sprinklers. Information from the sensors is regularly updated on BLYNK APP through which a farmer can check whether the water sprinklers are ON/OFF at any given time. Also, the sensor readings are transmitted to a Thing BLYNK channel to generate graphs for analysis. Our system is connected to the weather forecasting and by seeing all the conditions it will perform all the functions.*

IndexTerms **- IOT, BLYNK Platform, Soil Moisture Sensor, NODE MCU ESP8266**

I. INTRODUCTION

Aim is to develop a wireless three level controlled smart irrigation system to provide irrigation system which is automatic for the plants which help in saving water and money. The main objective is to apply the system for improvement of health of the soil and hence the plant via multiple sensors. Appropriate soil water level is a necessary pre-requisite for optimum plant growth. Also, water being an essential element for life sustenance, there is the necessity to avoid its undue usage. Irrigation is a dominant consumer of water. With the help of this system crops of the farmers will not get destroy (in raining season). This calls for the need to regulate water supply for irrigation purposes. Fields should neither be over-irrigated nor under-irrigated. The objective of this thesis is to design a simple, easy to install methodology to monitor and indicate the level of soil moisture that is continuously controlled in order to achieve maximum plant growth and simultaneously optimize the available irrigation resources on monitoring software BLYNK APP and the sensor data can be seen on Internet.

In order to replace expensive controllers in current available systems, the Node MCU ESP8266 will be used in this project as it is an affordable microcontroller. The Node MCU ESP8266 can be programmed to analyze some signals from sensors such as moisture, temperature, and rain. A motor pump is used to pump the water into the irrigation system. The use of easily available components reduces the manufacturing and maintenance costs. This makes the proposed system to be an economical, appropriate and a low maintenance solution for applications, especially in rural areas and for small scale agriculturists. This research work enhanced to help the small-scale cultivators and will be increase the yield of the crops then will increase government economy.

II. LITERATURE REVIEW

Ashwini B.V focused on smart irrigation system IOT for Surveillance of Crop field, which presented conservation of water by monitoring soil moister condition, temperature and air moister through different sensors used by driving microcontroller. It's not even work out just for an automatic irrigation but instead it workout like a smart by watering the plant automatically through their soil moister condition and by sending whatever work it operation on work field all the data is to sanded out to the user through Bluetooth module [1]. Dr. Jegathesh Amalraj, et al. discussed on Economic development of country's GDP. We all know that agriculture is a imperative for human life survives so, according to this the project was prepare for ramp up of food production through smart irrigation system by conserving wastage of water by using technology. So, the entire project would work out smartly based on IOT [2]. M.Sowmiya Manoj and B.Hemalatha presented human intervention system which provides enough water without wasting it. To restrict the entire project, an 8051 series microcontroller was used, which was programmed to take input signals of varying moister conditions from the soil moister sensor, which is how the complete project works on Automatic

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Research Article

Multiresolution-Based Singular Value Decomposition Approach for Breast Cancer Image Classification

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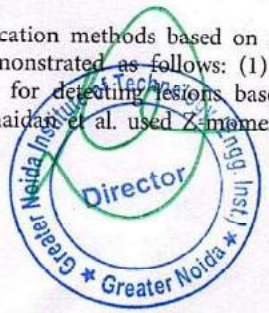
Breast cancer is the most prevalent form of cancer that can strike at any age; the higher the age, the greater the risk. The presence of malignant tissue has become more frequent in women. Although medical therapy has improved breast cancer diagnostic and treatment methods, still the death rate remains high due to failure of diagnosing breast cancer in its early stages. A classification approach for mammography images based on nonsubsampled contourlet transform (NSCT) is proposed in order to investigate it. The proposed method uses multiresolution NSCT decomposition to the region of interest (ROI) of mammography images and then uses Z-moments for extracting features from the NSCT-decomposed images. The matrix is formed by the components that are extracted from the region of interest and are then subjected to singular value decomposition (SVD) in order to remove the essential features that can generalize globally. The method employs a support vector machine (SVM) classification algorithm to categorize mammography pictures into normal, benign, and malignant and to identify and classify the breast lesions. The accuracy of the proposed model is 96.76 percent, and the training time is greatly decreased, as evident from the experiments performed. The paper also focuses on conducting the feature extraction experiments using morphological spectroscopy. The experiment combines 16 different algorithms with 4 classification methods for achieving exceptional accuracy and time efficiency outcomes as compared to other existing state-of-the-art approaches.

1. Introduction

Breast cancer is now one of the most common cancers in women. According to the World Health Organization, between 2008 and 2012, breast cancer incidence and mortality have increased by approximately 20% and 14% [1]. Faced with the increasingly severe health situation, technical workers from self-detection activity to medical image-based breast cancer early detection techniques, especially the study of mammograms, manage breast cancer mortality to some extent. However, by X-ray, some of the mammary images obtained by photography will inevitably contain some noise, such as fatty breast groups that are very close to the gray level of the lesion area organization; it is difficult even for experienced radiologists to accurately identify the type of tumor (benign, malignant, and normal) [2, 3], and in dense breast cases, patients with this type of breast are usually young patients. It can be seen that the research on the classification of adipose breast cancer tumors has strong practical application value and social value.

At present, the classification methods based on mammography images are demonstrated as follows: (1) Feng et al. proposed a method for detecting lesions based on region growth [4]; (2) Hmaidan et al. used Z-moments as



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Research Article

Design and Optimization of 4-Bit Array Multiplier with Adiabatic Logic Using 65 nm CMOS Technologies

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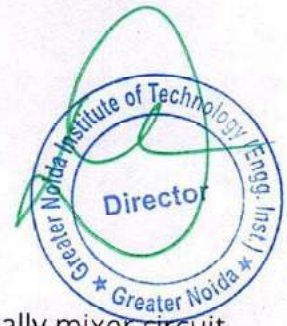

ABSTRACT

This paper proposes a 4-bit array multiplier useful in the design of basically mixer circuit, which is highly involved in signal and image processing using an efficient low-power VLSI technique. The presented architecture is completely implemented adiabatic techniques in the Near Threshold Region, which optimize the product of propagation delay and power dissipation. Multiplier is the most frequently used element in many digital electronics applications. Depending on the applications, various types of multipliers emerge. With this technique, the total power dissipation, i.e. dynamic power dissipation as well as static power dissipation is less as compared to the conventional CMOS technique. The Near Threshold Adiabatic Logic (NTAL) technique is used with a single timevarying power supply which reduces the clock tree management and enhances the energy-saving capability. Simulation of the proposed design is done by Cadence virtuoso schematic editor with specter simulator on

TSMC 65 nm technology node to verify the optimized result. Also comparing our result to conventional CMOS techniques with all the same design parameters, the result shows that

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X-Ray Image Authentication Scheme Using SLT and Contourlet Transform for Modern Healthcare System

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Abstract: The network's convenience has created a copyright dilemma for some multimedia works. Nowadays, every healthcare system relies on digital medical images for diagnosis. These medical images are transmitted through communication channels, so there is a risk of tampering and copyright violation. A digital watermarking system can ensure and guarantee that tampering and copyright violation are prevented. This study presents a nonblind digital watermarking approach to X-ray medical images based on Contourlet transform (C.T.) and Slantlet Transform (SLT). Since the two-dimensional signals are represented flexibly by contourlet transforms, the contour plot can be used efficiently to represent curves and smooth contours. At the same time, the SLT has better time-localization & smoothness properties. The maximum energy of an image is conceived in the LL band if SLT transform are employed. Therefore, the LL band is used to entrench the watermark. The additive quantization method has been used to entrench the watermark. The efficiency of our scheme is assessed by different quality parameters and compared with several existing schemes. The results of the experiment show that the proposed scheme performs better and has the ability to resist several attacks.

Keywords: Watermarking, SLT, Encryption, Contourlet transform, X-ray Image
Categories: J.3, H.3.2, H.5.1, I.4.6, M.7
DOI:10.3897/jucs.94132

1 Introduction

Nowadays, millions of users are sharing data on the World Wide Web. The most important concerns of these data are security, integrity, copyright & tamper protection, etc. [Li et al. 2015], [Zheng et al. 2015]. These concerns are also closely connected to multimedia images. To prevent the issues related to these concerns, there should be some standard solution. To protect the contents of images to be tampered with or to violate the copyright, digital watermarking could be a better solution. An imperceptible mark being inserted into the host image is the key idea behind digital watermarking [Thomas and Sucharitha 2022]. The ability of the watermark to resist several attacks can be categorized as robust or fragile. A robust watermark is resistant to specific attacks, whereas fragile ones do not resist and can be easily destroyed. Blind, non-blind, or semi-blind are three different types of watermarking techniques [Su et al. 2016],

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A novel adaptive intelligent MPC scheme for frequency stabilization of a microgrid considering SoC control of EVs

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ARTICLE INFO

Keywords:
Adaptive intelligent MPC (AIMPC)
Electric vehicle
Load frequency control
Microgrid
SoC control

ABSTRACT

In the recent years, the vehicle-to-grid (V2G) technology has been successfully implemented to stabilize the frequency deviations in a microgrid (MG) whereby charging/discharging of battery of electric vehicles (EVs) is utilized depending upon their state-of-charge (SoC). Compared to the conventional battery energy storage technology, lower degradation tendency and lesser cost of an EV battery are obvious reasons for its utilization as an alternate. This paper proposes a novel adaptive intelligent model predictive control (AIMPC) scheme for frequency stabilization of an MG considering the SoC control of the battery of the EVs. The MPC scheme operates by predicting the future behavior of a plant whereby an explicit discrete-time state-space model of the plant is utilized. Since optimal performance of the MPC depends upon the tuning parameter (τ_w) present in its cost function, an intelligent optimization algorithm is implemented to dynamically optimize the parameter τ_w and simultaneously the proposed control scheme is made adaptive. Effect of the SoC control on the frequency deviation response (FDR) of the MG is demonstrated. Further, competence of the proposed control scheme is established over the adaptive fuzzy MPC and PID controller considering diverse loading conditions in the MG. Simulation results clearly establish that the FDRs of the MG are improved with the implementation of the proposed control scheme. Lastly, sensitivity of the proposed scheme is corroborated considering parametric uncertainties in the MG.

1. Introduction

Mitigating the pernicious effects on the environmental health from the harmful emissions of the conventional power plants and the fright of depletion of the fossil fuel reserves have assisted in the emergence of the microgrids (MGs). Energy security, economic benefits, and clean energy integration are the key factors that have promoted their emergence. The MGs have now been transiting from lab benches and pilot demonstration sites to commercial markets [1]. An MG, in general, can be defined as an interconnected group of distributed generation units (DGUs), energy storage units (ESUs), fixed and adjustable loads, and associated power electronic converters (PECs) that operate in synchronism to satisfy the power demand of a local community. The DGUs may be either renewable energy source (RES) dependent like wind turbine generator (WTG) and solar photovoltaic (PV) array or independent like micro turbine (MT), fuel cell (FC), and diesel engine generator (DEG). The ESUs (like battery, flywheel, ultra capacitor, etc.) provide ancillary services to ensure a reliable power flow and maintain a balance between generation and demand in the MG. An MG may be operated in either grid-connected mode or islanded/stand-alone mode [2,3]. Since an MG facilitates a considerable penetration of the RES dependent DGUs, the intermittent and unpredictable operation of these units and simultaneously low inertia of the other DGUs and their associated PECs may result in a mismatch between generation and demand. Consequently, this may lead to frequency instability in the MG, especially in the stand-alone mode [4,5]. Hence, implementation of an effective load frequency control (LFC) strategy becomes obligatory to ensure a reliable and stable operation of the MG. The LFC engages in restraining the frequency deviations within permissible limits by maintaining a balance between generation and demand.

In the recent years, the vehicle-to-grid (V2G) technology has been successfully implemented to stabilize the frequency deviations in power system. The V2G technology utilizes the battery of the EVs through charging/discharging process. In charging mode, the EVs behave as a load connected to the grid whereas in the discharging mode they act as a power source [6]. Compared to the conventional battery energy storage technology, lower degradation tendency and lesser cost of the battery of the EVs are obvious reasons for its utilization [4,7]. Concurrently, this can also taper the needed capacity of the conventional battery energy storage. Several works can be located in the

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Smart Chatbot

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Abstract— **Instead of offering direct touch with a real human agent, a Chat-bot is a software programme that conducts an online chat discussion using text or text-to-speech. Designed to closely resemble how a human would interact with a conversational partner. We introduced a chatbot in the suggested system that delivers a dynamic answer to online customer enquiries. The proposed system is based on a chatbot driven by artificial intelligence. The web-based platform has a large intelligence database that may be used to replicate human problem-solving. This suggested chatbot recognises the user context that prompts a certain response intent. Because it is a dynamic response, the user will receive the desired response. To train the suggested system uses machine learning methods. Our research found that the strength of Chat-bot is that it can be used in a variety of sectors in our daily lives, based on 17 IEEE publications and 13 S tandard papers. Nowaday s, chatbots have grown in strength as Artificial Intelligence assists the human touch in every discussion, allowi ng chatbots to comprehend the learner's question and provide the appropriate response. The goal of project is to show how chatbots may assist an organisation reduce its reliance on people while also reducing the requirement for several systems for different operations.**

Keywords—Chatbot, Artificial Intelligence, Machinelearning, Web-based.

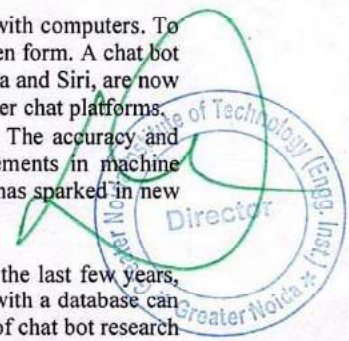
I. INTRODUCTION

Artificial intelligence (A.I.) has becoming increasingly popular for mimicking bot -human dialogues, particularly on mobile platforms. Such chatbots functioning varies from practical to entertaining, but their worth is frequently unclear. The purpose and need for these chatbots is frequently unclear. Although inquisitive and prying may lead to first engagement with chatbot, we should develop a generally accepted role with a clear goal to bring additional value to continued encounters. What a chatbot is and how to utilise one successfully are both novel concepts that many people are having trouble grasping. Chatbot interactions can take the form of text or voice exchanges, and their value varies depending on the situation. Accord the whole information of the user, the outcome the user wants , and environmental elements is required to determine the optimal input modality. Rather than establishing a goal from the perspective of the chatbot designer, we employ a user-centered approach to learn how people perceive and interact with chatbots in their daily lives.

We may begin to analyse chatbot performance and purpose by evaluating how chatbot encounters live up to expectations and how chatbot services compare to alternatives. We should expect increasing accessibility to chatbots now that they are availab le on mobile devices. Number of mobile chatbot applicatios has constantly increased, as well as the number of chatbots.

II. LITERATURE SURVEY

Chat bots, also called as human computer interaction, are a new technique for people to connect with computers. To get a query answered by a software programme in the past, you had to use a browser or fill the given form. A chat bot grants a consumer to seek inquiries in the as they do to a live person. Voice chat bots, such as Alexa and Siri, are now the most famous chat bots. Chatbots, on the other hand, are presently being widely used on computer chat platforms. Natural language processing ("NLP") is the technology at the heart of the chat bot's emergence. The accuracy and efficacy of natural language processing have substantially increased thanks to recent advancements in machine learning, creating chatbots a possible add-on. This advancement in Natural Language Processing has sparked in new research a lot, which will direct even more advancements in the future.



In the next years, chat bots will be more effective. The Chatbot has a better tomorrow since, in the last few years, we've seen it become increasingly popular as a website. It's also not too expen sive, so everyone with a database can use it . As the use of chatbots in association has increased to unprecedented heights. The majority of chat bot research focuses on various algorithms and a way to build an developed chatbot. The outcomes of professional persons, as well as any software or programmes, are heavily reliant on this study. Chatbots can communicate with a huge number of people at the same time.

They have the potential to become a useful data collecting tool in the upcoming time. The goal of the current research is to construct a conversation bot with various characteristics and knowledge about various natural language understanding methods.

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REMOVAL OF ERROR BY FINDING DEFECT IN RGB IMAGE

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Abstract: Due to the outburst in the digital image in today's era, demands for accurate and visually pleased image have increased. So, the image taken by the camera gets deteriorated due to the presence of noise, which in turn leads to the distortion in the quality of image. So, some is needed to reduce the noise without affecting the characteristics of image such as edge, corners, sharpening etc. As yet various method has already been imposed by the researchers to reduce noise with each method having its own advantage and drawback. So firstly, the expression of image was provided and de-noising was done and then it was represented by several techniques. Additional need is to discuss the properties of such technique and hence several directions are provided for future research of color image segmentation as emerging research area in color image analysis and pattern recognition. For this purpose, many algorithms have been developed. But it is often seen that the segmentation result of these algorithms seems to be suffered from over segmentation and miss classification. This suffering is caused due to distortion in the quality of the image at the time of acquisition, transmission and color space conversion. As a result, here arises the need of image enhancement which can remove noise from color image before the segmentation process. In this paper different enhancement technique has been analyzed so as recover noise free enhanced images.

IndexTerms- MATLAB, Image processing toolbox, RGB, filters.

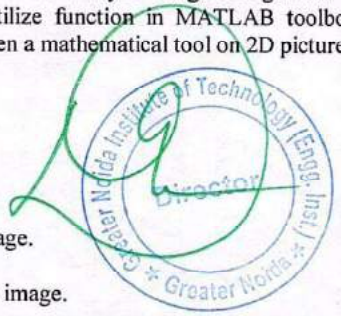
I. INTRODUCTION

In today's era advancement in technology has led to a growing research interest in the field of image processing technique have grown rapidly and established an important area in field of engineering and computer science these techniques are basically based on improving the quality of image and removing some error from image to extract some important information from any image.

In early days many result have been obtain as a result of research in image processing and research centre has studied image enhancement and algorithm from 1995 and their research gave great contribution in image enhancement [1-4]. In 2004 they proposed research for automatic image enhancement named EVOLEHA which was based on real code genetic algorithm. To perform research, technique applied a code with some modification. Due to more study and select scheme, search was so balanced [5]. In 2005 they proposed a general method for enhancement this problem sorts out the problem of loss of gray level method. The edge in the processed image became determinable, and with the help of this method better information of law gray is undertaken [6]. In 2009 researcher presented an image in mathematical form with 2 variable coordinate and represented in amplitude of function. Then processed image is conversed into a matrix and further represented into digital form [7]. Consequently in 2013 then the proposed data undergoes image undergo phases like preprocessing, enhancement and extraction, smoothening of important information from image. By the way, image processing techniques have become more applicable in our life as its application in technical fields specialize difference type of electronic device like computer, camera, mobile [8]. 2014 The paper highlighted the methodological approach and implemented on MATLAB that shows, a software system to analyze image recognition. New technique was proposed an image editing and color edition using MATLAB that utilize function in MATLAB toolbox to implement various application of image processing [9]. Proposed image processing has been a mathematical tool on 2D picture.

II. DESIGN STEP ALGORITHM

STEP 1: IMREAD: Image to be read from the graphic file.
STEP 2: RGB2GRAY: RGB converted into gray scale
STEP 3: IMCLOSE: morphological closing performed on the grayscale or binary image.
STEP 4: SRREL: Create a flat disc shaped structure element with specific radius.
STEP 5: IMSUBTRACT: Two images are subtracted, or constant are subtracted from image.



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Face Mask Detection

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Abstract: Global pandemic COVID-19 circumstances emerged in an epidemic of dangerous disease in all over the world. Wearing a face mask will help prevent the spread of infection and prevent the individual from contracting any airborne infectious germs. The novel coronavirus had brought a new normal life in which the social distance and wearing of face masks plays a vital role in controlling the spread of virus. But most of the people are not wearing face masks in public places which increase the spread of viruses. This may result in a serious problem of increased spreading. Hence to avoid such situations we have to scrutinize and make people aware of wearing face masks. Humans cannot be involved for this process, due to the chance of getting affected by corona, using Face Mask Detection System, one can monitor if the people are wearing masks or not.

Index Terms - **COVID-19 epidemic, mask detection, face mask image, non-face mask image.**

I. INTRODUCTION

The worlds has not yet fully recover from this pandemic and every few months we say a new variant of covid-19 is identifying in some part of the world. Now day's Indian government release a statement for all the state government to continuously monitoring the situation of covid-19 carefully. India has large number of population so it can be difficult to identify person wearing mask or not by the help of human power, so we developed face mask detection system for identify those people. To reduce the spread of infection, it gives a message to the people to maintain social distance and wear mask at public place.

II. LITERATURE SURVEY

COVID-19 pandemic caused by novel coronavirus is continuously spreading until now all over the world. The impact of COVID-19 has fallen on almost all sectors of development. The healthcare system is going through a crisis. Many precautionary measures have been taken to reduce the spread of this disease where wearing a mask is one of them. In this paper, we propose a system that restricts the growth of COVID-19 by finding out people who are not wearing any facial mask in a smart city network where all the public places are monitored with Closed-Circuit Television (CCTV) cameras on technology of masked Face Recognition Using Convolutional Neural Network [1]. While a person without a mask is detected, the corresponding authority is informed through the city network applying a Deep Learning based approach for classification [2, 3].

In a smart city network, an automated system to limit covid-19 using facial mask detection [4]: covid-19 is a pandemic caused by a novel coronavirus that has swept the country. Covid-19 has made a difference all around the world for a long time. Almost all aspects of development are addressed stochastic model for human face identification [5, 6]. The medical system has reached a critical point. One of them is hiding behind a mask. The several preventive steps used to keep the disease from spreading this ailment we will look into this in this project in respective of learning algorithm for face verification [7]. Our research aims to minimise the spread of this infectious disease in different parts of the world by the system with recognition over linear projection [8].

IIİ. DESCRIPTION

On every entry gate we install face mask dictation system to check individual person who wear mask or not. We use camera for face dictation. When a person is come in front of camera, camera captor the image and process it according to its command, if it's find mask is missing it give's warning "Mask Is Missing". The block diagram and flow chart of the proposed model is illustrated in Fig. 1 and Fig. 2, respectively. An activity diagram is a behavioural diagram i.e., it depicts the behaviour of a system. An activity diagram portrays the control flow from a start point to a finish point showing the various decision paths that exist while the activity is being executed.

IV. FACE MASK DETECTION TECHNOLOGY

When Face mask identification is a Machine Learning (ML) analytic solution that uses algorithms and deep learning technologies to distinguish between those who are wearing a face mask and those who are not. Face recognition detection technology scans a person's facial area to quickly identify an individual who is not wearing a mask – even in a crowded situation – while machine learning and/or reference models produced by machine learning operate behind the scenes to allow correct

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Plant Disease Detection Using Machine Learning

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Abstract: Leaf disease pose a significant threat to food security; however their quick identification remains a problem in different region across the world due to the absence of necessary foundations. Advancements in the field of image-based techniques of plant leaf classification showed great results. In this research paper, we will use Random Forest technique to identify whether the leaf is healthy or it is infected by any disease based on results of datasets which is created. This research paper consists of several stages for the implementation such as creating datasets, Extraction of different features of leaf, classifier then training and the last step is classification. The datasets of the leaves which is infected by any disease and the healthy leaves are combined and is trained under Random Forest for the classification of the infected and the healthy leaves. A histogram of oriented gradient is used as a tool for extracting features from an image. Overall, training large data sets with machine learning enables accurate disease detection of plant leaf on large scale.

Index Terms - **Random Forest Technique, Extraction of Features, Training of Model, Classification.**

I. INTRODUCTION

In provincial regions, it is very difficult for an agriculturist to determine what kind of disease is present in their harvests. It is not easy for them to get in touch with an agribusiness office and find out what the disease is. In this study we are primarily concerned with determining whether plants exhibit any symptoms of illness by observing their morphology using picture handling and machine learning. In less developed countries people have limited knowledge on how to control any disease that is occurring on leaf and the pest management, which results in declination of their production that cause food insecurity. Pests and diseases also damage the crops and the different part of the plants that result in reduction of food. One of the key reasons for decreased food production is toxic infectious agents, poor control of disease, and extreme changes in climate. Harmful pathogens such as bacteria viruses, lack of control on disease and the drastic change in climate are the main reasons which causes decline in the production of food.

To minimise post-harvest losses, to enhance sustainability, and to increase the productivity, different types of modern technologies have been used. For the diagnosis of any diseases, different laboratory-based approaches like gas chromatography, polymerase chain reactions, and mass spectrometry, thermography, and hyperspectral techniques have been used [1-5]. However these methods are quite time-consuming and not cost-effective. Mobile-based and internet-based approaches for the recognition of any disease are currently in use. There are various factors of these technologies, including High Resolution camera's extensive built-in accessories and, high performance processing that result in automatic recognition of disease. Various approaches such as deep learning and machine learning algorithm have been used to increase the accuracy and the recognition rate of the results. Various researches have been conducted in the field of machine learning for plant disease detection and diagnosis. Artificial Neural Network, Random forest, Fuzzy logic, Support Vector Machine, Convolutional Neural Network, K-means method are some of the traditional machine learning approaches.

In general Random Forest is a method widely used for classification and regression problem and the other task that operates by constructing a decision tree at the time of training. The decision tree has the disadvantage like over fitting of trained datasets. Random Forests have the advantages of handling both categorical and numerical data. The Histogram of Oriented Gradient [HOG] is a feature descriptor used in computer vision and image processing. The main purpose of using HOG is to extract the different features of leaf. That's why using three feature extractor techniques.

- Hu Moments Feature Extractor
- Haralick Texture Feature
- Color Histogram Feature Extractor

Hu Moments is a feature Extractor which is generally used for extracting the outline of the leaf. For extracting the texture of leaf Haralick texture feature is used and for extracting the distribution of different colours in image, Color Histogram is used.

II. METHODOLOGY

For determining whether the leaf is infected or healthy, we have to follow several steps. This includes Pre processing, Extracting features, Training and Classification. The main function of pre-processing of any image is to improve the image data that suppresses undesired distortion and then extracting all the features of the pre-processed image by using Histogram of Oriented

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AI BASED CHESS ENGINE

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Abstract: Game playing in chess is one of the important areas of machine learning research. Though creating a powerful chess engine that can play at a superhuman level is not the hardest problem anymore with the advent of powerful chess engines like Stockfish, Alpha Zero, Leela chess zero etc. Most of these engines still depend upon powerful and highly optimized look-ahead algorithms. CNN which is used primarily for images and matrix-like data is been proved successful with games like chess and go. Treating chess like a regression problem. In this paper, a supervised learning approach is proposed using the convolutional neural network with a limited look ahead. Data was collected around 44029 chess games from the FICS chess database with players having an Elo rating of 2000 and above. Our goal is to create a zero-knowledge chess engine. The trained model is then paired with a minimax algorithm to create the AI. Our proposed supervised system can learn the chess rules by itself from the data. It was able to win 10% of the games and draw 30% of games when manually tested against Stockfish computer engine with Elo of 1300. CNN can detect various tactical pattern to excel in games like chess even when using a limited lookahead search.

IndexTerms–**CNN, Backtracking, look ahead algorithm, Evaluation Function**

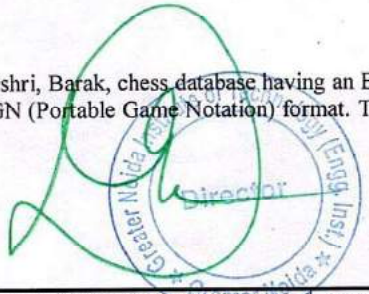
I. INTRODUCTION

The improvement of PC chess programming methods and information can be partitioned into particular periods. Every time has its own arrangement of improvements, some of which can be followed back to expanded processor power, the accessibility of new equipment gadgets, or algorithmic headways [2]. Alan Turing began investigating a chess computer in 1946, but his notion was limited to handwritten records, which were further refined by Claude Shannon. Bernstein (1957) made the primary significant chess playing program, which worked on an IBM 704 PC fit for doing around 42,000 operations each second. This was not a 'brute force' software because it only considered the best seven moves based on chess lore heuristics. This is a rather narrow range of moves when compared to today's advanced brute force programs that create the entire range of moves at the root. In 1968 Greenblatt's program was the first to attain any type of distinguishable level of play. For many years, this was the most capable chess program, with an Elo rating of around 1500. It was the principal program to utilize rendering tables to diminish the inquiry space, and it included distinct peacefulness rules to work on strategic strength, the program used an underlying determination strategy to decrease the size of the game-tree. Yet again on account of its selectivity at the root hub, this program slips into the principal period. The first program to reach its full potential. Belfast-based software Blitz was created by computer pioneer Richard Hyatt and entered in the 1976 ACM North American Computer Chess Championship. By 1981, it was searching around 3000 nodes per second and routinely performing six ply searches. The introduction of assembly language and the Cray XMP computer with multiprocessing capabilities boosted this rate of analysis to 20,000 - 30,000 nodes a second in 1983. In 1996 Deep Blue won the opening game, making history as the first computer to defeat a world chess champion in a tournament setting. Every three minutes, Deep Blue computed 50 billion positions. Every three minutes, Kasparov calculated ten new positions. 200 processors were used in DEEP BLUE.

A Neural Networks technique, which is based on the way neurons work in people and can execute a variety of jobs just like humans. CNN, a sort of feed-forward neural network used in image analysis, has shown to be particularly successful in a variety of AI game tasks [4]. It is currently commonly utilized in Go and Chess engines of the modern era. With Alpha Zero's recent success, it's clear that CNN can be used to successfully forecast professional level chess moves. Our goal is to see how accurate CNN is in analyzing chess positions.

II. METHODOLOGY

For Dataset source, dataset form, data set analysis similar to the Dataset provided in Oshri, Barak, chess database having an Elo rating of 2000 and above of the year 2020 [1]. All the chess game in the database is in PGN (Portable Game Notation) format. The chess database contains 44029 total games of chess.



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REAL-TIME FACE RECOGNITION USING OPENCV

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Abstract : In today's advanced world of Tech-era, face acknowledgement system performs an important task in every management and security field. Face recognition can be used for many purposes like for authentication of a particular person, security, identification and has many other advantages. Face recognition is one of the mostly used biometric system for the security purpose. It is one of the mostly used system, in comparison to other biometric systems like finger-print or iris recognition system because of contactless procedure. This system can be used to mark attendance of employee, students or staffs of any company, school or colleges. This system have four processing phases- data creation, data/face detection, face recognition, automatically marked attendance. Data is created by the images of employee, staffs or students. Face detection is done by Haar cascade xml classifier and face recognition is done by a followed algorithm know as histogram-algorithm of binary(0,1) Pattern. The faces aresensed and recognised from the live sessions. The data /attendance is marked in a CSV(comma, separated value) file and gets stored in the local system drive.

IndexTerms– **Opencv, data-creation, face-recognition, haar cascade, image processing.**

I. INTRODUCTION

The local method to mark the attendance is a monotonous task for faculties in school, colleges and companies and the chances of getting lost of marked attendance are very high. This process is also very time taking and there are major chances for proxies and data loss. In 2017 Okokpujie, Kennedy O designed an attendance system using iris biometric method. Iris biometric attendance system has a slow process rate so later on this problem was overcome by the introduction of face attendance system in the market [4]. In 2018 Akbar, Md Sajid modelled a Face Recognition and RFID Verified System which was very effective but the estimated cost was very high and was not good for the regular [3]. In 2018 Hapani, Smit created an semi-automated Attendance model using Image Processing techniques. Which was a success above other attendance system, but the accuracy of system was low because of old image processing methods and libraries[2]. In 2018, Salim, Omar Abdul Rhman, Rashidah Funke Olanrewaju, and Wasiu Adebayo Balogun designed a attendance management model using facial identification and recognition, which was very effective for large data but also has a very slow processing rate [8].

In this model, a haar-cascade xml file is used , that contains a opencv library modules. At the beginning of project a user has to provide their input(face-image) and later on the attendance will be marked in csv file whenever the user present his/her face to the system for the second time. Because of haar-cascade xml modules the recognition is very fast and effective.

II. WORKING METHODOLOGY AND ALGORITHMS

STEP 1. DATASET CREATION

A web-cam is required to capture images of students or employees. Large number of images of user will be captured in different plane, positions and angles. Pre-processing of these images was done in the next step. All captured images are cropped, so that the region of interest for the image can be obtain. Then, these images are converted to gray scale from RGB form. Later, these images are saved by the provided IDs of respective user in an user defined folder.

STEP 2. FACE DETECTION

Face detection process for this system is done by Haar-cascade XML classifier with scripted opencv libraries. A training process is required in order to make face recognition process smooth. This whole process is known as features extraction. This system used haar cascade training model used is an xml filehaarcascade_frontalface_default.

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ROAD SAFETY PLAN FOR HAIRPIN CURVES

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Abstract- *According to several studies, there are thousands of people failed or injured in accidents in every time. In developing countries like India, accidents are the main explanation for death. There are numerous dangerous roads at mountain places/ hill areas which are single line narrow twisted roads. At those twisted places, the motorists can't see the vehicle or obstacles coming from the other end of the wind and if the vehicle is n't in good condition, also it's delicate to control those twisted places. To minimize these accidents, we proposed a design to stop accidents at U-turns by altering the driving force about the vehicle coming from the other side. This is done by keeping an IR detector on each side of the Volte-face also that if vehicle comes from one end of the wind, also detector senses and this IR detector gives signal to Arduino and Arduino gives command to Buzzer, LED lights and Buzzer rings on the other side to warn the motorist. for safety driving in hilly area these parameters are dependable. Road safety system is the innovative conception which makes driving in hilly area accessible for motorist Accidents are more common now a days and forestalment of accidents is really a great concern of people. So, an accident forestalment system is of great help also our paper deals with a sensible road safety and forestalment system to avoid road accidents. Then detectors are used alongside Arduino and for suggestion purposes IR detectors, buzzers and RGB LED light are used. Then we're employing a counter to stay the count of vehicles passing through the road. To overcome the accidents thanks to wind and narrow roads this safety system is preventative. The main purpose of this paper is to form a security road system to gauge back the quantum of road accidents thanks to curvy and narrow roads. This suggestion system gives suggestion to the vehicles that other vehicles are coming from the contrary side in order that they will take the security measures beforehand only*

KEYWORDS: hairpin angles, road safety, sensors, Arduino microcontroller, accidents, hilly areas

1. INTRODUCTION

The mountain roads have numerous eyeless spots and turns. These spots are so dangerous occasionally that they beget accidents if not maneuverer duly. Our system is such a system which can be salutary in roads like these and can also reduce the number of accidents that do frequently.

Then we're considering hairpin angles where the driving force of a vehicle has no idea whether there is the contrary vehicle coming from the other side or not. Therefore, our system when fixed at these dangerous angles will have propinquity detectors, signals (RGB LED) and a counter, to help the motorists. The propinquity detector senses the vehicles, and thus the counter keeps the count of vehicles present therein turn, coming from a specific direction. supported the word of the counter, the signal will change its colour.

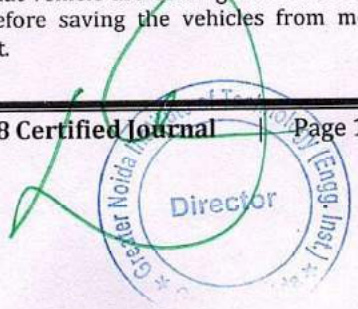
2. IMPLEMENTATION

There are multitudinous being plans towards safety against road accidents like thanks to advanced technology GSM and GPS were introduced in order that they're helpful in tracking the vehicles that met with an accident, but they aren't precautionary for avoiding the accidents.

An approach towards avoiding road accidents was proposed as Arduino grounded vehicle accident discovery system. during this proposed model Arduino, GSM, GPS, TV, vibration detectors were used.

In this system vibration detector is employed as an input source to system which is analysed by the Arduino and when the detector reading exceeds the traditional or threshold applicable action starts passing because it'll direct the GSM to shoot dispatches from the stoner mobile to the authority as they will shoot immediate help to the accident victims. Coming approach was made accidentally system using ultrasonic detector.

Ultrasonic detectors were used alongside regulator and Arduino to stop the accident from being. Buzzers and lights are placed on both the side of the roads alongside regulator and ultrasonic detectors. The ultrasonic detectors senses from where the vehicles are coming and consequently the regulators end signals and consequently buzzers will ring and thus the lights will glow to point that vehicle are coming from the contrary sides and therefore saving the vehicles from meeting with an accident.



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SEISMIC RESPONSE STUDY OF MULTI-STORIED REINFORCED CONCRETE BUILDING WITH FLUID VISCOUS DAMPERS

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Abstract - *When an earthquake occurs, it causes enormous damage in terms of property loss, human lives, and structural collapse. As a result, structural remodeling is a must. Damping Contributes significantly to Earthquake Resistant Structures' overall design by reducing their ability to deform when loaded from the sides. There are a variety of damper options available. Fluid viscous dampers (FVD) are employed in this study to gauge the reaction of reinforced concrete structures (RCB). The time period is reduced to 90% by employed FVD in Time History analysis. Structures' Base Shear is reduced by 70% while using FVD250.*

Key Words: Damping, FVD, time period, Base shear

1. INTRODUCTION

One of the most common civil engineering disasters is earthquake. Seismic activity causes structural deterioration in buildings. Earthquake-resistant systems may be implemented to improve the building's capacity to withstand earthquakes. The damper is one of the most common and effective earthquake resistance measures. Throughout the building. In a passive control system, seismic energy is dispersed. In the case of an earthquake, this device flexes. Dams absorb earthquake energy. dampens ground movement during earthquakes by dispersing it structure. There are several dampers on the market now, including pall friction dampers Stabilizer, such as a mechanical or hydraulic strut or a damper installed on a strut. A viscous liquid. The FVD damper is one of the most effective and easiest to install dampers.

Energy is dispersed in this damper by the use of a viscous fluid contained within a cylinder. As a result of their simple installation, versatility, and collaboration with other components, viscous dampers may be used in a wide range of design and retrofit applications.

1.1 Literature Review

Structural Analysis

The primary goal of structural analysis is to determine an object's response to a force. People, furniture, wind, snow, etc. can all contribute to this activity, but it can also be the result of an earthquake, a nearby explosion, or some other type of stimulation. All of these loads, including the structure's own weight, are inherently dynamic since they weren't present at some earlier moment in time. Static vs. dynamic analysis may be distinguished based on whether the applied action has sufficient acceleration in contrast to the structure's inherent frequency. Inertia forces (Newton's first law of motion) can be neglected if a load is applied slowly enough. This simplifies the static analysis. As a result, structural dynamics is a sort of structural analysis that deals with dynamic loads. It is possible to employ dynamic analysis to find dynamic displacements, time histories, and modal analysis.

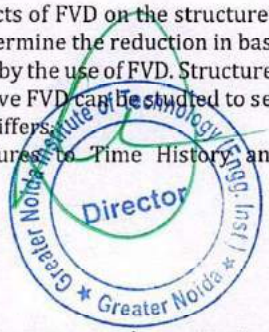
Analysis using ETAB

B. S. Taranath in "Building Design for Tall Buildings" complex non-linear time is necessary for seismic ground movements, which are then compared to the design satisfies the specified safety level.

Liya Mathew & C. Prabha It was reported in "Effect of Fluid Viscous Dampers in Multi-Storied Buildings" in 2014 that new protection methods had been created to increase earthquake safety and minimize structural damage.1 The fluid viscous damper (FVD) is prominently featured in this application. This work also studies reinforced concrete structures

1.2 Objective

1. Buildings with square and rectangular designs, with and without FVD, will be compared for their seismic reaction.
2. To determine the effects of FVD on the structure's displacements. To determine the reduction in base shear in RC structures by the use of FVD. Structures that have and don't have FVD can be studied to see how the time period differs.
3. Compare FVD structures to Time History and Pushover.



2. METHODOLOGY

2.1 Modal analysis

In a modal analysis, the frequency modes or natural frequencies of a system are calculated, but the full-time historical response to an input is not always included. a

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MHD FLOW OF DUSTY VISCOUS FLUID THROUGH A POROUS MEDIUM BOUNDED BY AN OSCILLATING POROUS PLATE IN SLIP FLOW REGIME

Dr. Dinesh Kumar Sharma & Dr.Kirti

Department of Applied Sciences, Faculty of Mathematics, Greater Noida Institute of Technology, Greater Noida, U.P (India)

(Key words: porous medium/magnetic field, Dust particle, skin-friction)

ABSTRACT:

A theoretical analysis for fluid velocity, dust particle velocity and skin-friction of the flow of dusty viscous an incompressible fluid of small electrical conductivity in porous medium. Near and oscillating infinite porous flat plate in slip flow regime under influence of transverse magnetic field of uniform strength. Fixed relative to the fluid has been carried out. The velocity of fluid and dust particle decreases with the increase in density of dust particle. But the skin- friction decreases with increase in density of dust particle.

INTRODUCTION:

Due to importance of dusty viscous flows in petroleum industry in the purification of crude oil, in physiological flows and in other technological fields, various studies have appeared in the literature. The dispersion and fall out of pollutants in air or in water have necessitated the study of the flow of dusty fluids. Saffman (1962) has formulated the basic equations for the flow dusty fluid. Since then many researchers have discussed the problems of dusty fluid. Korchevskie and Marcochunik(1965), Michael and Miller (1966), Micheal and Norey(1968), Agrawal and Varshney(1986). The study of fluctuating flow is important in the paper industry and many other technological fields. Due to this reason many research works[2–13] have paid their attention

Energy Meter

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Abstract:- An advance and quick solution and fully reliable instrument that helps to make us aware about the proper utilisation of energy sources with perfect accuracy that's going to helpers to measure the losses as well as increases or efficiency in terms of energy and other protections.

I. INTRODUCTION

Now a days energy losses is a big concern for the different power plant industries and the generation sector energy metre helps the advancement of the solution of some problems which can be minimised by the proper awareness of the actual cinerio that were present for the energy meter.

Latest discuss some of the major losses that can't be measured by unawareness or still lack of the awareness in the energy sector. Data sasin 2011 about 7.5 megawatt of energy losses done without a proper measurement system devices and awareness's.

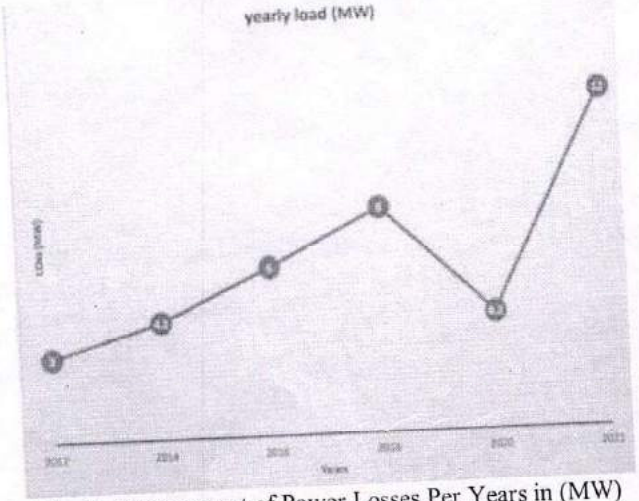


Fig 1:- Measurement of Power Losses Per Years in (MW)

In 2015 this figure is gone up about 10 megawatt losses which can be easily minimised at that time by losing loss measuring devices uses and mix us a very awareness about the proper actual laws content that are going to be followed daily basis.

II. MECHANISM OF ENERGY METER

A. Driving Mechanism-

Driving mechanism deals with the torque developed and the amount of energy stories which can drive the energy meter a very highly inductive circuit is going to use with the energy metre so that the ratio of error which can be linked with the energy metre is reduced somehow if we are going to measure the energy content that committed by the law says and this losses is not going to be and advance version of losses by the energy metre itself. fig. measurement of power losses per years in (MW)

B. Rotating Mechanism

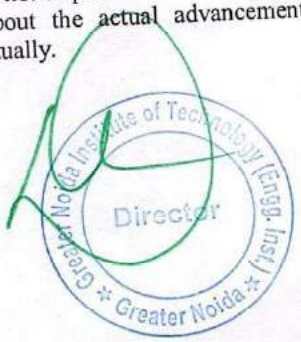
The major challenges is that if we are going to introduce the energy metre which has a rotating part then it must consume some energy devices which mean not be full field the actual losses and increase the content of losses so the losses content is minimised by keeping an ideal rotating mechanism practically no nothing is going to be ideal but if you keep on trying to updated the version our devices then it must be have reduce the losses as previously.

C. Breaking Mechanism

As the like a normal machinery system if we observe there will be a breaking system on for direct contact this will create any external heat losses which is not as beneficial for us what is the better option than we can create an extra mechanism which can follow the external power sources to conserve or let's see take back the energy of a mechanical which are stored as a breaking system to system itself this phenomena can be referred as a term rewards power back to the system which is the beneficial part of the energy metre.

D. Cannot Be Done Actually.

Registring mechanism-Registering mechanism is the phenomena where the amount of external agent is used when this System is creates an extra efficiency where the data analysis disease process energy flow back to the system will create the new automation live where the data actually analysed was not be prevent and we cannot be properly make us aware about the actual advancement that cannot be happened actually.



GSM Based Smart Home Appliances

Shivam Modanwal[1] Santosh Kumar[2] Punit Kumar Pandey[3] Aneep Kumar[4]
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Abstract— As a reason of the latest technological advancement, automation & wireless controlled of devices has becoming more popular in the world. So here we are discussed about wireless controlled of home appliances. This project puts forth the equipment which enables users to control the home appliances using their cellular phone. It shows that the construction and working of this project is to wirelessly control the Home appliances based on GSM networking technology, Arduino NANO microcontroller, Relay, Transistor and Capacitor.

Keywords: GSM Module, Arduino NANO Microcontroller, Transistor, Relay, Microwave Oven, Electric Kettle

I. INTRODUCTION

As a reason of especially developments in the field of wireless communication these days, the application of this technology can be used in various sectors for making daily tasks comfortable and easy. Causes of this technology, its also increases safety as well as speed of operation in times of failure and damages. So here we are present a design which uses technology for switching of Home Appliances. Any equipment that can be controlled wirelessly is more easily maintained and it responded very fast comparing to the general operation of the equipment.

This project uses the application of wireless communication i.e; GSM network and Arduino NANO Microcontroller for the wirelessly control of the Home Appliances i:e; Microwave Oven and Electric Kettle.

A. Problem:

The main aim/object of the design provided in this project is to develop a device to have wireless control or regulates the switches of Microwave Oven and Electric Kettle. Also, the device can be made sure to be available at a low cost so that everyone can afford it.

II. LITERATURE REVIEW:

One such application can be used for control or regulates the switches of Home Appliances which results in effective uses of electrical power reducing the loss as well as reducing the loss of time. In this area, minor explored to the world. So we would like to take this opportunity to put forward a less cost effective methods for the wireless switching of Home Appliances. This project is basically built on the process of wireless communication through the GSM network and Arduino-NANO Microcontroller, Relay and Transistors.

III. METHODOLOGY:

A. Block Diagram:

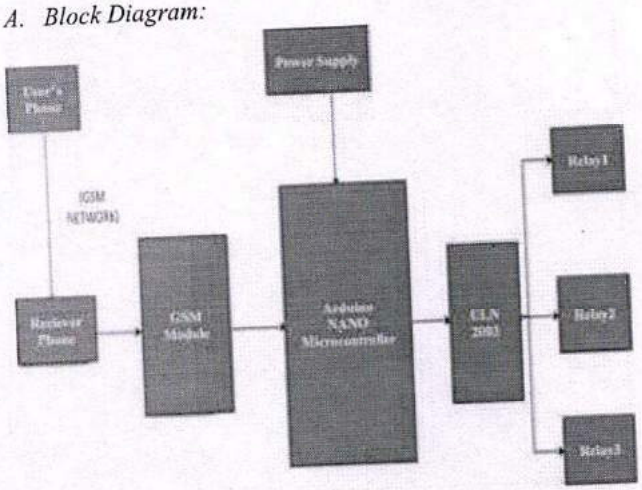

Fig. 1. Block Diagram

The block diagram of this project is shown below in the fig. It is an contour description of how we have implemented our project and the various steps involved in it. From the block diagram given below, the first mobile station is used as a transmitting section from which the user sends a code that contains commands and instructions to the second mobile station which is based on a specific area where our control system is located, through GSM network technology.

IV. HARDWARE SPECIFICATION:

A. Microwave Oven

Fig. 2: Microwave Oven

A Microwave Oven is a such type electric heats and cooks food by exposing it to electromagnetic radiation in the micro-wave frequency range.

It includes polar molecules in the food to rotate & produce thermal energy.

Here we are in this project, we use 17L Microwave Oven.

Bill Board Wifi Based Bill Board Led Display

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Abstract:- In optoelectronics, the use of light emitting diodes (LEDs) has been of great importance. Now a day LED-based moving-message displays are becoming popular for transmitting information to large groups of people quickly. The control of LED matrix is based PIC18F4520 microcontrollers. This micro controller was programmed using C language. The number of the microcontroller's pins used in controlling the LED matrix was strictly minimized to three by adopting the serial to parallel mode of signal transmission. The design of the project was done and simulated with Proteus software. The LED matrix was constructed on a vero board. The drive circuitry which consists of the microcontroller, two ULN2803s, nine 74HC595s and other peripherals was constructed on a printed circuit board.

I. INTRODUCTION

LED –Based moving-messages display are becoming popular for transmitting information to large group of people quickly. Its is used indoor or outdoor area like bank, station, office, hotel, institutes etc. we preferred to use 16 single digital alphanumeric display over the led dot- matrix type since the former is much cost effective and has less programming bueden compared to other. From the name or title given to this project, it can be explained that the project entails, firstly, the dimension, 64 x 8 which can be simply said as 64 columns by 8 rows arrangement. Secondly, scrolling is the movement of text or graphics up or down or across a display screen as if unrolling a scroll (Merriam Webster dictionary). Thirdly, LED is semiconductor diode that emits light when a voltage is applied to it and that is used especially in electronic devices (as indicator light) (Merriam Webster dictionary).. Thus it can be inferred that this the project consists of 64 coloums by row arrangement of LED (forming a rectangular arrangement) and exhibiting an group of required components interacts regularly forming a unified whole.

II. DESCRIPTION

We programmed to move the message from the rightmost display to the left and the message stayed stationary for a few second when the first character reaches the left most display then it continues to move . In optoelectronics, the use of light emitting diodes (LEDs) has been of great importance. They are widely used in our day-to-day act. A 4 pin dip switch connected to the microcontroller through a port is used to select the desired message stored in the memory of the microcontroller. The microcontroller provides the data signal to the 16 display units through other two ports.

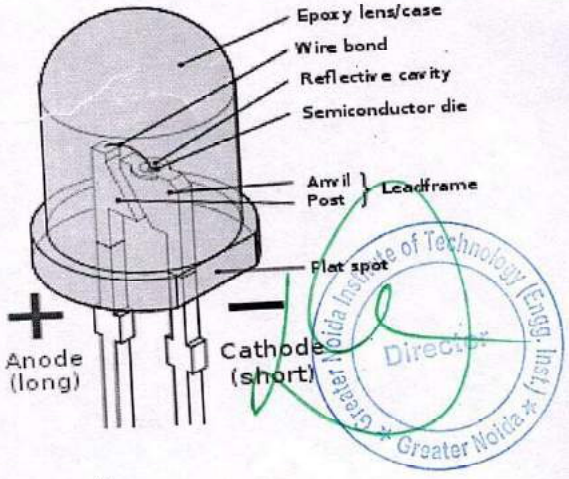
III. COMPONENTS

A. LED
B. Microcontroller
C. Shift register
D. Voltage Regulators

We shall discuss these components in detail

A. LED.

Light Emitting Diode, in short LED is a semiconductor device based on the Electric Luminescence principle. So often designed into transparent body. The colour of light (corresponding to energy of the photons) is determined by the energy required for electrons of the cross band gap of the semiconductor.



B. Microcontroller:

A microcontrollers ia small computer on single metal oxid semiconductor (MOS) integrated circuit (IC) chip. microcontroller contains one or more CPUs (processor core along with memory and programmable input/outpu pheripherals. Intel 8031 and 8051 are bits microcontrollers microcontrollers contains a cpu memory i/o all integrated in one chip . the micro controller is designed task repeatedly. On the program is embedded on a microcontroller chip, it cant altered easily and you may need some special tools to reburn i

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Comparative Performance Analysis of MPPT Techniques For Solar Power Extraction Using Zeta Converter

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ABSTRACT *- In this paper, the comparative study between the conventional and artificial intelligence technique of MPPT is analyzed in terms of variable atmospheric conditions and temperature. Zeta converter uses soft switching technique to reduce the switching losses which is found prominently in the conventional buck converter, thus the efficiency of the system is improved. The benefits of the zeta converter include lower output-voltage ripple and easier compensation. The DC power extracted from the PV array is synthesized and modulated by the converter to suit the load requirements. The proposed scheme consists of a solar panel; a zeta dc-dc converter, and MPPT techniques that aresimulated in the MATLAB/Simulink environment.*

Keywords*—photovoltaic (PV) modules; fuzzy logic controller (FLC); Perturb and Observe (P&O); maximum power point tracker (MPPT), Zeta converter*

Date of Submission: 15-05-2022 Date of acceptance: 30-05-2022

I. INTRODUCTION

A solar panel changes over 30-40% of energy incident on it to electrical energy. A Maximum Power Point Tracking calculation is important to build the productivity of the solar panel. There are diverse strategies for MPPT, for example, Perturb and Observe (slope climbing technique), Incremental conductance, Fractional Short Circuit Current, Fractional Open Circuit Voltage, Fuzzy Control, Neural Network Control and so on.

This paper presents a comparative study of the tracking strategies of the MPP based on Perturb & Observe and Fuzzy logic techniques. These techniques vary in complexity, effectiveness, time response, cost and sensors required.

II. PHOTOVOLTAIC CELL

PV cells are made of semiconductor materials, for example, silicon. For solar cells, a thin semiconductor wafer is uniquely treated to shape an electric field, positive on one side and negative on the other. At the point when light vitality strikes the solar cell, electrons are thumped free from the molecules in the semiconductor material. In the event that electrical conveyors are joined to the positive and negative sides, shaping an electrical circuit, the electrons can be caught as an electric current and produce electric power. This electric power would then be able to be utilized to control a heap. A PV cell can either be roundabout or square in development.It is a non-linear device and can be represented as a current source in parallel with a diode as shown in the Fig. 1.

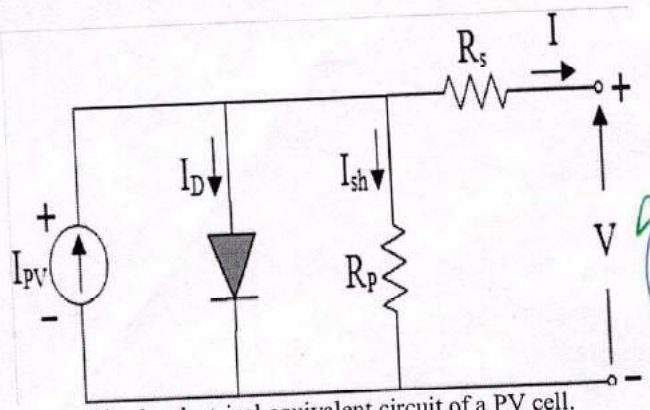

Fig. 1: electrical equivalent circuit of a PV cell.

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Scrolling Display GSM based Messages Crolling Led Display

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Abstract:- Now a days GSM Based scrolling LED light displays is very largely used display. Which is being used in the field like railway buses and other vehicles displayed their destination and source from where they have got started and the path followed by the vehicle to reach their destination. Similarly, some other uses are on the station, platform and airport etc. To display the message. The visibility of LED light is very good which is the best advantage of LED light. Due to availability of LED lights of different colours it excites us to work on that. Due to having different colours of LED it becomes very attractive. And having different colours its wave length are also different which make them good looking. Usually, we use 230 volt alternating source of supply to operate the LED scrolling light. This ac source is not directly fed to the scrolling light, by the use of rectifier circuit like centre tap and bridge rectifier and filter circuit. We convert the source into dc source and fed to the scrolling LED display. And the level of voltage is decrease by use of controlled rectifier and chopper circuit.

Keywords:- *GSM modem, Display board, Microcontroller, Assembly language etc.*

I. INTRODUCTION

Before the invention of Semiconductor devices and microcontrollers, displaying a message was very cumbersome task, people used traditional method of wooden notice boards. By the advancement of technology & invention of microcontrollers, digital notice boards came into the market, many colleges, banks, railway stations, cinema halls started using scrolling LED display. Unit design was very compact and easy to handle. It is made of LEDs connected together with specific number of rows and columns arranged in a matrix configuration. Panels are divided in small standard size panels containing some sort of ratio of LED such as (8x8), (10x10) and so on. This arrangement makes easy to choose any size required for the purpose which can be manipulated as desired. But it has also some limitation, displaying a simple message on scrolling digital notice boards may be terrible and need someone skilled having knowledge of computer & program writing. Moreover, if the message presently being displayed need any modification or change at the same time, a personal computer is needed to connect with notice board microcontroller and a new message could be installed to the display board. If there are more than one display boards same process needs to be done which is time consuming. This complexity can be eliminated from the system introducing GSM modems (Global System for Mobile communication). To make LED scrolling display more portable. GSM phone is used instead of bulky Keyboard and laptops. GSM based LED display consist of a receiver and message decoder which can be programmed using SMS.it visualize the MIN (Mobile Identification Number) and display the message after code conversion. with help of this device Scrolling message can be controlled easily and can be updated through SMS using simple mobile phones from anywhere under the range of wireless network. This idea of message display eliminated the tough task of programming and reprograming the microcontroller every time it needs to be changed. It also saves time and threat of physical damage to the equipment. GSM system is popular because it provides flexibility to display a new flash message or any announcement instantly thus avoiding any delay as faced in Programmable. Now a days GSM based display boards are being used everywhere from public transportation to shopping malls, High-way sign to the traffic signs. Apart from GSM based LED scrolling message display, several works have also deployed GSM for monitoring and Controlling purpose such as GSM based Street light controlling system, Vehicle tracking system using GSM modems, Vehicle parking slot booking system using GSM and RFID (Radio frequency identification). This Project uses a GSM modem at the display side to receive SMS, a microcontroller to derive the LED display along with this a Power supply unit and supporting hardware.

II. DESCRIPTION

This project explains each development step we took for designing the GSM based notice board by integrating features of all hardware components used. Each module is reasoned out and placed carefully, then making the unit to work best. The speed of the display can be controlled through the software and the message is displayed as required. received message on the LCD. Here we use 8051 as a microcontroller with 5v DC Power supply. The main hub/heart of this synopsis is GSM modem and it works on GPRS AT commands.

III. WORKING & CONSTRUCTION

The main motive of this research is to replace presently used display system with automatically driven GSM based

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LED DISPLAY SCROLLING BOARD BASED ON GLOBAL SYSTEM FOR MOBILE COMMUNICATION

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ABSTRACT

These days Global System for mobile communication is widely used in various applications. One from them applications is LED Display Scrolling board. These Boards are generally used in various public places like School, Airports, metro Stations and railway Stations too. The basic use for these boards are to show the desired messages to the public. These boards help out large people to get the specific amount information at the same time. This increases the efficiency of delivering the message to the public. Since these display uses led lights to display the messages which makes it very gorgeous. These Scrolling boards uses Key Elements like: LED, GSM, Micro Controller, rectifiers etc. It also uses 230V Alternating Current supply as input power source.

Keywords: Global System For Mobile Communication, Display Board, Rectifier, LED.

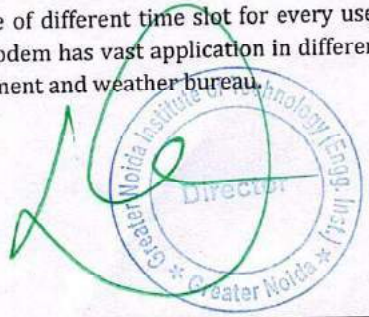
I. INTRODUCTION

Well in very past times it was very hard for people to display these messages. They used different techniques like wooden boards even black boards to show the messages. By the time passes people invented the Semiconductor Technology and this made the thing very easy. With the use semiconductors like rectifiers, Microcontrollers, LED lights etc. we are now able to display the messages on the display boards at various stations and hospitals. The message display portion consist of various LED lights which are combined in the form of Matrix such as (8x8), (10x10) etc. These display boards are given their input (which is to be displayed on the board) through key boards which can not be access through remote. So, we come up with an idea for fixing its remote accessing problem. We added the GSM i.e. Global System for mobile Communication. As we know that GSM is generally used for sending the messages through mobile phones to other mobile phones. Though here this GSM is used to send the message to be displayed on the Message board through mobile phones and hence this makes this system to work remotely.

II. COMPONENTS USED

- **GSM MODULE**

Global system for mobile communications chip {GSM}. It's a medium between transmitter and receiver for example cell phones and electronic bulletin board.it was shot up by {ETSI} which is European telecommunication standards institute. It's a core of the entire setup. GSM modem is connected to the power supply microchip and communicating link (RS-232) with programmable device. We can also join this by committed modem devices such as input output consecutive ports, {universal serial bus}, Bluetooth or else smartphones which make it extra appropriate for use. Every module is linked with an interchangeable phones.it is moreover furnished for voices and data services to perform at the 850mhz, 900mhz,1800mhz and 1900mhz frequency band. Sometimes in case of interference among two information the GSM modem uses {TDMA}strategy which is time division multiple access with the purpose of different time slot for every user with the similar frequency to their information respectively. The GSM modem has vast application in different fields namely transact business security applicants, supply chain management and weather bureau.



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GSM BASED MESSAGE SCROLLING LED DISPLAY

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Abstract: *Now a days GSM Based scrolling LED light displays is very largely used display. Which is being used in the field like railway buses and other vehicles displayed their destination and source from where they have got started and the path followed by the vehicle to reach their destination. Similarly, some other uses are on the station, platform and airport etc. To display the message. The visibility of LED light is very good which is the best advantage of LED light. Due to availability of LED lights of different colors it excites us to work on that. Due to having different colors of LED it becomes very attractive. And having different colors its wave length are also different which make them good looking. Usually, we use 230 volt alternating source of supply to operate the LED scrolling light. This ac source is not directly fed to the scrolling light, by the use of rectifier circuit like center tap and bridge rectifier and filter circuit. We convert the source into dc source and fed to the scrolling LED display. And the level of voltage is decrease by use of controlled rectifier and chopper circuit.*

Key Words: *GSM modem, Display board, Microcontroller, Assembly language etc.*

INTRODUCTION

Before the invention of Semiconductor devices and microcontrollers, displaying a message was very cumbersome task, people used traditional method of wooden notice boards. By the advancement of technology & invention of microcontrollers, digital notice boards came into the market, many colleges, banks, railway stations, cinema halls started using scrolling LED display. Unit design was very compact and easy to handle. It is made of LEDs connected together with specific number of rows and columns arranged in a matrix configuration. Panels are divided in small standard size panels containing some sort of ratio of LED such as (8x8), (10x10) and so on. This arrangement makes easy to choose any size required for the purpose which can be manipulated as desired. But it has also some limitation, displaying a simple message on scrolling digital notice boards may be terrible and need someone skilled having knowledge of computer & program writing. Moreover, if the message presently being displayed need any modification or change at the same time, a personal computer is needed to connect with notice board microcontroller and a new message could be installed to the display board. If there are more than one display boards same process needs to be done which is time consuming. This complexity can be eliminated from the system introducing GSM modems (Global System for Mobile communication). To make LED scrolling display more portable. GSM phone is used instead of bulky Keyboard and laptops. GSM based LED display consist of a receiver and message decoder which can be programmed using SMS.it visualize the MIN (Mobile Identification Number) and display the message after code conversion. with help of this device Scrolling message can be controlled easily and can be updated through SMS using simple mobile phones from anywhere under the range of wireless network. This idea of message display eliminated the tough task of programming and reprograming the microcontroller every time it needs to be changed. It also saves time and threat of physical damage to the equipment. GSM system is popular because it provides flexibility to display a new flash message or any announcement instantly thus avoiding any delay as faced in Programmable. Now a days GSM based display boards are being used everywhere from public transportation to shopping malls, High-way sign to the traffic signs. Apart from GSM based LED scrolling message display, several works have also deployed GSM for monitoring and Controlling purpose such as GSM based Street light controlling system, Vehicle tracking system using GSM modems, Vehicle parking slot booking system using GSM and RFID (Radio frequency identification). This Project uses a GSM modem at the display side to receive SMS, a microcontroller to derive the LED display along with this a Power supply unit and supporting hardware.

DESCRIPTION

This project explains each development step we took for designing the GSM based notice board by integrating features of all hardware components used. Each module is reasoned out and placed carefully, then making the unit to work best. The speed of the display can be controlled through the software and the message is displayed as

Smart Sensor based Drunken Driver Detection System for Human Life Safety

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Abstract— a drunk driving, or a driving under the Influence (DUI) of alcohol, is a common cause of the road accidents in the entire world. Our goal is to protect a driver from driving when he is drunk. Our approach is to check up if the driver is in his wear or not by using a Breath alcohol detecting device sensor. Every year the number of deaths increase caused due to this problem. We recommend a new Sensor based Drunken Driver Detection System for Human Life Safety to reduce the number of accidents and human life loss due to the drunken driving. This system is based on smart sensor of electronic circuits which monitors the alcohol content in the air surrounding by the body of the driver. The breath-based system will draw the driver's breath into a sensor through a specified distance, So as to measure only the concentration of carbon dioxide and ethanol molecules being exhaled from the body of the driver and not the passengers. The sensors will act as a tracking system to measure the ratio of carbon dioxide molecules to ethanol molecules produced by the driver. If the value ethanol to carbon ratio is higher than the medically prescribed value, i.e., 0.05 to 0.08, then the car won't start.

Keywords - Breathe alcohol detecting device, Car, Detection, Real time system, Sensors.

I. INTRODUCTION

In Oman-Muscat; Accident rates in year 2016 have decreased compared to 2015, however, the death rate has increased, especially among expat drivers, according to data from the National Center for Statistics and Information.

Compared to 6,279 accidents in 2015, the year 2016 witnessed 4,219 traffic accidents, reflecting a drop of 32.8 percent. However, compared to 675 people who lost their life in road accidents in 2015, 692 died in such incidents in 2016. However, the number of those injured fell by 19.2 per cent, from 3,624 in 2015 to 2,929 in 2016. In today's world, a lot of automobile accidents take place on

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from Graphic Era Hill University, Dehradun
has participation / presented paper entitled Performance Analysis of Nature Inspired Optimization based Watermarking Schemes

in Three Days 2nd International Confernce on Cybersecurity and Evolutionary Data Engineering (ICCEDE 2022) Technically Co-sponsored by SPRINGER LNEE on 09th Dec to 11th Dec, 2022 organized by Department of Master of Computer Applications, G L Bajaj Institute of Technology & Management Greater Noida, (U.P) India.

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Environmental effects of cement production: A review

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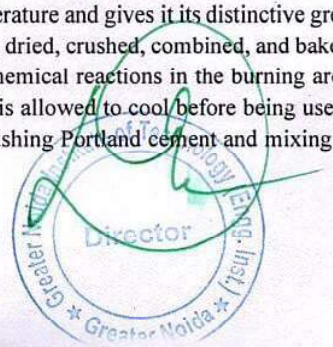
Abstract:
This study examines the consequences of cement production on the environment and possible solutions to global warming. A rise in cement production has led to a decline in nonrenewable resources like limestone. Extracting resources from natural ecosystems increases the risk of ecological imbalance and destroys the green environment, home to many plant and animal species. Rapid usage will likely deplete this limited resource in the near future. In addition, the company's raw material processing phases produce dust, noise, and greenhouse gases, especially carbon dioxide, which degrade the environment and worsen climate change. Unwanted environmental impediments hinder daily life. Better cement plant production processes can help reduce pollution by creating cleaner cement. Industrial waste could be utilised as a cement additive or in cement-free concrete, lowering the country's cement use and improving the environment. If we want to utilise other materials as concrete binder, we must use products that use less natural resources, are more cost-effective, and cause less environmental harm. It will make the environment more resilient and healthier for future generations.
Keywords: Global Warming, Sustainable Manufacturing, Ecosystem, Environment Impact, Cement Production

1. Introduction

Due to its inherent advantages, concrete is the most extensively used building material [1]. The appeal of concrete is primarily due to its superior mechanical properties and low cost [2–5]. It'll most likely used to produces a variety shapes and sizes of structural elements [6]. Furthermore, traditional concrete production is expected to reach around 6 billion tonnes per year globally [7]. Cement as a solitary binder in concrete creates a solid, weight-bearing mass. For over 200 years, regular cement has been used as a primary component of concrete in construction [8]. China is the world's largest producer of concrete and produces some of the world's highest-quality cement [9]. China produced 2.15 billion metric tonnes of cement in 2012, with India accounting for 8.6% of total production and the US accounting for 29% [10]. The total volume of cement produced in 2016 was over 4174 MT. It increased by 24.96 percent compared to overall output in 2010 [11]. The use of cement is increasing, which has predictable implications for energy consumption and pollution. Because Portland cement requires precise mixing of raw materials, open-pit mining is used. China produced 22,489 thousand tonnes of cement in August 2020, while Malaysia produced 1866 thousand tonnes, as shown in fig 1 [12]. The use of aggregate, particularly limestone, which is required in the production of Portland cement, is increasing as the demand for cement grows [13–14]. When the answer is that energy consumption has increased significantly in the twenty-first century [15], nonrenewable resource exhaustion becomes a growing concern. Non-renewable resource reserves will unavoidably be depleted when they are extracted from the environment and exploited for economic purposes due to the dominance of the quarrying and mining industries. Nonrenewable resources are in short supply, and once depleted, their stockpiles do not replenish. Ecosystem destruction, river damage, and dust contamination have all been linked to the continued extraction of natural resources [15–17]. Thus it is important to stop the extraction of natural resources. The use of cement is increasing, which has predictable implications for energy consumption and pollution. Because Portland cement requires precise mixing of raw materials, open-pit mining is used. Bulldozers and dump trucks, as well as excavating, blowing, and other heavy earthmoving equipment, are used in quarrying. A good mix of calcium, silica, aluminium, and iron is required to make the typical clinker composition. Lime and silica are the main components of cement, while iron lowers the reaction temperature and gives it its distinctive grey colour. Clinker is made from limestone, shale, and clay that has been prepared, dried, crushed, combined, and baked at temperatures between 1200 and 1450 degrees Celsius in cement ovens. Chemical reactions in the burning area require a high temperature. Clinker, a nodular substance formed in the oven, is allowed to cool before being used. Clinker is then used as the main component in the production of cement. Crushing Portland cement and mixing it



Industry 4.0 Implications for Industries-Academia in the Indian context

Sarabjot Singh Azrot[1], Balbir Singh[2], Iqbal Ahmed Khan[3], Varun Dutta[4]

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Abstract. Globally developed countries have taken lead in exploring, implementing and enjoying the benefits of Industry 4.0 through synchronization of various stake holders such as government, industries and academia. Industry 4.0 technologies are applied in creation of smart cities, smart factories, smart machines, smart products, smart services, predictive maintenance, unmanned vehicles, drones, smart warehousing, collaborative robots etc. The use of Industry 4.0 technologies facilitates fast and better living, efficient services, self adjusting machines, high level automation in the industries with or without human intervention especially in hazardous environments. Fourth Industrial revolution has a potential to transform whole manufacturing system into smart manufacturing system in industries through the integration of Industry 4.0 technologies such as Big Data Analytics, Artificial Intelligence (AI), Cyber Security, Cloud Computing, Collaborative Robots, Additive manufacturing, Augmented reality, Cyber Physical system (CPS), smart sensors etc. This paper elaborates on an overview of Industry 4.0 technologies, challenges and their penetration in the industries through collaborative efforts of industry and academia. Further, highlighted the preparation strategies of the academia for smooth adoption of latest technologies by Indian industries through the trained passing out engineers and supporting infrastructure.

1. Introduction

Journey of civilization is a continual process and it never stops, because of dynamic need of time in all walks of life. With the passage of time, society always tries to explore and upgrade themselves in terms of quality of life, comfort, ease and safety. The witnessed milestones in terms of industrial revolutions across the world are shown in figure 1. This figure reveals Industrial revolutions 1.0, 2.0, 3.0 and 4.0 with their timeline. Fourth Industrial revolution begins nearly 2012 in Germany with development and applications of digital technology. Further, I4.0 technologies can be used almost in all the fields such as manufacturing, service sector, healthcare, logistics, agriculture, transportation, education etc. Proper selection of Industry 4.0 technologies provides quality, enhanced productivity, predictive maintenance, safety, and comfort in real time. On one hand, it produces smart products such as smart lights, ACs, doors, smart homes etc. whereas, on the other side, smart processes, smart machines, smart tools which are self-sensing, self-adaptive and self-configure in real time. As a consequence, machine itself adjust its input and output parameters and maintained quality standards. Further, through machine learning (ML), remaining useful life (RUL) can be determined which can be basis for adopting proactive measures to ensure consistent performance with enhanced life. Also services point of view in transportation, people can check the location of their booked vehicle. Drones

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Article

Characterization of Al-6061 Castings Fabricated by Microwave Energy Technique

Md. Modassar Anwar [1], Girendra Bhati [1]*, Vaibhav Gangwar [1] and Gagan Varshney[1]

[1] Greater Noida Institute of Engineering and Technology, Greater Noida, UP.
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Abstract: The demand for the handling of aluminum alloy is expanding attributable to their broad use in high unambiguous strength products. Therefore, the need for improvement of a quicker and more financial root to deal with such material has been felt. In this paper, microwave energy has been used to heat the Al 6061 metal to produce the casting products with more dimensional accuracy and surface finish. The applicator used for the melting, having 2.45 GHz microwaves at 600 W to 900 W. Three most significant process parameters with different levels have been selected as power, susceptor material and heating time. The influence of process parameters on tensile strength have been investigated with the help of Taguchi's technique. Optimization of process parameters indicated that the maximum value of tensile strength has been achieved at 750W power, stone charcoal susceptor and 180 minutes heating time. SEM microstructure study, XRD and EBD analysis have been done for more tensile specimens.

Keywords: microwave casting, tensile strength, SEM microstructure, XRD analysis

Citation: Anwar M. M.; Bhati G.; Gangwar V.; Varshney G. Characterization of Al-6061 Castings Fabricated by Microwave Technology. *Robotics* **2022**, *11*, x. https://doi.org/10.3390/xxxxx

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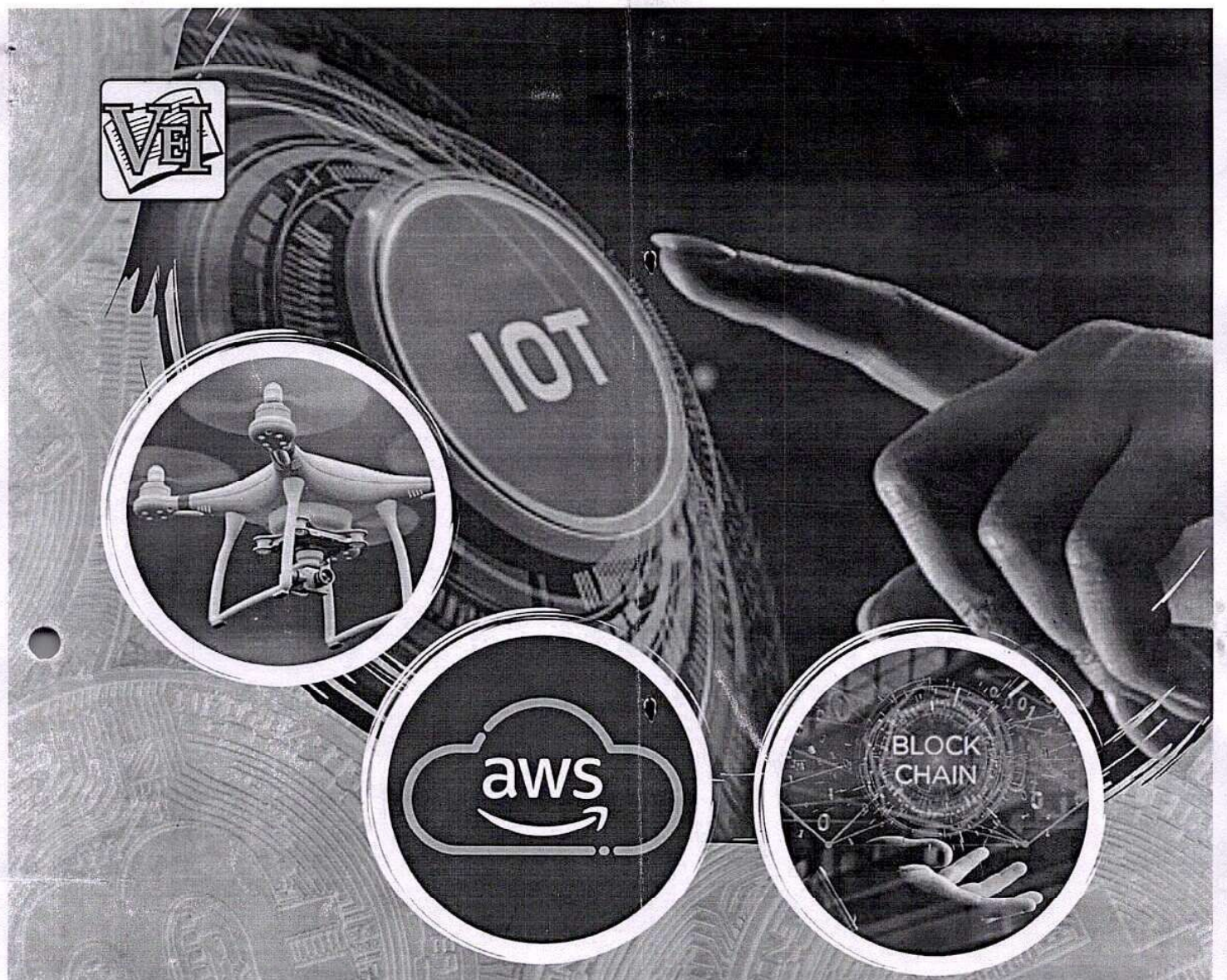
1. Introduction

The projecting of metals is one of the essential assembling processes utilized in ventures and is one of the affordable courses for delivering helpful parts. Average ordinary projecting cycles include charging of heaters, keeping up with of high temperatures (utilizing unmanageable materials) for softening and projecting of liquid metal into wanted shapes utilizing molds. Notwithstanding, customary projecting cycles have a few disadvantages with regards to higher energy utilizations, longer liquefying times and higher imperfection developments. To conquer the downsides of ordinary projecting cycles; new cycles were created [1-3].

Microwave material handling has arisen as one of the promising strategies in the field of assembling. It has been widely executed in the field of joining, sintering, cladding, pottery, powder metallurgy and so forth of mass metallic material. It is been broadly utilized because of decreased assembling cost, handling time, fine microstructure, less deformities and so on as contrasted and customary strategies. Microwave energy has been by and large utilized in clinical, food handling, drying and so on. This work has been centered around the advancement of new arising innovation, for example microwave projecting/liquefying of non-ferrous metallic materials. Microwave projecting is an arising field of exploration with heaps of holes to be satisfied. Notwithstanding, handling any material under microwaves is dependably troublesome [4-10].

Microwave projecting is additionally separated into in-situ and ex-situ projecting. In the in-situ projecting cycle, the device is planned so that the liquefied charge goes through a sprue due to gravity and scopes to drag and adapt segment. In drag and adapt it is permitted to cement and get the ideal shape. In ex-situ arrangement, the charge is permitted to soften through microwave radiations yet the drag adapt area is set external the hole.



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This is to Certify that Dr./Prof./Mr./Ms. GIRENDRA BHATI of J C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA, FARIDABAD, HARYANA has participated and Presented the paper titled A REVIEW ON THE INFLUENCES OF PROCESS PARAMETERS ON MECHANICAL PROPERTIES AND MICROSTRUCTURE OF FREEZE CASTING PROCESS in the "Third International Conference on Robotics, Intelligent Automation and Control Technologies (RIACT 2022)" organized by School of Mechanical Engineering, Vellore Institute of Technology, Chennai, India in association with School of Computing, Engineering and Digital Technologies, Teesside University, UK and Department of Mechatronics and Mechanical Engineering, Bochum University of Applied Sciences, Germany between 23rd and 25th of September 2022.

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Review Paper

A Review on the Influences of Process Parameters on Mechanical Properties and Microstructure of Freeze Casting Process

Girendra Bhati[1*], Vikram Singh[2], Sanjeev Kumar[2] and Sudhir Kumar[3]

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Abstract: In the present scenario, it is a big challenge to produce well controlled porous structured materials with complex shape and geometry based ceramic castings. This paradise can be achieved by freeze casting process. Freeze casting process is preferred over other processes because of low production cost, porous structure, crack-free ceramics, ecofriendly, a wide range of composites, complex shape and zero shrinkage products. The purpose of this review paper is to enlighten the effects of process parameters on mechanical properties and microstructures. At low freezing temperature and high sintering temperature, the microstructure of casting is dense and compact i.e. having less porosity and pore size as well as higher compressive strength and hardness. Larger solids loading in slurry possess less amount of solvent and thus produce low porosity and high density results higher compressive strength. So, the mechanical properties have improved at low freezing temperature, high sintering temperature and solid loading.

Keywords: Particle Size, Freezing Directions, Sintering Temperature, Compressive Strength, Porosity, pore size.

1. Introduction

In last two decades, researchers are focusing on the casting of well controlled porous structured materials with complex shape and geometry based ceramic products. They used various processes such as direct forming, powder metallurgy, sacrificial template process, sol-gel casting and slip casting. These processes have many disadvantages. Direct forming method and powder metallurgy methods are not flexible in control of porosity and pore size. Sol-gel casting and sacrificial template process have large shrinkage of gels upto 25% of the volume. These are not suitable for complex shaped ceramics. Slip casting process has low dimensional precision. The castings produced by slip casting process, are much affected by differential shrinkage rate. Also, all these processes demonstrated the limited range of industrial products. None of these techniques use the freezing of ceramic slurry before heating or sintering due to which the porosity and pore size in castings are not in control [1-6].

Freeze casting process is preferred over these processes because of low production cost, porous structure, crack-free ceramics as well as ceramic-metal composite, complex shape and zero shrinkage products. Freeze casting process has these advantages over other manufacturing processes-

- No material burns during sintering process.
- It is cost effective.
- Simple equipment used in experimental set-up.
- It is environment friendly casting process.
- More flexibility in the control of porosity as well as pore size by the concentration of suspension solution.

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OPTIMIZATION OF PROCESS PARAMETERS OF Al-6061 CASTINGS PRODUCED BY MICROWAVE ENERGY TECHNIQUE

Md Modassar Anwar[1], Mr. Girendra Bhati[2*], Mr. Vaibhav Gangwar[2]
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* Corresponding Author: Phone No.: +91-9910819291; Email:girendrabhatime@gmail.com

ABSTRACT

In this paper, microwave energy has been used to heat the Al 6061 metal to produce the casting products with more dimensional accuracy and surface finish. The applicator used for the melting, having 2.45 GHz microwaves at 600 W to 900 W. Three most significant process parameters with different levels have been selected as power, susceptor material and heating time. The influence of process parameters on hardness have been investigated with the help of Taguchi' technique. Optimization of process parameters indicated that the maximum value of hardness has been achieved at 750W power, stone charcoal susceptor and 180 minutes heating time. The optical microstructures have been studied for the most harder casting specimens.

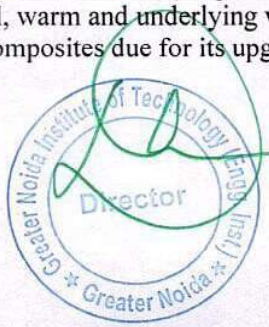
Keywords: Microwave Casting Technique; Al-6061 alloy, Hardness strength, Microstructure Study

1. INTRODUCTION

The research we are working on is Al-6061/SiC charcoal using the microwave casting technique. We know about some materials and reinforcement like aluminum; silicon carbide and charcoal matrix composites. Which is used in automotive industries due to its tensile strength, more strength to weight ratio, more wear resistance, elevated temperature hardness, and more stiffness [1]. The development of new technologies is required for the joining of aluminum, which causes a minimum effect on the mechanical. Microwave energy can be effectively used for metal processing. In microwave processing, the fundamental of heating is the opposite of the traditional heating process. In the conventional heating process, the heat is conducted from the surface them to the inner core of the metal, therefore heating is uniform throughout the material [2]. The Microwave casting has various advantages over conventional processing techniques such as selective heating, volumetric heating, and less processing time resulting in significant energy saving and fabricated the castings of fine microstructure as well as better properties. Generally, microwaves which are electromagnetic waves of wavelength variation between 1 mm to 1 m and the frequency lies between 300 MHz and 300 GHz [3-4].

2. LITERATURE REVIEW

This section means to display and feature past research, comparable or connected with this work completed by different researchers, and furthermore to foster an essential comprehension of cross breed composite utilizing the mix casting method for Aluminum Alloy. Mishra and Sharma revealed the investigation of cast microstructure acquired involving in-situ microwave casting of Al 6061. The interaction was done under the modern microwave of 900 W powers at a recurrence of 2.45 GHz. The ongoing bend among time and temperature was gotten utilizing an implicit IR pyrometer. The time temperature bend characterizes there were four unique stages that had an alternate method of warming. The method of warming was helped by the presence of an oxide layer which goes about as a susceptor. Porosity investigation shows an extremely low porosity of under 2%. Further, they had concentrated on the adjustment of openness time, softening time, and cast capacity of Al-Zn-Mg combination with the difference in susceptor and form material. SiC and the artistic cauldron was utilized as susceptor with the end goal of MHH. The charge was set under the shape material of alumina and graphite. From the outcomes, it is seen that the better grains were gotten for the mix of alumina (shape material) and SiC (susceptor) [5]. Reddy et. al. explored the physical, mechanical, warm and underlying way of behaving of the expelled AA 203. Creator clarified that ceramic matrix composites due for its upgraded durability



Multi-Objective Optimization of Process Parameters of HAp-Al_2O_3 Bio-inspired Freeze Castings by Genetic Algorithm

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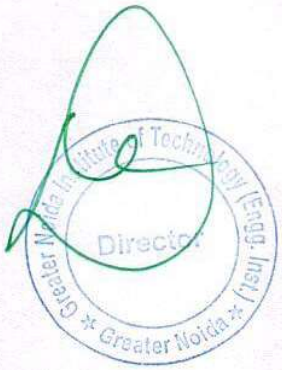
Abstract: In this paper, the different compositions of hydroxyapatite or HAp ($Ca_{10}(PO_4)_6(OH)_2$) and alumina (Al_2O_3) are used as ceramic materials to fabricate the biomaterials by freeze casting process. The mechanical properties i.e. hardness and porosity have been measured at three different process parameters i.e. freezing temperature, sublimation pressure, sintering heating rate. Regression analysis and Genetic Algorithm have been used to find the multi-objective optimized results.

Keywords: Freeze Casting Process, Freezing Temperature, Sublimation Pressure, Sintering Heating Rate, Hardness, Porosity, Genetic Algorithm.

1. Introduction:

In the present scenario, the researchers are focusing on bioinspired materials and its advanced manufacturing techniques. Many techniques are used such as direct forming method, powder metallurgy, sol gel and slip casting process. Due to uncontrollable porosity, low compressive and wear strength, low degree of compactness and versatility, these methods have limited uses in ceramics industries. These limitations may be eliminated in Freeze Casting process. In this freeze casting method, pore size and its shape are controllable through process parameters. Freeze casting process consist four basic steps: (i) preparation of slurry or liquid suspension, (ii) freezing of the slurry/suspension, (iii) sublimation of the frozen phase and (iv) sintering. Firstly, the slurry has been prepared and mixed by mechanical stir and then it has poured into a mould. Then slurry filled mould has left for freezing with the help of liquid nitrogen. The freezing process taken placed in a range of freezing temperature which lies between -50 °C to -196 °C. Then followed by the process of sublimation of the solidified state from the solid to the gas state at a very low pressure, and then sintering to consolidate as well as densify the pores/dendrites [1-5].

Tallen et al (2009) prepared the slurry of alumina ceramic powder of particle size 700 nm with additive glycerol in water solvent which was freezed at -190 °C temperature. The slurry in mould was freezed by liquid nitrogen when it was partially immersed in liquid nitrogen tank. The additive glycerol increased the viscosity of slurry as well as



A review of evaporation droplets on a transparent heater

Rupak Kumar Deb [1], Iqbal Ahmed Khan[2]

[1] Mechanical Engineering Department, Lingaya's Vidyapeeth, Faridabad, Haryana,

[2] Mechanical Engineering Department, Greater Noida Institute of Technology, Greater Noida, Uttar Pradesh

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ABSTRACT

Many devices are using transparent heaters and they often face problems due to fogging or icing on the surface of the transparent heater (TH). The fogging or icing is mainly due to the droplet that gets deposited over the surface of the transparent heater. If the evaporation of these droplets from the surface of TH gets obstructed then only the fogging or icing starts. To develop an effective defogging we require the effective evaporation rate of the droplet. Many studies have already been done on the dependence of evaporation on the various factors of the substrate as well as the ambient conditions. In this paper, the evaporation droplet characteristics of the transparent heater are analyzed. Theoretical and experimental investigations on droplet evaporation are reviewed. The dependence of droplet evaporation time and temperature distribution on transparent heater coating properties are studied. Finally, the role of material coating on defogging and defrosting properties of transparent heaters are investigated and discussed. Also, the dependence of surface wettability of transparent heaters on the droplet evaporation property has been investigated.

KEYWORDS

"Droplet", "Defogging", "Defrosting", "Evaporation", "Hydrophobic"; "Thermal conductivity", "Marangoni effect", "Transparent heaters", "Sessile".

1.Introduction

The phenomenon of how liquid droplet is responsible for wetting the solid surface has already been studied since the 18th century. The angle of contact between the solid and liquid is an important factor for wetting the solid by liquid droplet. The role of Contact angle, wetting properties and the bonding of liquid and solid was investigated by Young and Pierre-Simon Laplace. In biomedical and normal life situations, it is very

Corresponding author: Rupak Kumar Deb. Email: deb.rupak@gmail.com

High Performance Dynamic D Flip Flop based on GNRFET in Double Gate Mode

Publisher: IEEE

Farha Naj ; Vivek Gupta ; Mukesh Kumar Ojha ; Priyesh Tiwari All Authors

Abstract:D flip flops may be divided into two categories: static and dynamic flip flops. The dynamic D flip flop is the focus of this research project. The sophisticated design of... **View more**

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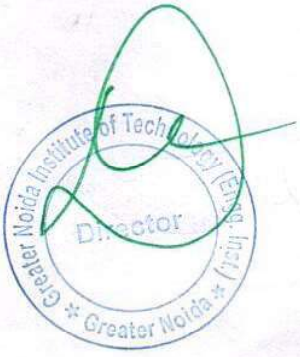
Abstract:

D flip flops may be divided into two categories: static and dynamic flip flops. The dynamic D flip flop is the focus of this research project. The sophisticated design of TSPC is complemented by the configuration of the clock and reset (True single phase clocked). When it comes to performing its function and switching operations, the clock and rest signal use a significant amount of power. The necessity for improvements in the power consumption of the TSPC-based D flip flop creates an appealing study arena in which to pursue further advances in the field. Power consumption rises below 16nm as a result of factors such as DIBL or GIBL, which must be addressed in addition to the process itself. It is suggested in this research to use a novel TSPC-based D Flip Flop with Gates Tied Mode (Multi-Threshold CMOS Logic) sleep signal injection for low-power applications in order to minimise power consumption. This study makes use of low power dependant MOS, such as the GNRFET, in order to alleviate the short channel effects in MOS. The usage of GNRFETs in 16nm technology is the emphasis of this work, which aims to reduce power consumption.

Published in: 2022 2nd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)

Date of Conference: 28-29 April 2022 **INSPEC Accession Number:**



Low Power Energy Efficient Full Adder using GNRFET

Publisher: IEEE

Sanjay Singh ; Amit Kumar ; Mukesh Kumar Ojha ; Dhiraj Gupta **All Authors**

Abstract: As the low power requirement is the essential for today's state of art technology, it is necessary to use low power FET device in the designing of full adder which can be... **View more**

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Abstract:
As the low power requirement is the essential for today's state of art technology, it is necessary to use low power FET device in the designing of full adder which can be used in arithmetic logic unit and further can be used in IoT applications. In this work graphene nano-ribbon FET is used at 32 nm technology node to reduce the power consumption moreover the reduce size and better device parameters help GNRFET to provide excellent device performance. The spice simulation for this work has been performed in synopsys HSPICE tool at 32 nm technology. The result of the proposed full adder validated and compared with the already existing full adder design. The proposed full adder circuit shows 99.92%, 85.46%, 97.28%, 87.14% reduction in power consumption, delay, power delay product and leakage power respectively.

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Date of Conference: 21-22 April 2022

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Comparative analysis of Full Adders using CNTFET in 32nm Technology

Publisher: IEEE Cite This PDF

Bhuvaneshwari Shankar ; Priyesh Tiwari ; Dhiraj Gupta ; Mukesh Kumar Ojha ; Shiv N... All Authors

Abstract: In any electronic component, the main factor for measuring the performance criteria is full adders. This thesis investigates and analyses the efficiency of full adder cir... **View more**

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Abstract:

In any electronic component, the main factor for measuring the performance criteria is full adders. This thesis investigates and analyses the efficiency of full adder circuits using CNTFET devices in 32nm technology. The whole adder circuit is built using XOR/XNOR logic types, which are then compared to transistor technology. This thesis has five full adders that follow the technique of actuate potential and one full adder follows the non-actuate potential. Simulations have been carried out using HSPICE to better understand the power consumption, average power consumption, energy dissipation, and latency of an XOR /XNOR full adder. The performance among full adders is compared, and the best low-power full adder of CNTFET is analyzed and further used in new technology.

Published in: 2022 3rd International Conference on Intelligent Engineering and Management (ICIEM)

Date of Conference: 27-29 April 2022

INSPEC Accession Number: 21971335

Date Added to IEEE *Xplore*: 17 August 2022

DOI: 10.1109/ICIEM54221.2022.9853015

▸ ISBN Information:

Cyber Security in Intelligent Computing and Communications pp 311–324

Natural Language Processing for Small Businesses and Future Trends in Healthcare

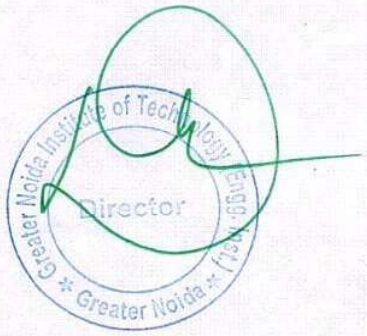
Saurav Jha, Priyesh Tiwari, Shiv Narain Gupta & Vivek Gupta

Chapter | First Online: 12 March 2022

Part of the Studies in Computational Intelligence book series (SCI,volume 1007)

Abstract

The Natural Language Processing (NLP) a computational used for reducing the distance between human and the machine. It means NLP facilitate human to communicate with the machine easily. NLP is a subfield of linguistics and artificial intelligence. NLP can be defined as the automatic manipulation of natural language like speech and text by using python models. The conversation between humans and machines has never been much easier and it is bound to be better in the upcoming decade. The paper distinguishes four phases by discussing a brief introduction to NLP



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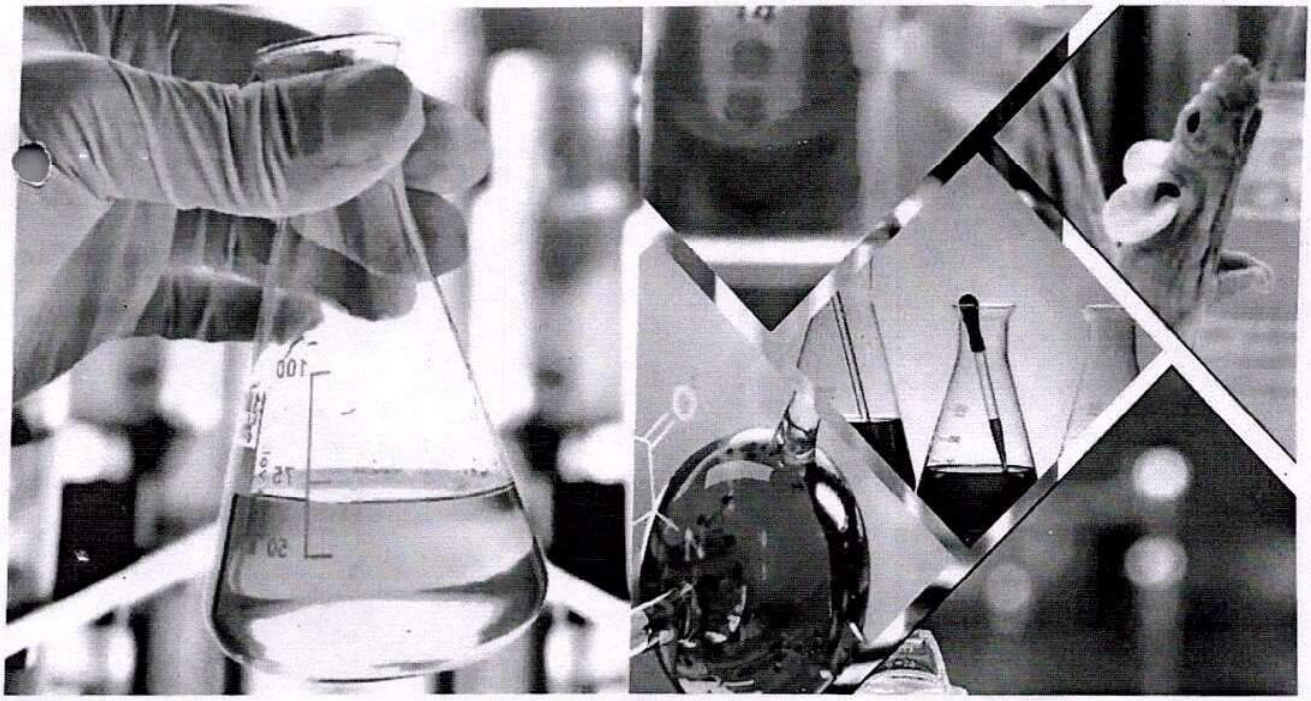

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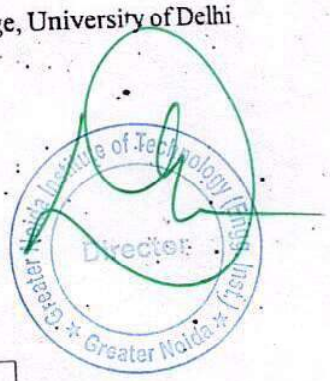

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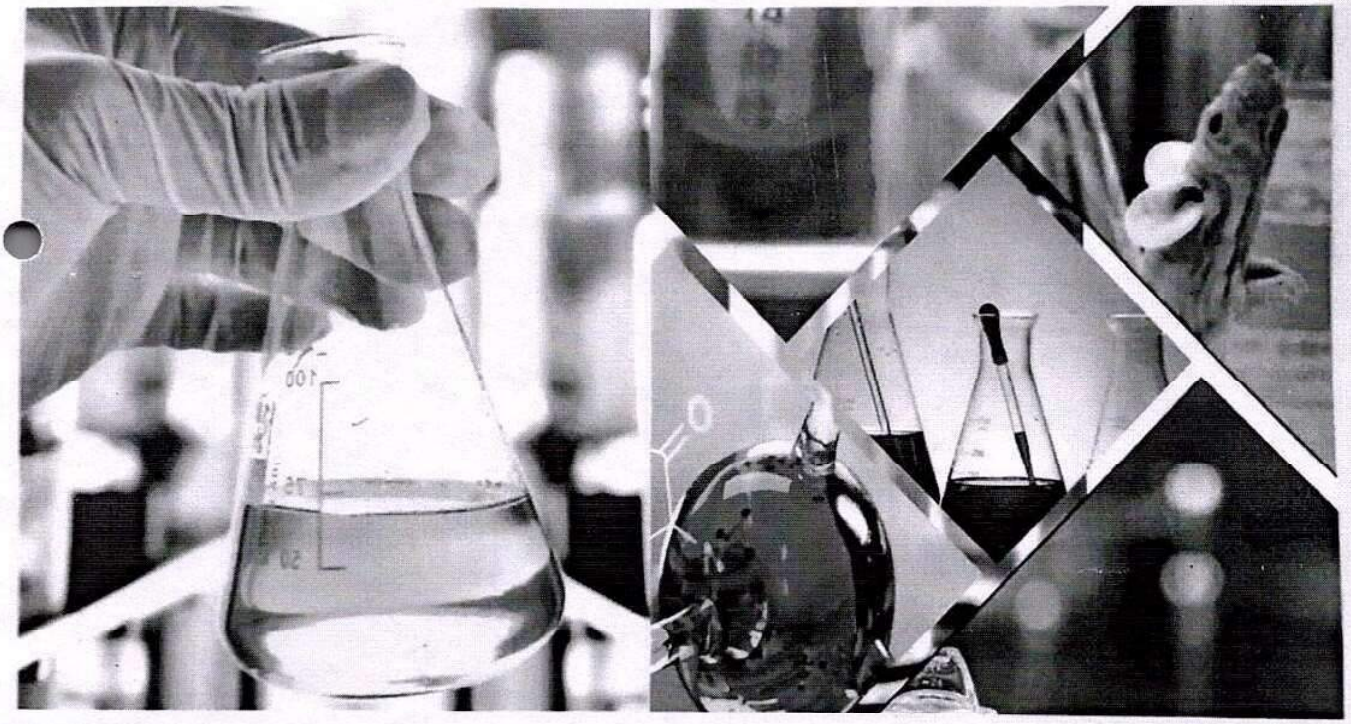

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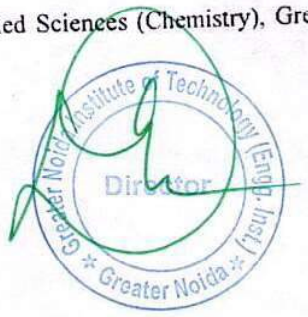

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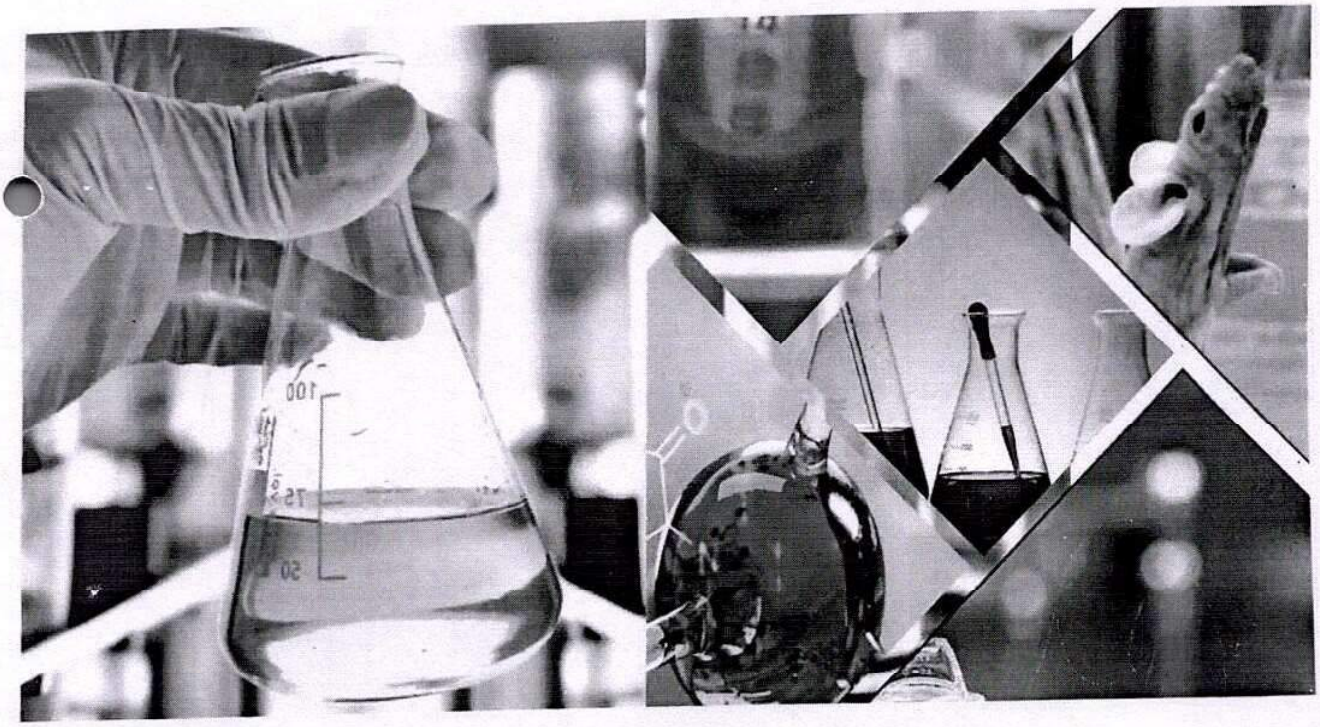

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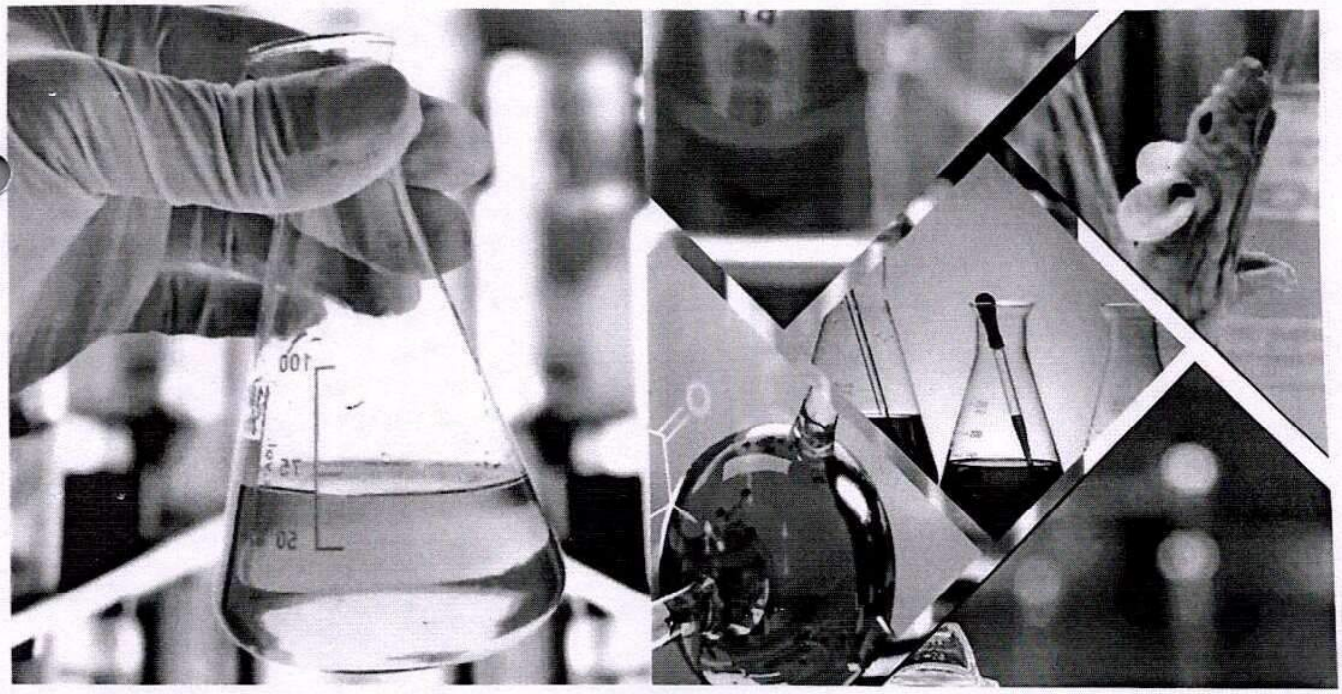

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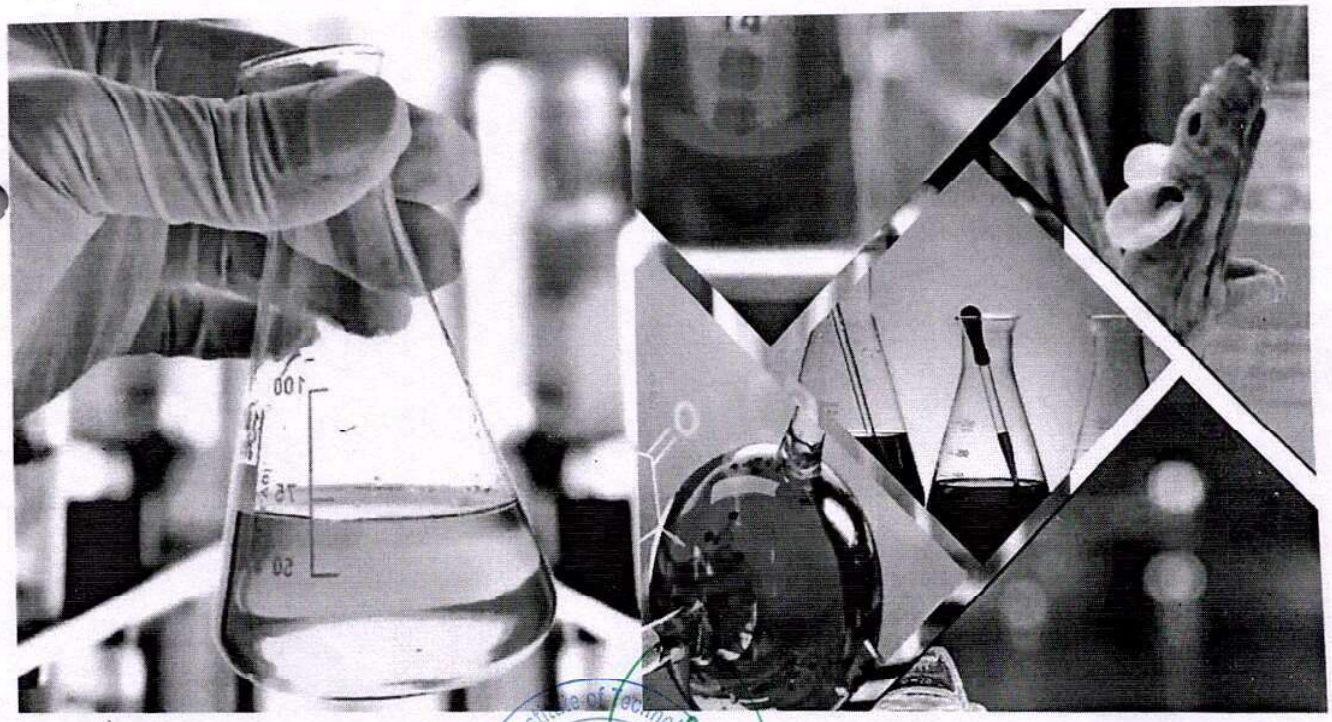

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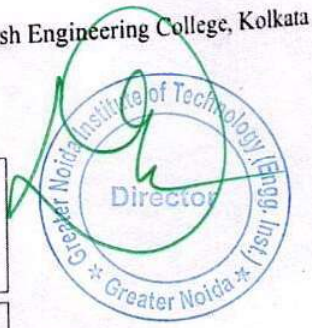

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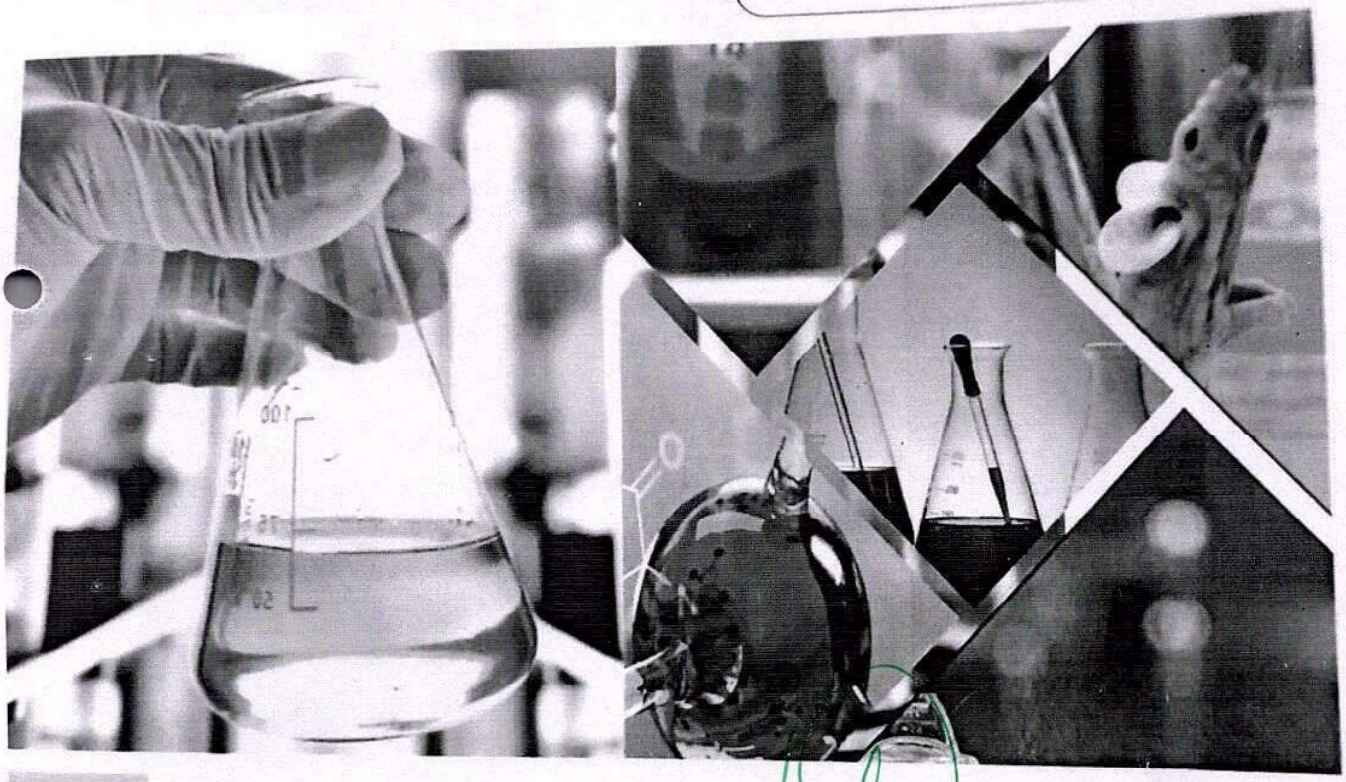

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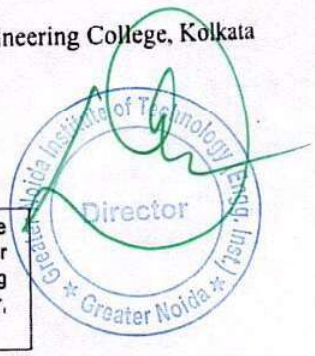

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Study of nuclear shapes of some even nuclei

*M. Singh[1], Y. Singh[2], Gulashan Mahajan[3], A. K. Varshney[4] and K. K. Gupta[5]

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In Davydov asymmetric rotor (β – fixed, γ – fixed) the effect of (ΔK = 2) to state mixing is a classical illustration where γ and ground state levels of energy are plotted against the asymmetric defamation γ of the nucleus [1]. For γ close to 0^0, the Davydove model gives the symmetric rotor 'γ – band' energies. As γ increases the levels of γ – band decreases rapidly in energy and hence the even spin levels of the γ – band interact more and more with their partners in the ground band. The effect becomes extreme above $\gamma = 20^0$. The interaction faces a repulsion which is the origin of the upturn in $E(4^+)$ near $\gamma = 25^0$. Thus, the γ – band levels from the couplets arranged as $(2_2^+, 3_{1)}^+, (4_2^+, 5_1^+), 5_1^+$ ...

In another approach, say γ – unstable or Wilets – Jean model [2] the energies of γ – band are expected to form couplets arranged as $2_2^+, (3_1^+, 4_2^+), (5_1^+, 6_2^+)$ ... These two different couplets of γ – band energy levels are significant in distinguishing between γ – soft and γ – rigid shapes of a nucleus. Zamfir and Casten [3] introduced a term 'staggering indices' S(I) which has the form –

$$S(I) = \frac{S(I)+S(I-2)-2S(I-1)}{E2_1^+} \qquad (1)$$

A clear distinction is arising in the γ – band in S (I) values, where both models exhibit in energy staggering, the sequencing is exactly opposite that is the phases of the S (I) in both the models would be reversed. Casten examined the values of the staggering indices obtained from the experimental data of even nuclei and found them to be matching with γ – soft predictions showing no evidence of γ – rigidity. Liao considered 140 even nuclei of mass region A = 64 – 200 where the most of the nuclei were found to be γ – soft but a few may be slightly triaxial. Almost all the axial nuclei are sightly γ – soft, some of them exhibiting shape transitions from axial to γ – soft to triaxial shape with increasing angular momentum [4]. In our view point since the nuclei possessing $15^0 < \gamma < 25^0$ are most appropriate to be considered in asymmetric rotor model description as they belong to transitional region. It will not be possible for a triaxial nucleus belonging to $\gamma \leq 20^0$ to show a zigzag pattern of S (I) versus spin (I) in theoretical values. We plotted a number of graphs in S (I) versus spin (I) for $\gamma = 10^0$, 15^0, 20^0 and 25^0 in asymmetric rotor model values [5]. Another thing associated with S (I) is nature of axial rotor. For an axial rotor model the energy spectra has the form –

$$E_I = AI(I+1) - BI^2(I+1)^2 \qquad (2)$$

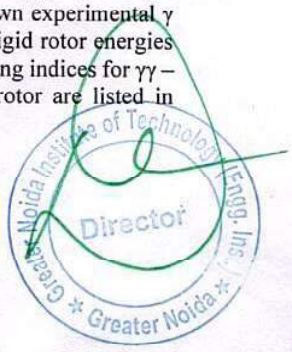
Here S (I) are small and positive in magnitude that show no zigzag behavior, but increase slowly with increasing spin (I). Of course, S (I) = 0 for all spin (I) if B = 0. $E \propto I(I+1)$ are equally followed by axial as well as triaxial rotor. Thus, it becomes essential to distinguish triaxial rotors from axial rotors. This is done by corroborating them with the values of staggering indices S(I) in γ – band. We observe that the sign of S (I) changes alternatively for odd and even spins in the case of triaxial rotor but, S (I) in axial rotor does not change sign with spin. McCutchen referred to special solutions of the Bohr – Mottelson Hamiltonian that gave predictions for a triaxial structure in respect of five nuclei that is ^{112}Ru, ^{170}Er, ^{192}Os, ^{192}Pt and ^{232}Th [6].

In the present work the authors try to verify whether the nuclei proposed above except ^{170}Er, since it is discussed already in ref [7], are associated with triaxiality and if yes than to what extent. Attempts have been made to discuss ^{112}Ru in recent past but, in ref. 8 only γ – band is considered and not the γγ – band while we consider it to take essential γ – band as well as γγ – band together since both are generated simultaneously by rigid rotor of Davydov.

The asymmetry parameter γ is evaluated from the energy ratio of two band head energies ($R = E2_2^+/E2_1^+$) using the relation –

$$\frac{E2_2^+}{E2_1^+} = \frac{1+\left[1-\frac{8}{9}(\sin^2 3\gamma)\right]^{1/2}}{1-\left[1-\frac{8}{9}(\sin^2 3\gamma)\right]^{1/2}} \qquad (3)$$

This asymmetric parameter γ is fed to compute the rigid rotor model energies in γ and γγ – bands. The staggering indices S (I) for known experimental γ – band energies alongwith the rigid rotor energies are listed in table 1. The staggering indices for γγ – band in experiment and rigid rotor are listed in table 2.



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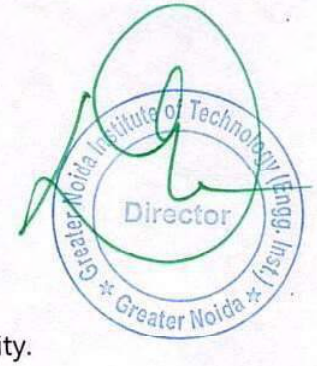

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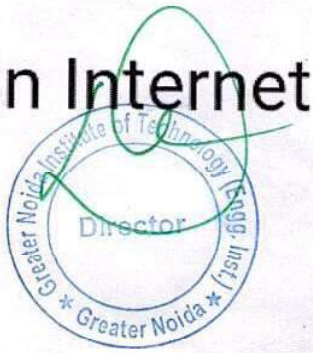

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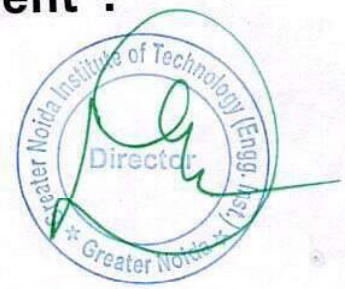

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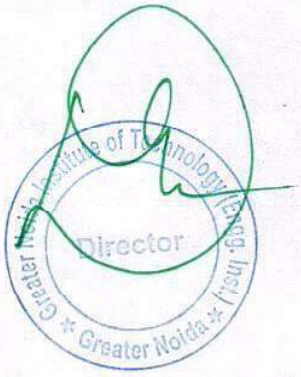

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Fractional Order PID for Load Frequency Control of Time Delayed Islanded Microgrid

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***Abstract*—Microgrids have been rapidly deployed in electric power systems in recent years with significant accompanying benefits. The load frequency control or secondary frequency control problem of microgrid in islanded mode has been addressed in this paper. The microgrid system is comprised of renewable energy sources like wind turbine generator (WTG), solar photovoltaic (SPV), and autonomous electric energy generation sources like diesel generator (DG), and fuel cells (FC) along with two energy storage devices namely battery energy storage system (BESS) and flywheel energy storage system (FESS). The proposed fractional order proportional-integral-derivative (FOPID) controller is designed by using stability boundary locus (SBL) technique to stabilize the frequency changes due to fluctuations in loads, wind speeds and solar intensity in the presence of communication time delay. The FOPID controller delivers the control signal to the generating sources by employing the communication channels. These communication channels are prone to time delay. The time delay can affect the microgrid system stability and in worst case the microgrid system may become unstable. The efficacy of the proposed controller is verified by the simulation results.**

***Index Terms*—Fractional order PID controller, Load frequency control, Microgrid, Stability boundary locus, Time delay.**

I. Introduction

A microgrid can be defined as a power distribution entity having distributive sources like DG and FC, renewable energy sources like solar and wind, energy storage devices like BESS and FESS, and multiple loads. It is very challenging to maintain the microgrid frequency in the presence of so many energy sources and loads. It becomes further difficult to regulate the microgrid frequency in the presence of communication time delay. Recently, the issue of microgrid frequency control with communication time delay has been very much explored in the literature. In [1], the effect of communication time delay on the secondary frequency control of an islanded microgrid with multiple distributed generators has been investigated. In [2], a model predictive control (MPC) and a Smith predictor based control approaches are discussed to deal with the issue of secondary frequency restoration. In [3], secondary frequency control is achieved by a frequency restoration function based consensus algorithm comprising of a load frequency control and a single time delay communication network. In [4], sliding mode estimation based controller is designed to predict the microgrid states, time delay, and to reject the disturbance of estimation errors. In [5], a distributed multi agent finite time control approach having time delays for the state of charge balancing and voltage regulation in a dc microgrid with distributed battery energy storage systems (BESS) has been implemented. In [6], feedback linearization, nonlinear sliding mode control and Artstein transformation concepts are utilized. In [7], a robust proportional-integral (PI) frequency controller based on Kharitonov's theorem has been designed having communication time delay and parametric uncertainties. In [8], secondary load frequency controller based on linear matrix inequalities (LMIs) and Lyapunov stability theory has been formulated for the shipboard microgrid system. The dynamic modeling and operation of a microgrid based on solar and wind energy is presented in [9]. The dc-dc converters are utilized to connect the wind and solar RES to the main dc bus.

In this paper, the stability boundary locus (SBL) approach of PID controller design is utilized [10]. The SBL is an analytical cum graphical technique of obtaining the PID controller parameters from the two dimensional stable parameter space. The SBL methodology is utilized in [11] to design the robust PID controllers with specific gain and phase margin for LFC problem of multi-area power system. In [12], PID controllers are designed for interval LFC system in the presence of communication time delay, GDB, and GRC. In [13], parametric uncertainty margin is computed for the LFC system using SBL technique. The main contributions of this paper are summarized as follows:

1) The new formulae for FOPID controller parameter gains are proposed using SBL approach for dispatchable energy sources in the microgrid, i.e., for DG and FC in the presence of communication time delay.
2) The frequency deviation for the microgrid is determined with wind power, solar photovoltaic power, and load as step inputs in the presence of communication time delay.
3) The comparison of frequency deviation achieved by the proposed approach is accomplished with that obtained by the other approaches available in the literature.

The organization of the remaining paper is as follows. Microgrid system modeling is explained in Section II. The proposed FOPID controllers are designed for both DG and FC in Section III. In Section IV, simulations are carried out followed by the conclusions of the work which is presented

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Low power based ternary half adder using fin type field effect transistor technology

Sandeep Kumar, Anil Kumar Dubey, Vivek Gupta, Mukesh Kumar Ojha

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Abstract

In this paper, we examine a ternary half adder that is low in power and leakage and is based on (FinFET) Fin type field effect transistor technology. The CNTFET Technology, as well as various circuits and implantation procedures for the CNTFET Technology, will be discussed in this chapter. It is shown in this paper that ternary adders using FinFET (Fin type field effect transistor) and ternary adders without FinFET (Fin type field effect transistor) are comparable in terms of latency, peak power distribution, and leakage power of the ternary adder. In this paper, we study several encoders and decoders that make use of FinFET (Fin type field effect transistor) to achieve their desired results. After that, we must get the right result, which is performed by computing the sum and carry of the decoder and encoder circuits. As a result of the evolution of this kind of technology, all electronic devices have become smarter and more trustworthy in terms of their functionality. Improvements in Average Power, Energy, and Power Dissipation may be shown in this experiment.

Introduction

Moore's law has shown that the component of each device in a coordinated circuit has been reduced by a factor of around two at regular intervals. As a key driving factor for technical progress since the late twentieth century, equipment reduction has been the primary driving force behind technological advancement. [1] According to the report of an international technology roadmap for semiconductor (ITRS) 2009 release, further decrement has hit genuine limitations related to manufacturing innovation and device exhibits, as shown by the ITRS 2009 release, since the basic measurement has been lowered down to the sub-22 nm zone. Points of confinement include short channel effects, short channel burrowing, and differences in device construction and doping, to name just a few examples. In addition to electron burrowing via narrow channels and thin protective coatings, and the leakage currents that occur from this, there are other places of confinement. [2] A single carbon nanotube (CNTs) or different types of carbon nanotubes in the typical mass MOSFET structure may be used to reduce these breaking points to some

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Automatic shopping trolley using IOT

Tejashwi Raj, Yaksh Cheema, Vishal Kumar Singh, Anshu Kumar, Shiv Narain Gupta

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Abstract

The large crowds' rush in the shopping malls is increasing day by day. Modern technology has increased the standard of living for humans day by day and large numbers of people are seen at shopping malls. To save the time of customers, it is important to reduce the time of the billing queue. This is done by using an automatic shopping trolley that uses an RFID sensor. Items that are put in a shopping cart read the RFID tag one by one and the bill is generated and displayed on the LCD display of the trolley and on the website as well. After the total bill is generated, the customer of the shopping mall usually pays their bills by using their net-banking or by using UPI. The main aim of this work is to reduce the time for billing.

Introduction

Now a day's shopping is one of the most difficult things to be waiting in a queue for a long time for the billing of the products that are put in the cart. The greater the number of products can add, the more time-consuming it is at the time of billing. The main aim of the smart trolley is to reduce the time management for the billing to avoid huge crowds in the billing area of the shopping mall. So, that the customer does not have to wait at the time of making payment. The customer only needs to pay by their card or through online mode. The other feature of this smart trolley is that the customer can make payment through their net-banking or by using their UPI payments. Finally, the information for the payment will be sent to the display or to the website of the shopping mall to the individual's account.

Section snippets

Literature survey

Low Power Optimization of Full Adder using GNRFET Technology– A Review

Publisher: IEEE

Sanjay Singh ; Pooja Saxena ; Mukesh Kumar Ojha ; Dhiraj Gupta All Authors •••

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This review paper illustrates the advantages of GNRFETs and their use in adder circuits to reduce interconnect and improve delay, power dissipation, and speed. Future nanotechnology will have to deal with CMOS limitations such as DIBL, short channel effect, high leakage current, and temperature-dependent threshold voltage. Graphene nanoribbon FET solves these problems. Because its channel is formed by graphene ribbons, graphene nanoribbon FETs have replaced CMOS. Several studies are currently underway to develop and examine the application of graphene nanoribbon FET in half and full adders. A comparison study for half and full adders using graphene nanoribbon FETs is presented in this article, with parameters like propagation delay, power dissipation, and PDP being studied. In comparison to CMOS logic, graphene nanoribbon FET-based digital circuits are substantially more efficient. We are expecting 99%, 85%, 97% and 87% reduction in power consumption, delay, Power delay product and leakage power respectively. HSPICE software is used to simulate the performance parameters and results.

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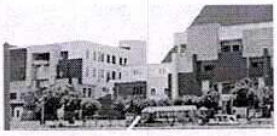

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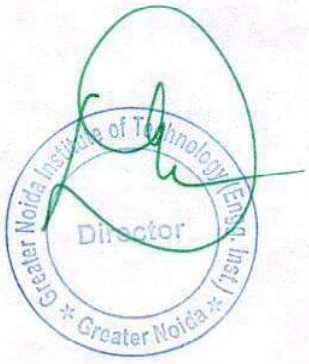

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9. Cinnamon

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Abstract:

Cinnamon in India, is commonly known as "Dalchini". It is well known spice which is used all around the world in different forms and in different ways. Cinnamon belongs to the family Lauracae. The cinnamon is mainly cultivated to get cinnamon bark, cinnamon leaf and cinnamon oil. Cinnamon is a hardy plant; it can be cultivated in any type of soil. But the climatic conditions affect the quality and nutritional composition of the bark or tree. The cinnamon has sweet and volatile aroma because of the presence of volatile compounds in it. The nutritional content of cinnamon varies, depending on the geographical conditions where it is grown and processed. Fertilizers are applied in two equal doses during the month of April to June and August to October. In case of cinnamon, pruning is not much required, only damaged parts and branches are removed from the plant. The shoot of the cinnamon are harvested in the month of Sep-Nov. Its processing costs account for 60% of its total production cost. It indicates that the processing of cinnamon is most crucial, time taking and laborious job. This processing affects the total quality of the end product. The products we get from cinnamon tree are used in the medical treatment of many ailments like fungal infections, blood sugar, cough, cold, diarrhoea, tooth ache, etc. Due to its medical and health related benefits; it is easily marketed to pharmaceutical companies, ayurvedic stores, local markets, hotels and restaurants.

Keywords: *Cinnamon, nutritional composition, processing, ailments*

9.1 Introductions:

Cinnamon, one of the world's most beloved and popular spices, is used almost all over the world. We obtain this spice from the dried inner bark of a tree known as Cinnamomum zeylanicum. Indonesia is the biggest producer of cinnamon, accounts for nearly 40 percent of the total global production. Next to Indonesia is China, followed by Vietnam and Sri Lanka. The dried inner stem of Cinnamon vernam is the True Cinnamon or Sri Lankan Cinnamon. These evergreen plants are grown as bushes. At the age of two years they are measured about 2 meter in height and at base 8 to 12 cm. At this stage they are ready to

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Abstract:

Cinnamon in India, is commonly known as "Dalchini". It is well known spice which is used all around the world in different forms and in different ways. Cinnamon belongs to the family Lauracae. The cinnamon is mainly cultivated to get cinnamon bark, cinnamon leaf and cinnamon oil. Cinnamon is a hardy plant; it can be cultivated in any type of soil. But the climatic conditions affect the quality and nutritional composition of the bark or tree. The cinnamon has sweet and volatile aroma because of the presence of volatile compounds in it. The nutritional content of cinnamon varies, depending on the geographical conditions where it is grown and processed. Fertilizers are applied in two equal doses during the month of April to June and August to October. In case of cinnamon, pruning is not much required, only damaged parts and branches are removed from the plant. The shoot of the cinnamon are harvested in the month of Sep-Nov. Its processing costs account for 60% of its total production cost. It indicates that the processing of cinnamon is most crucial, time taking and laborious job. This processing affects the total quality of the end product. The products we get from cinnamon tree are used in the medical treatment of many ailments like fungal infections, blood sugar, cough, cold, diarrhoea, tooth ache, etc. Due to its medical and health related benefits; it is easily marketed to pharmaceutical companies, ayurvedic stores, local markets, hotels and restaurants.

Keywords: *Cinnamon, nutritional composition, processing, ailments*

9.1 Introductions:

Cinnamon, one of the world's most beloved and popular spices, is used almost all over the world. We obtain this spice from the dried inner bark of a tree known as Cinnamomum zeylanicum. Indonesia is the biggest producer of cinnamon, accounts for nearly 40 percent of the total global production. Next to Indonesia is China, followed by Vietnam and Sri Lanka. The dried inner stem of Cinnamon vernam is the True Cinnamon or Sri Lankan Cinnamon. These evergreen plants are grown as bushes. At the age of two years they are measured about 2 meter in height and at base 8 to 12 cm. At this stage they are ready to

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5. Chicory Roots

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Abstract:

Chicory (chincorium intybus) is a flowering plant usually found near the roadside Chicory roots are elongated rigid, fleshy tapered shape tap roots. Raw chicory root can be eaten as a salad or as boiled it has many medicinal and nutritional properties. It is used to flavor the food and packing food. Chicory root has starch like inulin fibre. Chicory root is used to extract chicory coffee, chicory wine and vinegar also. Chicory coffee is ultimate substitute of caffeine-free coffee. It is the rich source of vitamin C, manganese, inulin, potassium, phosphorus, due to their antioxidant properties, they can help boost immunity. It is used for constipation, regulate blood pressure, loss of appetite stomach upset, gall bladder disorder and weight loss. Chicory root fiber inulin is sweet in taste so can be used as sweetener for diabetes. Although ground and supplemental chicory root is considered as safe but can cause bloating and gastritis. Due to various health and medicinal benefits, it is a subject for research and investigation.

Keywords: *Inulin, extract, roast, soak, submerged.*

5.1 Introduction:

Chicory is a plant that belongs to the daisy family Asteraceae. It is a flowering plant with white or pink or blue color. Chicory has many varieties which are cultivated for chicons (buds), Salad (leaf) and roots (coffee), and many more.

Inulin which is an extract of chicory root has been used in the food industry as a sweetener for dietary fiber. ***(Raninen, 2011)****. Chicory is grown as a forage crop.* ***(Blair, and Robert, 2011)****. Chicory is the common roadside plant in North America, China, Australia, and Native Europe.* ***(Flora of China, 2016).*** *Its seeds, roots, and dried above-ground parts have many medicinal properties.*

Chicory roots can be smaller or large according to cultivation conditions chicory roots may be an elongated slender tapered shape with narrows to a thin point like parsnip. The skin is cream-colored to tan, thin firm, and covered with root hairs.

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4. Seaweeds

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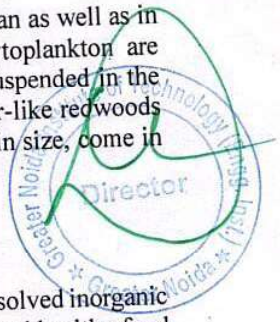
Abstract:

Throughout the world, many natural resources necessitate the development of alternative resources to produce commodities such as food, fuel, cosmetics, and pharmaceuticals. Seaweed aquaculture has the potential to play an important role in the future marine resource. China and Indonesia are the biggest producers of brown and red algae. The various seaweeds are processed by biotic process and abiotic process, the microwave system is reducing extraction time and also consumption of organic solvents. Due to anti-microbial, anti-inflammatory agents, antioxidant characteristics, there are more species of seaweeds that are used in pharmaceuticals. Seaweed contains many vitamins (A, C, and E), minerals, and protective pigments. Seaweed has a decent amount of iodine, a trace mineral vital for human health and the function of the thyroid. It is a huge marine resource for mankind, drugs, cosmetic products, nutraceuticals, and foods.

Key Words: *Marine Resources, Algae, Pharmaceutical, Seaweed Iodine, Antioxidant*

Seaweeds are countless species of marine plants and algae found in the ocean as well as in lakes, rivers, and other water bodies. Some seaweeds such as the phytoplankton are microscopic that provide the base for most marine food chains and live suspended in the water column. Some are enormous that grow in abundant forests and tower-like redwoods in underwater from their roots at the bottom of the sea. Most are medium in size, come in colors of brown, red, green, and black. (NOAA, 2021)



4.1 Production:

Seaweeds (autotrophic organisms) use sunlight to extract from the water dissolved inorganic nutrients and produced biomass. For that reason, besides being nutritious and healthy food and other applications, seaweeds are a very crucial compound for sound ecosystem management. In the twenty-first century, the exploitation of marine resources (for example, fed aquaculture of finfish and shrimp) will need to balance with the establishment of seaweeds production for the sustainable growth of aquaculture. Seaweed already represents

HEALTHY DIET FOR HEALTHY LIFE

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HEALTHY DIET FOR HEALTHY LIFE
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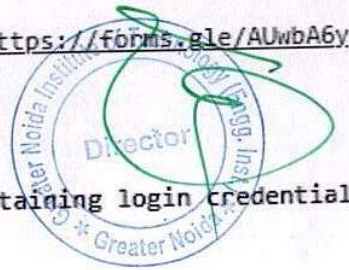

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PHYSICS OF ELEMENTARY PARTICLES AND ATOMIC NUCLEI. THEORY

Rigid Triaxial Rotor Model Description of γγ-Band in Some Even Nuclei

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Abstract—The odd-even staggering (OES) in γγ-band in rigid triaxial rotor model (RTRM) is investigated at different asymmetry. It is found that the OES in γ-band and γγ-band obtained from rigid triaxial rotor model (RTRM) are different with some details, essentially, they are similar: both of them are constant for an axial rotor and staggering appears in same phase for a rotor with large triaxial deformation. The onset of zigzag behavior of staggering indices $S(I)$ in γγ-band appears from $S(8)$ at $\gamma = 25°$ however, in γ-band from $S(8)$ at $\gamma = 15°$. Thus, similar OES curve in theory and experiment at specific asymmetry for an individual nucleus in γγ-band may be the criterion to distinguish γ-rigid or γ-soft structure of nucleus, not the alternate positive and negative values of $S(I)$. The experimental OES in γγ-band for some even nuclei is calculated and compared with rigid triaxial rotor model predictions and their structure has been commented.

Keyword: odd even staggering, rigid triaxial rotor model, γ-rigid, γ- and γγ-band

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1. INTRODUCTION

In past few decades, extremely rich experimental data have been accumulated in low-lying nuclear spectroscopy. Recently the large and efficient gamma-ray detector arrays are used which make a remarkable progress in the experimental yielding of many high spin states in nuclei including a fresh appearance of γγ-band, besides the usual ground state band and γ-band spectrum [1–12]. The first experimental information about the γγ-band was reported in ^{168}Er using a high resolution γ-ray spectroscopy following the neutron capture reaction [1]. However, Warner et al have given the first theoretical analysis using the interacting boson model with s and d bosons [13], thereafter; various theoretical approaches have been used to analyze the γγ-band that are nicely discussed by Masayuki Matsuzaki [14]. Yang Sun et al have applied the triaxial projected shell model to ^{166}Er and ^{168}Er nuclei to investigate the multi phonon gamma vibrational band commonly known as γγ-band in the literature [15]. In this model, the shell model diagonalization is carried out in a deformed basis with triaxiality and this model gives the states of γγ-band in kinematical manner similar to Davidov–Filippov's model [16]. The inclusion of the fixed triaxiality in the projected shell model (PSM) for triaxial nuclei not only improves the ground state band moments of inertia but also a realistic γ-band appears [17]. With the same fixed triaxial parameter, the single diagonalization of Hamiltonian with deformed basis produces the higher lying γγ-band. These studies indicate the role of static triaxiality in reproducing the ground state and γ-band along with the γγ-band in transitional nuclei. Modified soft rotor formula (MSRF) has been found successful exposing the rotational character of nucleus reproducing the energies of ground state and γ-band along with the γγ-band [18]. Therefore, the rigid triaxial rotor model is used in which all the three bands i.e., ground state, γ and γγ-band appears due to rotation of rigid nucleus in a natural way.

In the present work, we shall investigate whether more than a half century old prediction on the existence of γγ-band has become a reality. We shall evaluate the values of energy levels for the observed spectrum within the framework of rigid triaxial rotor model and compare them with the experiment just to explore whether the γγ-band is an outcome of rotation of rigid nucleus along with the ground state and γ-band in some even-even nuclei under consideration. The energies predicted in RTRM are large as compared to the experiment due to different effects like centrifugal stretching and Coriolis Effect [19]. Earlier, the high-energy values predicted in RTRM for ground state and γ-band in $A \approx 100$ and $A \approx 130$ mass regions

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Using Waste and Polymer for Soil Stabilization

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Abstract:- Soil stabilization is a technique for improving and refining engineering qualities. Expansive clay soils are those whose volume fluctuates as the amount of water in the soil changes. In civil engineering, soil is one of the most regularly encountered materials. When constructions are discovered atop expanding soil, geotechnical engineers all over the world face major challenges. Stabilization of soil is the process of enhancing soil strength by artificial means. They have a tendency to inflate and shrink, posing a major threat to anything placed on top of them. The results of an attempt to fortify and stabilize clay soil with plastic strips are presented in this research. The plastic strips were produced and added in three different aspect ratios and three different mixing ratios (0.4%,0.8%,1.5%) by weight (4mm x 7mm, 8mm x 14mm,12mm x 18.5mm). The experimental findings revealed that shear strength parameters improved significantly. The soil's swelling and desiccation cracking tendencies were also significantly reduced. The optimum moisture content was reduced significantly, but the maximum dry density increased little. Based on the importance of the selection criterion for a specific engineering activity, the ideal plastic size (aspect ratio) and plastic content that produces the best outcomes can be chosen. The difficulties are solved concurrently by stabilizing vast soils using waste plastic bottles. The findings of this study point to the possibility of using this material in expanding soils to increase ground stability in geotechnical engineering.

Keyword:- *Clay Soil, Plastic Strips, Plastic Powder, Soil Stabilization, CBR Test.*

I. INTRODUCTION AND MATERIAL USED

A strategy for improving the qualities of poor soil is soil stabilization. Mechanical strength, permeability, compressibility, durability, and plasticity are only a few of these characteristics. Polymers interact with clayey particles in the soil, increasing soil strength. Many of the polymers currently in use have the ability to improve the soil's water retention and shear strength. Building on expansive soils necessitates stabilization to prevent swelling and increase mechanical capacity. Soil stabilization is the process of enhancing the soil's engineering qualities and making it more stable. It is used to reduce unqualified soil properties such as permeability and consolidation potential while enhancing shear capacity. The approach is most commonly used in highway and airport construction projects. Compaction and pre-consolidation are commonly employed to improve types of soils that are already in good shape. Soil stabilization goes a long way in encouraging the use of weak soil and reducing the cost of weak soil renewal. PET bottles are common plastic bottles. Waste, soft drinks, liquid snacks, and a variety of other beverages are packaged in them. Their disposal is becoming more challenging as their demand grows. In nature, waste PET bottles take a long time to degrade (more than a hundred years). Recycling and using these plastic bottles to stabilize expansive clay soil are positive steps forward, and the construction industry is an ideal choice due to its enormous consumption capacity. This will be a good way to clean up and preserve the environment from discarded plastic bottles. Adding plastic strips to the floor as a stabilizer increased shear strength, tensile strength, and California bearing ratio.

II. MATERIAL AND METHOD

A. Materials

This study used two materials: a representative clay soil rectangular PET bottle strip and a representative virgin soil rectangular PET bottle strip. The strips were made from scrap plastic bottles found in the neighborhood. After collecting, the bottles were cleaned properly and manually sliced into three different sized strips (figure 1), with the strip sizes listed in Table 1.

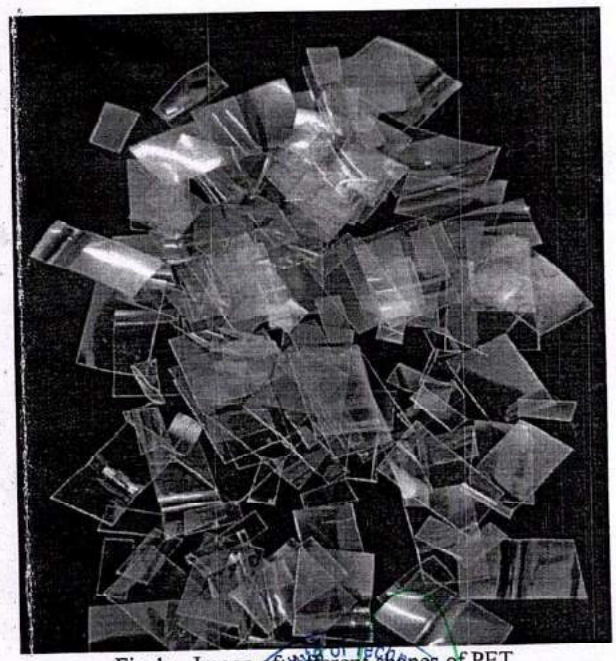

Fig 1:- Image of different shapes of PET

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Soil Stabilization Using Plastic Chips, Granules & Sugarcane Bagasse Ash Mixture

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Abstract: ***Soil is mainly the foundation of structure, that actually supports the structure from its beneath and hold it for a life long time and spread the load uniformly. If the stability of a soil would not be proportionate enough to hold or to support the structure then the chances of the breakdown of the structure might occur in the true form of its settlement and development of cracks. So, the soil stabilization will help in enhancing the shear strength of the soil as well as it enhancing the shrinkage and swelling properties of soil. It will also help in increasing the load bearing capacity of our soil in support of foundations and pavements. Soil stabilization can also be done by using the various admixtures such as lime, fly ash, cment etc. but in present day, these admixtures happen to be more expansive to be use as soil stabilizing mixture. So this problem is demanding an alternative solution in making the soil stabilizing process cheap and economic by using wastes as a stabilizer.This research work present the use of excess waste generated in our present and make it hazardeous. India generates nearly around 2600-2700 tons of plastic wastes everyday which is seriously one of the major problems not too for the India but also for the whole world. The harmful gases being generated by the various plastics such as furnace, dioxin, mercury e.t.c. into the open atmosphere and have a threat to our vegetation, humans life and animals as well. In the past recent years, the researchers from the various fields have attempt their best to solved the ecological problems occurred by plastic. But our major motive of this project is to properly analyse the potential capabilities of using plastic types as a stabilizer as well as sugarcane bagasse and its ashes. Bagasse ash as we all know, spread generally over the farms and dumped in ponds which causes severe environmental problems and also many researchers stated that ashes being dumped in the open workplace exposure can cause chronic lung infections. So there is seriously a major concern to reuse the sugarcane bagasse ash. This new techniques of soil stabilization could be essentially meet the various challenges in terms environmental concern. Plastic wastes being converted into chips will be used as a reinforcement in stabilizing the soil. So recommendation of using plastic waste and bagasse ash as a soil stabilizer will reduce the problem of disposing wastes and also helps to reduce the environmental problems.***

Keywords: Soil stabilization, Soil, Plastic waste, Plastic waste granules, Sugarcane bagasse ash, CBR, UCS, DST, Enviromental concern.

I. INTRODUCTION

In India, during the modern time period of soil stabilization, which has begun in the early 1970s. with an actual deficiency of aggregates and petroleum compounds, It has become requisite for the engineers to overlook the matter to improve the soil other than thinking of substituting the poor quality soils at the construction or building constructing sites. The Soil stabilization used to adopted in early times but due to the shortage of methods and moreover due to the unavailability of proper techniques and accurate methods, soil stabilization has lost its favour. In recent times, with the rapidly increase in the demand for modern infrastructure, fuels and some of the raw materials, the soil stabilization then started coming back into its existence. But, with the presence of betterment of research, varieties of specified materials as well as equipments, these all emerge as the cost effective method for the improvement of weak soils. Here, in this specfied work, the soil stabilization, that has been performed with the help of the randomly accumulated plastic wastes being converted into chips and a granule like shapes by the help of plastic machine cutter and sugarcane bagasse ash to the improvement of the shear strength parameters, compactive effort and to endure the bearing strength of the poor soil.So, soil stabilization can be applicable on the highway embankments, earthen bunds, soil under footing, retaining walls, as well as layers of subgrade soil. Soil stabilization using some fibres was the first explained by the researcher Heni Vedal in 1996, which has include in his study about the introduction of the materials which is tensile in nature to be added into the soil mass to improve the strength behaviour and its properties like stability, bearing capacity and deformation. Technically, we aware that the tensile strength of the soil mass is almost negligible whereas, soil has higher compressive strength comparatively to it, it is limited by the shear resistance of the soil.

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COMPARISION OF CONCRETE MADE THROUGH TSMA USING METAKAOLIN AND GGBS Vs NORMAL CONCRETE MADE THROUGH NMA

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Abstract - *The manufacture and use of sustainable materials, via disposal or reuse/recycling, can be done in a way that preserves the environment, creates no ecological imbalances, has no negative effect on human health, and can be done for a long time without sacrificing productivity. The use of recycled aggregate in concrete may help to preserve the environment. By separating the mixing process into two phases, a novel concrete mixing technique was developed to improve the quality of recycled aggregate concrete.*
This article presents two modified mixing techniques that differ from the two-stage mixing strategy in that they balance cement components with the amount of RA added in the second mix, which is referred as the two-stage mixing approach. Metakaolin and GGBS were also utilized to enhance concrete characteristics such as compressive strength, flexural strength, and permeability in a two-stage mixing process. After that, the results of concrete produced using the Two Stage Mixing Approach and concrete prepared with the Normal Mixing Approach were compared.

Key Words: Recycled Aggregate, Ground Granulated Blast Furnace Slag, Metakaolin, Two Stage Mixing Approach, Normal Mixing Approach

1. INTRODUCTION

Construction is the backbone of infrastructure development. Concrete, which is an essential building element, is the world's second-most-used item after water. Natural resources, such as stone, aggregate, sand, and water, are the basic ingredients of concrete, implying that this sector degrades these environmental assets. Moreover, aggregate quarrying and transportation contribute to environmental imbalance and pollution. Since World War II, recycled aggregates (RAs) from waste (CDW) have been utilized.

High recycling rates have been reached in a number of nations, especially in Europe, including the Netherlands, Denmark, and Germany, among others. This has been aided by those countries' comparatively low natural resource reserves, which have been converted to construction materials, or by the development of strict environmental legislation. These variables have allowed RA to be used in real construction applications, albeit with significant constraints, such as in-road pavement layers, embankments, and earth-filling activities.

Limits on the replacement ratio reflect empirically established impacts of recycled aggregate on concrete in previous research projects. Indeed, the quality of the aggregates determines the primary technical issues that arise when recycled aggregates are used. The compressive strength, flexural strength, and water permeability of concrete prepared with NMA and TSMA are compared in this research. The idea of the use of recycled material in concrete is not new; worldwide research has been carried out on recycled aggregates. However, recycled aggregates in India have failed to acquire momentum in the production of high-strength concrete.

2. LITRATURE REVEIW

2.1

In this paper, Sandeep Uniyal (2014) will describe two criteria that have been used to measure the compressive and flexural strength of concrete prepared using the two-stage mixing approach (TSMA). These parametric parameters are compared to traditional concrete with a percentage of recycled coarse aggregates (RCA) and fly ash variation. The results of this study show that concrete manufactured with 25% and 50% RCA substitution and 10% fly ash addition using TSMA has higher compressive and flexural strength for both 7 and 28 day strength than the comparable nominal concrete specimen made by NMA.

2.2

This experimental work, credited to Santosh Kumar and Sonu Pal (2017), focuses on the pre-soaked slurry two-stage mixing approach (PSTSMA) for getting the greatest mechanical properties. In the M40 concrete grade, recycled aggregate was employed as a 30 percent, 50 percent, and 100 percent replacement for natural aggregate. When compared to the Normal Mixing Approach, the PSTSMA approach improves the strength of recycled aggregate concrete by up to 6.35 percent at 28 days (NMA).

2.3

By a two-stage mixing approach Dr. Vanita Aggarwal (2014) did a modified mixture involving recycled coarse aggregates (RCA) and fly ash to increase the proportioning of the ingredients. Results from the experimental analysis were presented which showed changes in compressive strength. As a result of the porous nature of RA and the premixing process, TSMA has improved the strength of RAC. This can be

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Dynamic Analysis of G+15 Multi-storied RCCCommercial Buildings with Different Plan Configuration in Seismic Zone V using ETABS 2018

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Abstract:

Buildings in present scenario are having asymmetry in both in plan and elevation, which may subject to hazardous seismic ground vibrations causing collapse of building structure. Therefore, it is required to find out the behavior of the structures to survive against seismic forces in order to prevent the loss of life. This paper looks at the study of seismic response of the buildings with six different plan configurations. Response Spectrum Analysis has been carried out for six G+15 multi-storied RCC commercial buildings with different plan configuration (Rectangular, L, I, O, T and U) in seismic zone V using ETABS 2018 software. The analysis is carried out as per the latest Indian seismic code 1893(Part-1):2016"Criteria for Earthquake Resistant Design of Structures". The responses obtained for each structure are compared. It is observed from the results that, all the buildings exceed the permissible limit for drift by about 36% and permissible limit for displacement by about 96%. Furthermore, the irregular shapes buildings (L, I, T and U) shows poor performance than regular buildings (Rectangular and O); U-Shape building is the worst among all.

Keywords— ETABS, Response Spectrum, Storey Displacement, Storey Drift, Storey Shear, CM Displacement, Storey Overturning Moment, CM and CR.

I. INTRODUCTION

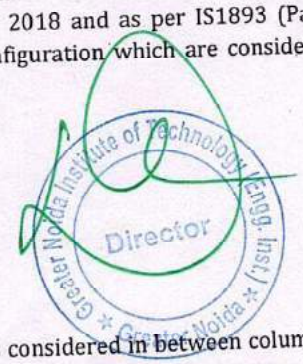
Seismic ground motions are caused by tectonic movements in the Earth's crust. The main reason for earthquake is when tectonic plates collides and rides one over the other, initiating hazardous earthquakes vibrations. The vibrations set up in the earth's crust, causing earthquakes which spread outward in all directions from the source of origin.

One of the latest earthquakes that occurred recently was in Nepal. On 25 April 2015, earthquake of magnitude around 7.8 destroyed housing in the Kathmandu, damaged the Word Heritage sites, and triggered deadly avalanches. Thus it is necessary to analyze and design the structures for hazardous seismic forces in order to prevent the loss of life and capital.

1.1 TYPES OF RCC FRAMES

Here the study is carried out for the behavior of G+15 multistoried RC commercial buildings with different plan configuration in seismic zone V. The modeling and analysis is done in ETABS 2018 and as per IS1893 (Part-1):2016 "Criteria for Earthquake Resistant Design of Structures". Six different plan configuration which are considered for the seismic analysis of the same structure, are mentioned below-

1. L-shape building
2. Rectangular shape building
3. U-shape building
4. O- shape building
5. I- shape building
6. T-shape building



The building is modeled in plan of 24m x 28m.Center to center spacing of 4m is considered in between columns. A height of 3m is assumed in between floor to floor. Plan and 3D view of the buildings for all the proposed cases are shown in the Fig. 1 to Fig. 6.

Following are the material properties consideredfor the analysis of the structures-

1. Steel grade: HYSD500
2. Concrete grade: 30Mpa for columns and 25Mpa for beams

Evaluation on Risk Assessment on Indoor Air Pollution: A Case Study of Delhi-NCR Region

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Recent Trends in Industrial and Production Engineering pp 185–196

Influence of Incorporating Industrial Byproducts/Wastes on Mechanical Properties and Durability Characteristics of Self-Consolidating Concrete: A Review

Rajat Saxena, Trilok Gupta, Rajesh Kumar Sharma & Saurav Yadav

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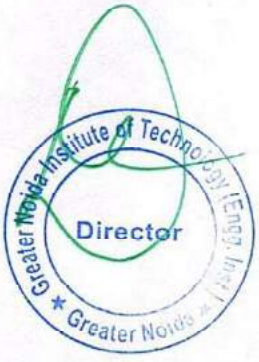
Abstract

Huge quantities of waste materials are generated daily from different industries and manufacturing units. The increasing amount of wastes, and the disposal issues related to wastes, are the major concerns of researchers and environmentalists these days. Factors, like less availability of space for landfilling and huge costs involved in landfilling, are influencing researchers toward waste utilization.



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Load frequency control of a microgrid employing a 2D Sine Logistic map based chaotic sine cosine algorithm

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ABSTRACT

This paper proposes a maiden application of a two dimensional Sine Logistic map based chaotic sine cosine algorithm (2D-SLCSCA) optimized classical PID controller for load frequency control (LFC) of an islanded microgrid (MG). In comparison to random variables and 1D chaotic sequences, the 2D chaotic sequences are more ergodic and possess a wider chaotic range, thereby enhancing the global convergence speed and search capability of an algorithm. Initially, the proposed 2D-SLCSCA is tested on eight classical benchmark test functions and its performance is compared with 1D Logistic map based chaotic SCA (1D-LCSCA), 1D Sine map based chaotic SCA (1D-SCSCA), and the SCA incorporating random variables. Test results reveal that the proposed algorithm exhibits better convergence characteristics, statistics, and execution time. Finally, the proposed 2D-SLCSCA is implemented for the LFC analysis of the islanded MG. To establish the competence of the proposed algorithm in this regard, its performance is compared with 2D Hénon map based chaotic SCA, 2D Lozi map based chaotic SCA, improved salp swarm algorithm (ISSA), SCA, grey wolf optimizer (GWO), and particle swarm optimization (PSO) algorithm considering diverse load disturbance patterns in the MG. Simulation results affirm that the proposed control scheme augments the frequency response of the MG exhibiting a maximum percentage improvement of 78.89%, 78.86%, and 96.51% in peak overshoot (OS_{peak}), peak undershoot (US_{peak}) and objective function (OF_{ITSE}) value, respectively as compared to the other algorithms. Furthermore, sensitivity of the proposed 2D-SLCSCA is validated considering ± 30% variation in the MG parameters.

1. Introduction

Increasing concerns over global warming due to harmful emissions from conventional power plants and gradual depletion of fossil fuel deposits have led the experts worldwide to shift their focus towards utilization of renewable energy sources (RESs) (like wind and solar energies) for power generation. These RESs possess inherent advantage of availability in abundance and are environmental friendly. The RESs when operated at low voltage/medium voltage levels in coordination with other distributed generation (DG) sources (like fuel cell, diesel engine generator, micro turbine, etc.), energy storage systems, control units, and electric loads constitute a small network that is capable enough to satisfy the power demand of its region. This small network is termed as an MG. Improved power quality, increased flexibility, reliable power supply, reduction in feeder capacity, and reduced transmission losses are the principal advantages associated with the MGs [1]. An MG is capable of operating either in grid-connected or islanded mode. In rest of the paper, MG and islanded MG have been used interchangeably. Although the MG expedites an increased penetration of the RESs but at the same time sporadic nature of these RESs and low inertia of the DG sources installed in the MG may cause an imbalance between the power generation and load demand. Consequently, this imbalance may result in intense frequency deviation problems in the MG (especially in the islanded mode). The resulting frequency deviations degrade the power quality, thus, affecting the reliability and stability of the MG. In such a regime LFC plays an indispensable role. LFC aims at restraining the frequency deviations within some pre-specified limits by reducing the disparity between the power generation and load demand, thereby preserving the power quality, reliability, and stability of the MG. To achieve this, proper implementation of an effective LFC strategy is obligatory.

Due to their simple structure, ease of tuning, reliable operation, lower expertise requirements, and a decent harmony

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An Application of Analytical Hierarchy Process in Selection of Coating Material Composition in Lost Foam Casting Process

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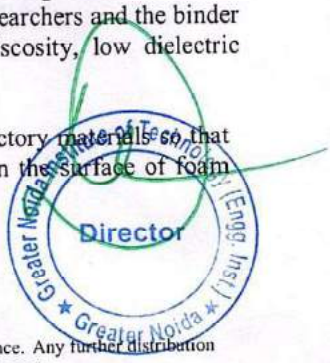
Abstract. In modern industrial era, the dimensional accuracy and surface finish are two major criteria in the selection of casting process. To achieve this paradise, lost foam casting is one of the casting processes. In this casting process, the shell is made by removal of expandable polystyrene or foam pattern with the application of heat. During the foam decomposition process, many problems have been generated such as bending, expansion, distending and crack of the shell. These problems may be eliminated by selecting the optimum ratio of coating materials. In this research work, zircon and aluminium silicate refractory coating materials with sodium silicate binder have been used with different composition and prepared the four test samples from them. For selection of best shell material composition, analytical hierarchy process is used.

Keyword: *Foam Pattern, Zircon, Alminium Silicate, Sodium silicate, Analytical Hierarchy Process*

1. Introduction:

In automobile sectors, castings made of Aluminium and its alloys are extremely applicable because these are replacing the heavy forged steel and cast. It became very important to produce defect free aluminium castings without using secondary machining. Investment casting is one of the oldest casting processes. It is used for producing better dimensional accuracy of complex shape products. Another important process is Lost Foam Casting (LFC). In this process lost foam pattern is used. It is a cavity less and binder less process. With the help of this process, we can fabricate the automobile and IC engine components such as cylinder head, piston, connecting rod, brake shoes etc. as well as agriculture equipment [1-2].
The lost foam selected for LFC process have 92% C and 8% H. C6H5 benzene ring in lost foam is comparatively stable and –CH= CH2- chain tends to decompose first. The benzene ring remains in liquid phase and reacts with melt causing casting defects. Polymethylmethacrylate (PMMA) decomposed mostly into gas phase, like 80% at 700° C while polystyrene only 40% at 700 °C [3-6]. Coating materials such as siliminite, quartz, aluminum silicate, zircon flour etc have been used by various researchers and the binder for cost effectiveness. Zircon and aluminum silicate have high density and viscosity, low dielectric constant, and pH value nearer to neutral refractory [7-10].

The selection of binding agent depends on the shape and size of particles of refractory materials so that the bonding and adhesive strength of particles and binders has been increased on the surface of foam pattern. Sodium silicate and potassium silicate with



Application of thermal spraying process in advancement of welding Technology

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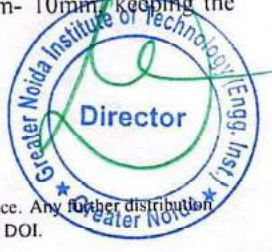
Abstract: In the contemporary world, with the incubation of advanced technologies and tremendous outbursts of research works, simplification of large cumbersome tasks with assets to saving time and money is perhaps one of the most crucial aspects in the current scenario. This paper focuses primarily on advancing welding technology using thermal spraying as the major tool for improving the cost, labor and time associated with some of the common welding processes. The analysis has been carried out on mild steel plates having the thickness of 3 mm & 4 mm thick. This has indeed provided multi-faceted benefits such as weldability of similar and dissimilar metals keeping in mind the quality of welded joint, cost of operation and minimizing time for achieving optimum results etc. The study has also compared different welding processes to that of thermal spraying for achieving the same results based on well-defined parameters, as discussed in further sections. Ultimately, now with thermal spraying a plethora of processes can be accompanied such as coating, cladding etc, in addition to welding technology as well.

Keywords: Thermal Spraying; Oxy-acetylene Welding; BronzoChrome-10185; SEM; Microstructure

1. Introduction:

The primary factors influencing the credentials of any welding technology depends entirely on cost, time and labor associated with the particular processes. Although in some cases this may seem to be a herculean task to be accomplished, keeping the feasibility of the process in mind. However, with the incorporation of thermal spraying technology, welding of a variable material type has been made easier compared with the past processes such as Gas Metal Arc Welding, Shield Metal Arc Welding etc.[1-3]. Thermal spraying is a group of processes in which finely divided metallic and nonmetallic materials are deposited in a molten or semi molten state on a prepared substrate [4,5]. Among the various types of thermal spraying processes, major emphasis has been laid on the usability of flame spray process in our experimental research and analysis. The temperature of the flame spray varies around till 3200^{0}C with a low particle velocity of around 110 m/s. The coating thickness varies from 5 mm- 10mm, keeping the spraying distance constant in the process.



Estimation of temperature during TIG welding of titanium

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Abstract: In this experimentation work, the welding of titanium (commercially pure of grade 2) has been performed. The technique used to perform the welding is Tungsten Inert Gas Welding. Several experimentations have been performed to get the preferred welding. On which further studies have been done. Temperature has been measured during the welding process to get the estimation.

Keywords: Gas tungsten arc welding; TIG Welding; HAZ; microstructure.

1. Introduction

TIG welding process is an arc welding process which uses a non consumable tungsten electrode to form an electric arc between work piece and the tungsten electrode [1,2]. Tungsten has a high melting temperature of about 3422°C; this extremely high melting point of tungsten helps in the formation of the arc without causing the electrode to melt [3,4]. Usage of TIG welding is mainly observed in aircraft industry [5]. TIG welding especially improved the welding of hard to weld metals like aluminium and magnesium [6-8].

Titanium and its alloys have proven themselves to be very useful and effective in a lot of different applications. They have great mechanical and material properties at elevated temperatures. It can form oxides and cause the weld to be brittle which is not desirable and makes its welding a difficult task. Corrosion resistance of the metal and high strength-to-density ration of titanium can be considered its most useful properties [9]. Because of these properties it is vastly popular in aerospace and marine engineering, military and industrial processes etc [10,11].

Generally, in regards with the alloying elements and microstructure of the titanium alloy, the alloys are classified into four major groups:

1. α Alloys
2. Near α Alloys
3. $\alpha + \beta$ Alloys
4. 4. $Metastable\beta Alloys$

High-efficiency thermodynamic cycles for Kalina power generation systems: A comprehensive review

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Abstract: In this paper, different Kalina power cycles have been identified and presented. The main endeavor of this review paper is to propel a complete understanding of simple and complex Kalina power generation systems. Additionally present status emphasizing some enhanced performance in Kalina power systems has been detailed. A hypothetical study of diverse Kalina power systems, incorporating an ejector, distillation column, sliding condensation, split cycle, double pressure and variable composition has been made. These modifications to the fundamental cycle decrease expansion losses using diverse principles and they require dissimilar mechanical hardware of special intricacies and expenditures. Kalina cycle with an ejector has maximum potential for efficiency improvement followed by the sliding condensation pressure method. Generally, the alternative options present several benefits to Kalina power systems such as decreased losses, improved performance and reduced energy expenditure.

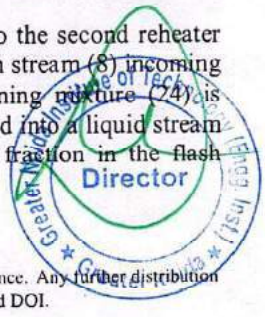
1. Introduction

It is vital to reduce fossil fuel consumption and greenhouse gas emissions for a sustainable future. Organic Rankine and Kalina power systems are two promising options which use low grade energy and have been extensively discussed in the available literature. The striking characteristic of the Kalina cycle is the increase in efficiency due to heat exchange processes occurring at varying temperatures. The increase results due to higher net work output. Efficiency is augmented by means of recuperator exchangers. The increase occurs as a consequence of the distinctive variable boiling and condensing feature of the work medium. The heat addition and rejection to the ammonia– water mixture takes place at varying temperatures. The varying temperature through the heat-exchange processes decreases the thermal unavailability. Moreover thermal pinch in a boiler is also reduced. Scientists and engineers have been investigating for the performance optimization of Kalina cycle. Researchers are making ever increasing efforts to compute thermodynamic properties of ammonia-water mixture precisely and analyze diverse Kalina cycles to improve thermal and exergy efficiencies.

2. Kalina cycle with a distillation column

Performance of the Kalina power cycle can be improved by using a distillation column. The DCSS configuration comprises of a flash separator, a flash preheater, two reheaters, an absorber, a feedwater heater and a condenser. The working fluid exiting from the turbine (15) is refrigerated in the flash preheater (16) and in the reheaters (18). It is mixed with a poor ammonia mixture (6) approaching from the separator so as to obtain a lower concentration of ammonia and hence a higher boiling temperature. This concentration (19) is called the basic composition.

After being condensed in the condenser (20) the mixture is pumped (21) to the second reheater (22) and heated. A portion of the liquid is extracted (23) to weaken the ammonia-rich stream (8) incoming via the separator so as to refurbish the composition of mixture (9). The remaining mixture (24) is exchanges heat in both first reheater (1) and flash preheater (2). The stream is divided into a liquid stream (3) with a low ammonia fraction and a vapor stream (7) with a high ammonia fraction in the flash



Optimization of FDM 3D printing process parameters using Taguchi technique

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Abstract. Fused deposition modelling (FDM) is a fast growing and low-cost 3D printing technology in order to comply most prominent demands of today's industries in terms of capability to fabricate complex parts along with high flexibility in design. The dimensional accuracy, is an urgent need of final parts printed by FDM process, that is primarily influenced by the process parameters. Optimizing the process parameters which significantly influence the dimensional accuracy is the primary goal of this study in order to achieve the ultimate final part quality. This experimental study investigates the effect of different process parameters viz. layer height, raster angle, nozzle temperature and surrounding pressure on thickness of the final part for Poly Lactic Acid (PLA) filament. Experiments, based on Taguchi's L9 orthogonal array, were performed and subsequently experimental data have been analysed by ANOVA. It has been observed that the layer height is the most significant factor in order to achieve the dimensional accuracy.

Key words- FDM, Taguchi Method, ANOVA

1. Introduction

3D (3 Dimensional) printing or Additive manufacturing (AM) has gained great popularity over the past few years due to its ability to produce complex objects with ease, available sizes, flexibility of usable materials, easy handling and wide range of applications such as engineering industry, medical sciences, food industry, construction, aeronautics, textile industry, automotive industry and so on [1]. There are various methods of Additive Manufacturing such as stercolithography, syringe extrusion, selective layer sintering, fused deposition modelling(FDM)/fused filament fabrication(FFF) being used over the field of its applications as per the requirements of industry but Fused Deposition Modelling (FDM) has become the most widely employed rapid prototyping technique among other methods [2]. FDM uses a temperature controlled head to extrude semi liquid thermoplastic through a nozzle of fixed orifice in layer by layer formation, shown in figure 1[3], the movement of printing head is controlled by a computer aided manufacturing (CAM) software[4].

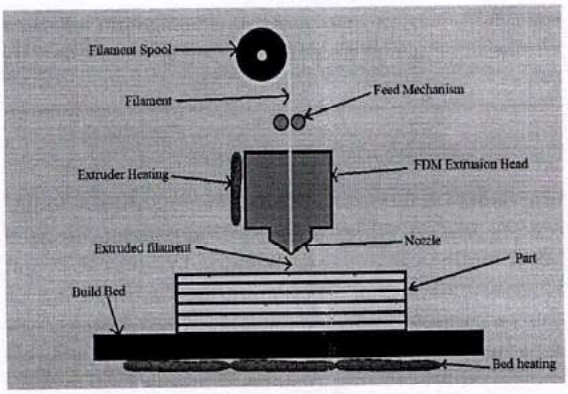

Figure 1 FDM Process Schematic

Researchers are continuously working towards improving different characteristics of FDM produced parts by tweaking with different process parameters and stating a range of optimum settings for a FDM machine and material at which the strength or production time or production cost or any other aspect is

Heat Transfer Analysis And Optimisation Of 2-Wheeler Engine Cyclinder Head Fins Using FEA

Anubhav Tiwari, Ankit Kumar, Himanshu Kumar, Dhananjay, Harendra patel, Manoj Sharma and Avinash Ravi Raja

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Abstract. This research describes about the thermal analysis of fins by FEA method. Fins are extended surfaces which help to increase the heat transfer rate[1]. In this research we observe that when heat is produced in IC engine when fuel is burned, will have to be at higher level so that thermal efficiency increases, but to fend off from damages like thermal damage, useless or excess heat have to be removed from the engine. In air cooled engine, fins are placed at upper layer or on boundary of engine cylinder to increase heat transfer rate, because of this analysis of fins is very important and help to enhance the performance of engine and also increase the life span of the engine parts. The main aim of this research is to analyse the thermal properties of fins by varying certain conditions i.e. doing some modifications in conventional model, in our research work we have done two modifications in the fins geometry. In modified model-1 we have increased the number of fins, to achieve this we decreased the gap between the fins of conventional model. And in modified model-2 we have done circular perforation of 4mm diameter on the faces of all the fins of the conventional model. The cylinder head with fins are modelled on Soildworks software 2019 version and all model's analysis is performed on Ansys software. We have used Steady State Thermal of Ansys mechanical to perform our analysis.And as per the analysis the results showed that modified model-1 has the maximum heat transfer rate as compared to other models.

KEYWORDS: Thermal analysis, Fins, FEA, cylinder block, steady state thermal analysis

1. Introduction

Fins are extended surfaces which are used to increase the heat transfer from the surface and then cool various surfaces through convection process[4]. In general heat transfer by Fins having limitations because of system's design though this problem is to be rectified by doing some modifications in design framework of fins. In engine, cooling part is very important also cooling mechanism is depend upon fin design of cylinder head. In this paper we tried to increase the heat flow rate by changing the different properties in existing model such as by increasing no of fins by decreasing gaps between the fins and by doing circular holes in fin. Through 3 D modelling software solid works we design a cylinder block by considering the data of existing model and then the thermal analysis is done on ANSYS.

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Designing E-learning Portal: How Academics come efficiently into Practice

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Abstract:

This project consists of the event of a tributary internet application to show and gather info. The goal of this application is to form the inspiration for a web-based abstraction inventory for minimize the Gap between every individual in Department. The inventory is supposed to develop a platform wherever each Student to school will access (WEFSA) simply. This is vital as a result of the push to modernize infrastructure ends up in cut back useful gap and examine the matter. the net application can consist all totally different interface for Actor's happiness to the department together with their practicality and access assigned with them to use remotely.

We introduce a cloud storage and cyber security elementary to form the web site safer and simply accessible. Cloud Computing could be a general term that involves delivering the hosted services over the net. As Cloud Computing has mature in quality, totally different models and preparation methods have united to assist the particular wants of various users. every style of cloud service supplier and preparation of the tactic provides totally different levels of management and management.

Cyber Security plays a crucial role within the field of knowledge technology. Securing the knowledge has become one in all the largest challenges within the gift day. Thus, this paper involves Security management that defines a collection of techniques accustomed shield the integrity of networks, programs and knowledge from attack, harm or unauthorized access. internet primarily based applications are getting a middle of attraction for malicious hackers.

Index Terms **– WEFSA, cyber security, cloud computing, AWS.**

I.INTRODUCTION

The target of our paper is to demonstrate our project named WESFA (Where each Student to school will Access) are addressing the upkeep of lecturers of the scholars over the cloud among the school within the most reliable and economical method. Main objective of our project is to record varied details of activities within the departments of the school just like the notes, assignments, results of the online/offline exams on one place which is able to change every department's work load.

Our main conditions are compiled as below: during this paper, we tend to examine a way to absolutely abide the Cyber security fundamentals to shield the web site from malicious attacks and permit the user to access freely from remote location with the assistance of cloud computing ideas.

II. WEB DEVELOPMENT

IT is the work concerned in developing a Website for the Internet (World Wide Web) or an intranet (a non-public network).[1] Web development will vary from developing an easy single static page of plain text to complex web applications, electronic businesses, and social network services. A lot of comprehensive list of tasks to that internet development unremarkably refers, could include Web engineering, Web design, online page development, shopper liaison, client-side/server-side scripting, internet server and network security configuration, and e-commerce development.

Among internet professionals, "Web development" sometimes refers to the most non-design aspects of building internet sites: writing markup and coding. internet development could use content management systems (CMS) to form content changes easier and out there with basic technical skills.

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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Lightweight Cloud Storage Auditing With Deduplication Supporting Strong Privacy Protection

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Abstract **-** The cloud storage auditing with deduplication is adequate to authenticate the integrity of data gathered in the cloud while the cloud demands to keep only a single copy of replicated file. To the conquer of our ability, all of the actual cloud storage auditing blueprint with deduplication are accessible to brute-force glossary attacks[1], which acquire the exposure of user confidentiality [2]. In this project, we spotlight on a new condition of being contrary to brute-force glossary attacks on cloud storage auditing. We introduce a cloud storage auditing blueprint with deduplication supporting strong privacy protection, in which the confidentiality of user's file would not be acknowledge to the cloud and other user's when this user's file is anticipated or from a limited space. In the scheduled blueprint, we architecture a fiction method to achieve the file index for duplicate analyze, and use a new approach to develop the key for file encryption. In inclusion, the user only needs to achieve lightweight estimation to accomplish data authenticators, verify cloud data principle, and reclaim the file from the cloud. The security confirmation and the achievement assessment determine that the proposed blueprint accomplish enticing security and competence [1].

IndexTerms - Lightweight Cloud, Cryptography, Encryption, Decryption, MD5 algorithm, Brute-force attack, AES algorithm.

I. INTRODUCTION

The objective of our paper is to demonstrate how we can guarantee security by providing two factor authentication using the approach of light weight and using the concept of deduplication to destroy the extra copies of the same data, disappear only one copy to be gathered. With the accelerated development of cloud computing, cloud storage has been extensively accepted by individuals and operation for its advantages of comprehensive access, low costs and on-demand service. Users can expand complicated computations to the cloud to diminish their computational afflict. In addition, users also can deploy their large-scale data to the cloud to clear their local storage afflict. Under such a tendency, it becomes urgent to guarantee the aspect of data storage services for the users and the cloud. On one hand, the deployed data might be perverted or lost due to the inevitable operation failure or software/hardware failures in the cloud. Thus, it is demanding to develop cloud storage auditing, by which users can authenticate the integrity of cloud data without computing the whole data from the cloud [1]. On the other hand, lots of data gathered in the cloud are duplicated. Based on the analysis by EMC, 75% of cloud data are replicated copies. In order to develop the storage competence of the cloud, it is fundamental to perform data deduplication where the cloud conduct only a single copy of the duplicated file and makes a associate to the file for the users.

Our main conditions can be compiled as below: In this paper, we examine how to fully abide the brute force dictionary attacks and comprehend deduplication with strong confidentiality protection in cloud storage auditing, and introduce a concrete scheme satisfying this property. In order to comprehend deduplication with strong privacy protection, we design a different method to generate the file index, and employ a new approach to generate the key for file encryption. In the complicated design, the file index is achieved with the help of an Agency Server (AS) alternately of precisely being composed by the hash value of file. The key for file encryption is achieved with the file and the file designate.

II. AES ENCRYPTION ALGORITHM :

Advanced Encryption Standard(AES) is a symmetric encryption algorithm. AES is the corporation model as of as it grant 128 bit, 192 bit and 256 bit encryption. Symmetric encryption is appropriate quick as related to asymmetric encryption and are recycled in structure as database scheme. It is a blueprint for the encryption of computerized data settled by the U.S National Institute of Standards and Technology(NIST) in 2001. The AES appliance desire a plain-text and a secret key for encryption and same secret key is needed over to decrypt it[3]. The Advanced Encryption Standards is one of the much famous global encryption model, that is why its composition AES conduct expecting up in about every analysis associated to cyber security [2].

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Used car price prediction

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***Abstract:** This research paper is the combination of dataset collected by the cardekho.com and we have used ML to predict the price of a used car by creating a model using python, flask and HTML the algorithm that we have used is Random Forest Regression. The price of the car is determined by the manufacturer and not everyone can afford it so they look for some low cost alternative such as used car and this helps to build a big and evergreen used car market but due to the price irregularities this market is facing lots of problem so we have used machine learning to develop a new model that will predict the price and help consume to buy the used car at a perfect price.*

***Keywords–** Used Car Price, Car Price Prediction, Prediction Model, Machine Learning, Random Forest Regression, Seaborn, Python, Flask, Pandas, Numpy.*

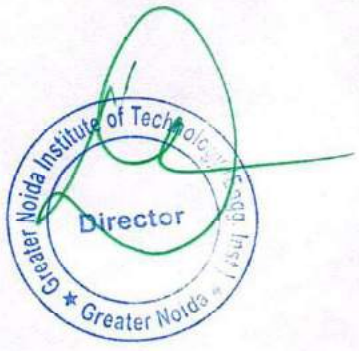
1. INTRODUCTION

In these times as we explore through automobile websites in search of buying or selling a used car, the price that we get is not accurate enough. Sometimes the buying price is high or sometimes the selling price is too low. This puts us in a confusing state whether to buy or sell the car at that price. The used car automobile industry works on the aim of making profits from the buyers and sellers. It includes their commission and extra profits they make from the customers. Deciding whether a used car is worth the posted price when you see listings online can be difficult. Several factors, including KM Driven, Fuel Type, No. of Owner, year, etc. can influence the actual worth of a car. From the perspective of a seller, it is also a dilemma to price a used car appropriately. Based on existing data, the aim is to use machine learning algorithms to develop models for predicting used car prices. The market is flooded with millions of used cars. Using their data on our own platform, we can generate accurate prices of used cars. In this way both buyers and sellers get a satisfactory price. Our research that we did on the Indian Automobile Industry, we got to know that the whole industry comprises of 65% used cars. In 2019, used car market in India was worth 24.24 billion USD. The value is further expected to register a CAGR of 15% of growth.

2. TECHNOLOGY

2.1 Requirements

(a) Python as a programming language.
(b) Jupyter as an IDE.
(c) Flask as a python-based web flamework.
(d) Pandas for Data Manipulation and Analysis.
(e) Numpy for working with arrays.
(f) Seaborn for Data Visualization
(g) Sklearnfor Machine learning.
(h) Matplotlib for plotting graphs and charts.
(i) Random Forest Regressor as an Algorithm.



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Next Generation AI based Virtual Assistant

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Abstract: ***This report discusses ways within which new technology may be controlled to form AN intelligent Virtual Assistant (VA) with attention to user-based data. It will look at examples of intelligent programs with natural language processing that are currently available, with different categories of support, and examine the potential usefulness of one specific piece of software as a VA. This engages the ability to communicate socially through natural language processing, holding (and analyzing) information within the context of the user. It is suggested that new technologies may soon make the idea of virtual assistants a reality. Experiments conducted on this system, combined with user testing, have provided evidence that a basic program with natural language processing algorithms in the form of a VA, with basic natural language processing and the ability to function without the need for another type of human input (or programming), may already be viable. We tend to check this on two variant speakers(masculine & feminine).***

Index Terms: Artificial Intelligence, Virtual assistant, natural language processing, NLU engine, Speech text recognition.

I. INTRODUCTION

The objective of our paper is to demonstrate how An artificial Conversational entity (ACE) may be a programmed to communicates with you. It's a layer on high of, or an entry to a service. Typically it's supercharged by machine learning (the artificial speech communication entity gets smarter the additional you act with it). Or, additionally usually, it's driven mistreatment intelligent rules (i.e. if the person says this, respond with that). The services a synthetic speech communication entity will deliver square measure numerous, necessary life-saving health messages, to ascertain the prognosis or to get a brand new combination of shoes, and anything in between.

The term artificial speech communication entity is similar to text speech communication however is growing quickly through voice communication… "Alexa, what time is it?" (other voice-artificial speech communication entities square measure available!) the unreal speech communication entity will confer with you thru totally different channels; like a Facebook traveler, Siri, WeChat, Telegram, SMS, Slack, Skype, and plenty of others. Customers pay several time mistreatment electronic communication applications (more than they pay on social media) [1]. Therefore, electronic communication applications square measure presently the foremost widespread manner firms deliver artificial speech communication entity experiences to customers.

An Artificial colloquial Entity may be a quiet chatbot that speaks with you helps you to speak over the net helps you to search out the knowledge you required to mistreatment the net. In this, we tend to use python language & its library operates for making our Artificial colloquial Entity for Windows software. it'll not solely give data from the net however it'll conjointly open the appliance put in in your system.

If you say some word to our ACE it'll search it over Wikipedia further as play the most-watched video over YouTube. mistreatment our ACE, you'll be able to even head to a specific website by gap a browser We named our ACE as JAMWANT as a result of some Hindi author afore mentioned("दुनियाकेआरम्भसेजहादुनियाकाअंतहैंसबदेखचूकायहजामवंतहै |".

In this digital era humans are completely dependent on technology. Now after so many great inventions and creations the industry is heading towards smart-bots enabled smart homes, voice assistants, A.I. and Data Mining enabled systems as well. We felt the requirement of a smart assistant chat-bot which will be economic and easy to access and afford for a common use and will let you up to date with the current weather updates and forecasts.

It will provide any information on demand which the user generally search on google, etc. It will solve your basic mathematical problems as well so that you can get rid of your old and outdated calculators [2]. As per requirements and growing industry our chat-bot will work on voice command and will perform a lot more for its users on demand. And also give you information from Wikipedia about a person if available and most watched video of the person.

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GANAKA: WEB BROWSER

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Abstract – A web browser is application software for accessing the World Wide Web. When a user requests a web page from a particular website, the web browser retrieves the necessary content from a web server and then displays the page on the user's device.
here we will use GANAKA as interface which is a web browser and it will help have multiple options like file ,edit , bookmark , history , tools , help which will help the user to make thing convenient and handy with the browser

Key Words: Internet, www, HTTP, URL , FTP , hyperlink , Web browser, ISP(internet service provider) ,

1. INTRODUCTION

A Web browser acts as an interface between the user and Web server Software application that resides on a computer and is used to locate and display Web pages. Web user access information from web servers, through a client program called browser. A web browser is a software application for retrieving, presenting, and traversing information resources on the World Wide Web

2. COMPONENTS OF A WEB BROWSER.

User Interface :
This includes the address bar, back/forward button , bookmarking menu etc

Rendering Engine :
Rendering, that is display of the requested contents on the browser screen.
By default the rendering engine can display HTML and XML documents and images

3. DEFINITION AND TERMS:

First thing first we need to understand the basic terminologies which will help us in the rest of paper cause we will encounter them again and again.

- **Internet** – set of millions of computers worldwide connected into a network with the purpose of exchanging data among users
- **WWW - World Wide Web** – one of the services on the Internet which we use to browse web pages (set of HTML documents connected with hyperlinks)
- **HTTP – Hypertext Transfer Protocol** – protocol (set of rules) that allows transmission of information published on the Web
- **URL – Uniform Resource Locator** - Web address of a particular object (Web pages, images, or Word or PDF document) published on the Internet
- **FTP – File Transfer Protocol** – protocol that allows data transfer between computers over the Internet
- **Hyperlink or link** - part of the text or graphics on a web page; when we activate a hyperlink (click on it), it takes us to: o another part within the same web page o another website
- **Web address elements** –

for example http://www.google.hr

http: - protocol (rules of transmission)
www – a type of service available on the Internet
Google – a domain name (computer)
.hr – top–level domain (ccTLD - Country code top-level domain)
Domain: - electronic identification on the Internet
commercial (.com, .net, .biz)
international (.hr, .si, .it, .de...)
non-commercial (.edu, .mil, .gov)

4. Web browser

Software (program) which allows us to browse web pages o the most widely used: Google Chrome, Mozilla Firefox, Opera, Internet Explorer

Web search engine

Contains content categorization of many Web pages after one enters the desired term, search engine will search the Web and display results (web pages, images,

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Security and Automation using Raspberry Pi and Arduino for Home

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Abstract - *This project here is an amalgamation of various aspects of IoT, Web design and Networking put together in order to function as an ecosystem. The goal here is to put together a competent and robust system of IoT that includes hardware as well as software running together in unison to provide the user with a seamless home automation environment. Security and Automation using Raspberry Pi and Arduino for Home (SARAH) uses a web base application where the user controls each and every aspect of the proposed system. This project tackles the Everything IoT race by putting the versatility of the development environment that a Raspberry Pi provides along with the connectivity and expansion options that are provided by Arduino.*

We here have created an ecosystem of interconnected devices that functions locally between a Raspberry Pi rather the using a web-based service thus making it extremely secure and redundant to an array of web-based attacks. However, if somebody is to access the system remotely, they can do that via an open-source service known as VNC or Virtual Network Computing. We've used an open-source service known as Real VNC server that uses 256bit AES encryption making it extremely safe for personal use without worrying about any data or privacy breach. This system while running on a web access Wi-Fi router is totally devoid of any internet access as it uses a static IPv5 address.

Cyber Security is one of the most important aspects of the domain called Information technology as there are numerous threats that are just looking out for a device to exploit. Anything that is connected to internet and uses user data is susceptible to at least some kind of a cyberattack. Any compromised device is a threat to the privacy of its' user. Thus, in this paper, we involve an IoT system as well as it's secure deployment so that the system is secure as well as well functioning in every way.

Key Words: SARAH, IoT, Raspberry Pi, Arduino, Cyber Security, VNC

1.INTRODUCTION

This paper Demonstrates our project named SARAH (Security and Automation using Raspberry Pi and Arduino for home) that deals with the ever-expanding leisurely needs of urban citizens as well as catching on with the modern-day trends of IoT. This project also goes a long way in helping the elderly as well as the disabled as it aids them with the possibility of controlling temperature, lights, fans etc. at the comfort of their fingertips. While heavily aiding to the convenience of its' user, it also provides them with the luxury of remotely controlling the appliances that are connected to the system.

Our project is compiled out of several parts listed below.

In this paper, we examine the complete wireframes of the project in detail as well as the possibilities of making it safer with the abidance of some cyber security protocols to make sure that the system is safe and cannot be compromised in any way thus making SARAH immune to malicious attacks.

2. DEVLOPMENT

This part involves the development of a web application with the use of HTML, CSS and JavaScript. This application runs run locally on the Raspberry Pi acting as a host to the entire system and allowing us to control the functions on other computers and smart phones using VNC (Virtual Network Computing) [1]. Along with an html-based web page, there is a hardware construction so that the web app can be hosted in an isolated environment. This system is constructed out of a Raspberry Pi that connects to an array of Arduino based ESP8266 Node MCU boards via Wi-Fi [3].

They send and receive signals via MQTT as it is the most efficient way of transferring data over the air while avoiding any kind of interception. The network however has a crucial dependency on Wi-Fi network for its' operations as that is the only medium the Raspberry Pi communicate with the ESP8266 modules.

3. SCOPE OF SARAH

Current:

- Automation:
  - Residential:
    - Electrical/Electronic Automation
    - Energy Saving
    - Centralized Control & Security
  - Safety & Security:
    - Personal Security:

Published: 22 February 2021

A Novel Approach Based on EMD to improve the Performance of SSVEP Based BCI System

Mukesh Kumar Ojha & Manoj Kumar Mukul

Wireless Personal Communications **118**, 2455–2467 (2021)

Abstract

This paper investigate the effectiveness of the Empirical Mode Decomposition (EMD) based Power Spectrum analysis (PSA) technique to evaluate the Performance of SSVEP based Brain computer inference (BCI) system in terms of SSEP recognition accuracy and Information transmission rate (ITR). Steady State Visual evoked Potential (SSVEP) is a quasi sinusoidal signal contaminated into recorded EEG signal. The presence of artifacts and spontaneous EEG signal deteriorate the SSVEP Performance. EMD is technique that decomposes the recorded EEG Signal into several oscillating components known as intrinsic mode functions (IMF). The selection of IMF components plays a vital role in recognizing SSVEP signal with high accuracy. Power spectrum density (PSD) as a feature is extracted from the SSVEP Prominent

An Explicit Output Current-mode Quadrature Sinusoidal Oscillator and a Universal Filter Employing Only Grounded Passive Components - a Minimal Realisation

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Abstract. *The use of voltage differencing current conveyor as an active device to design a current-mode oscillator along with a universal filter with only grounded passive elements is the main focus of this manuscript. This re-arranging circuit can work as a sinusoidal oscillator as well as a current-mode universal filter, by simple selection of passive switches. Both the circuits employ only two active devices and three grounded passive elements. The designed oscillator provides two distinctive current outputs with a quadrature-phase difference. It also maintains an independent condition of oscillation and frequency of oscillation. Moreover, the basic responses including low pass, high pass, and band pass are easily available from a current-mode universal filter. The low input impedance and high output impedance are amongst the noteworthy features of the current-mode derived filter. Non-ideal, parasitic, and sensitivity analysis of the designed circuits are also incorporated in the manuscript. Cadence PSPICE software simulation results are also included to justify the design idea. Experimental implementation of the described circuit has also been shown by employing special-purpose amplifier integrated circuit, i.e., OPA860.*

Keywords

Active filter, sinusoidal oscillator, Voltage Differencing Current Conveyor.

1. Introduction

The domain of analog signal processing is all about measurement, detection, and manipulation of the analog signals. Analog circuits find their applications in the area of control systems, communication engineering, instrumentation, and measurements [1]. Despite the dominance of digital signal processing, the analog signal processing finds its irreplaceable space in optical drives, analog to digital converters, etc. [2].

The rich culture of analog circuits is filled with multitudinous active devices. Few names in this long list are as follows: Current Conveyor (CC) [3] and [4], Operational Transconductance Amplifier (OTA) [5] and [6], Current Differencing Buffered Amplifier (CDBA) [7], Differential Voltage Current Conveyor (DVCC) [8], Current Differencing Transconductance Amplifier (CDTA) [9], Differential Voltage Current Conveyor Transconductance Amplifier (DVCCTA) [10], Unity Gain Cell (UGC) [11], Differential Difference Current Conveyor (DDCC) [12], Z-Copy Current Feedback Transconductance Amplifier (ZCCFTA) [13], etc. Each of the mentioned devices has its own uniqueness and features.

In [14], the authors proposed future looming devices, including Voltage Differencing Current Conveyor (VDCC). This is an electronic combination of OTA and

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Big Data Security Problem and Its Solutions

Madan Mohan, Aadarsh Malviya, Anuranjan Mishra

Abstract: ***Big Data is the way to go especially for the large companies which keep a lot of information on the systems. This paper delves into the new challenges associated with big data. It points out safety challenges on Big Data as the main issues that organizations seek to address on a day-to-day basis. These challenges include securing the trusted environments, sufficient access management, performing due diligence, combating AVI vulnerabilities, and security automation. They can be solved by maintaining strict access strategies that only allow their esteemed and responsible employees to login and also set the systems in such a way that they can detect abnormalities and allow for investigations while there is still time. The paper has addressed big data challenges as well as their solutions which are always be considered in the case of the organization as they have long-term consequences if not put into consideration.***

Keywords: Big Data, Systems, AVI Vulnerabilities, Security Automation, Solutions, Trusted Environments

I. INTRODUCTION

Big data is a word used to describe large-scale structured and unresolved data very much, it is very difficult to process data using traditional database and software technology. Volume: The quantity of produce and stored data, many factors contribute to an increase in volume, live streaming data and Storing transaction data, live streaming data, and data collections from sensors

Variety: There are data in all types of formats

Variability: Together with speed, the data flow may not be consistent with the periodic top of something height.

Complexity: When data comes from multiple sources, you also need to consider the complexity of the data. Before actual processing, the data must be linked, matched, cleaned and converted to the desired format.

II. NEW CHALLENGES ON BIG DATA SECURITY AND ITS SOLUTIONS

The 21st Century business milieu regards data as its most crucial asset. Earlier on it was only the technological field that believed in the value of data but now all industries ranging from manufacturing, health, education, media and all others are already in the clique.

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Due to this growth, the volumes of data to be handled in organizations has increased and facilitated towards the formation of Big Data for the sake of saving all the information in the most original and quality form. Big Data has however been associated with issues of security and privacy that have been in existence for a long period [1]. Hacking activities motivate people to access information with no authorization and make it available to the wrong parties who might take advantage of the data obtained.

Privacy and security threats have been a challenge when dealing with Big Data for the longest time possible but there are new issues to watch for in 2018. The protecting of trusted environments, sufficient access management, performing due attentiveness, combating API weaknesses and security automation are the most recent challenges in Big Data security which should be solved to ensure for trustworthy operations of the systems [2].

Most organizations consider using the cloud when it comes to big data although it is not restricted. However, cloud computing and Big Data go hand in hand towards ensuring that the information of a company is maintained in the most effective way possible. However, since many hackers have realized that Big Data holds all the valuable details about the running and development of the firm, the system becomes a weakness (Lystra's & Papadopoulos, 2018). The following are the recent problems in Big Data security and how to solve them for a better future in protecting organization's information. The main causes of security issues on big data can be shown through the chart below:

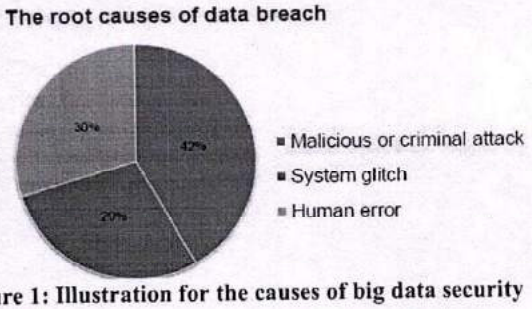
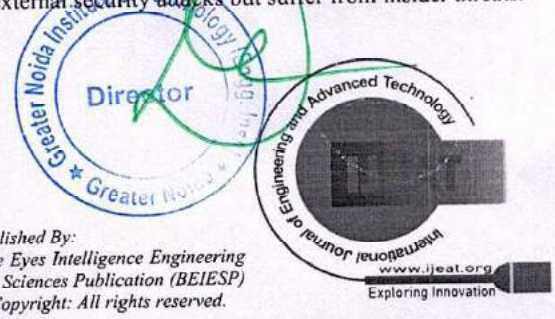


Figure 1: Illustration for the causes of big data security issues

Source: http://www.billchamberlin.com/cost-of-a-security-data-breach-rises-according-to-9th-annual-ponemon-institute-study/

III. SECURING TRUSTED ENVIRONMENT

As mentioned earlier, Big Data does not have to entirely depend on the cloud and many large companies use internal environments to run NoSQL or Hadoop databases. Such environments are crucial in preventing the systems against any external security attacks but suffer from insider threats.



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Importance of Security in Big Data Log Files on Cloud

Madan Mohan, Aadarsh Malviya, Anuranjan Mishra

Abstract: *Today cloud computing is a very popular technology, and many people use this technology in many ways. it's important to have it safe. This technology was primarily used to keep data safer and safer in the cloud, so in this article we suggest a security framework for large data logs in the cloud. There are many and many risks that threaten the integrity of this information in the great information. Therefore, in line with the development of technology, the level of security has also increased significantly over the years. Various technology techniques access several online activities, such as interaction with different internet sites and services, making the web more accessible to their plug-ins. As a result, these activities have created a global platform for malicious activities to add these devices that expose large data logs harmful attacks. Sky system is an online platform that requires proper security integration. In addition, the current state of online security threatens high data in the cloud, which has affected the performance and service model.*

Keywords: *Log File, Security, Big data, Dataset, Data analysis, Malicious, Technology, Security, Big data, Dataset, Cloud.*

I. INTRODUCTION

Cloud computing is increasingly gaining momentum in the process and storage of big data. Especially, in a world where security and privacy are magnified by the diversity and scale of data being process and stored. The uses of traditional security mechanism have become obsolete in the modern technological era [1]. As such, new security frameworks are being implemented to ensure the safety to the high-volume data. Therefore, this essay will focus on the security frameworks being implemented to enhance security and privacy of big data log files on the cloud as well as addresses the major challenges associated with these frameworks in cloud computing. Big data is a term used to refer to the study and applications of data sets that are so big and complex that traditional data-processing application software are inadequate to deal with them. Big data challenges include capturing data, data storage, data analysis, sharing, transfer, visualization, querying, updating, information privacy and data source.

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There are a number of concepts associated with big data: originally there were 3 concepts volume, variety, velocity. instrument that provides small scale, static and semi-isolated security. Logfiles are very important data in the cloud so these logfiles should be secure. In securing big data, security frameworks must be put in places such as logging, encryption, and honeypot to provide data protection and privacy.

II. HADOOP

Apache Hadoop is a collection of open-source software utilities that facilitate using a network of many computers to solve problems involving massive amounts of data and computation. It provides a software framework for distributed storage and processing of big data using the MapReduce programming model. It can run on thousands of terabytes of systems involving thousands of nodes. The distributed file system in Hadoop helps to achieve fast data transfer rates, and the system continues to function even in the event of some node failure. This approach reduces the risk of a total system failure, even in the case of a large number of node lack of success. Hadoop Make the calculation resolution can expand, economy, flexible and fault tolerant. In these days so many companies are using Hadoop Framework to support applications that involve big amounts of data. Hadoop has two main subprojects Map Reduce and Hadoop Distributed File System.

III. META CLOUD DATA STORAGE SECURITY FRAMEWORK

This security framework is used to protected big data from any form of intrusion. The Meta Cloud MC security framework provides various scalable algorithms security solutions to any data deployed in the cloud system [1]. The Meta Cloud system works by forwarding data in the cloud to a Grouping and Choosing architecture GC for security enhancement. This security framework organizes stored data sent in cloud n multiple center-based systems. These systems are categorized into three basic level of security that is sensitive, critical and normal. Whereby, each level redirects data log files to the appropriate data center in the cloud for the safety measures. The Meta Cloud security framework provides a unique storage path that is impossible decrypt.

IV. MAPREDUCE SECURITY FRAMEWORK

This form of security encryption of big data log file provides authorization and authentication only to valid account users. It uses the HDFS authorization mechanism to protect and secure data files on the cloud computing systems [4].

QUEUING THEORY: EFFECTIVE AND EFFICIENT TOOL TO REDUCE THE WAITING TIME IN HOSPITAL

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ABSTRACT:

Waiting time is inherent to the hospital sector in India and a serious challenge faced by almost every big hospital is queuing. Long waiting time are often a mirrored image of inefficiency in hospital operations. The Fortis Escorts Hospital in Delhi receive sizable amount of patients every day which results in longer waiting time for patients because of long queues. To deal with this challenge, a SWOT analysis was conducted for the OPD of Fortis Escorts Hospital Jaipur (FEHJ) which resulted into dissecting the queuing problem and initiating with solutions knowing where the hospital operations can excel and where there's a scope of improvement to create the working and processes better. Additionally, after observing the problem technically and applying queuing theory, suggestion was given to enhance the delay points and make the OPD more efficient so as to obtain a high patient satisfaction rating.

Keywords: Queuing Theory, OPD, Waiting time, Hospital operations, SWOT, Patient satisfaction

IMPACT OF COVID – 19 ON INDIAN EDUCATION SYSTEM: A STUDY WITH SPECIAL REFERENCE TO GREATER NOIDA SCHOOLS AND COLLEGES

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*** & **Assistant Professor**

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ABSTRACT:

As we, all know that in the time of Covid-19, all the sectors are affected in both ways-positive and negative. Education sectors is one of them which was affected consistently and has observed drastic change in the day to day execution of the job. As in the teaching profession, technology played vital role during the pandemic situation and replaced the offline mode with the online mode. Education is foundation for every one and it creates skills, habits, knowledge, talent etc. for the child. It is not possible to discontinue education of students but health is also equal important. Hence, in the tenure of covid 19, it is a big challenges to make the people safeguard along with to continue their education so online mode of education is the best option to continue and keep the children safe and do study at home.

Therefore, online classes were conducted and running out all the activities related to their study with going to school and colleges.

This research was based on primary and secondary source of data. Data was collected by circulating well-structured questionnaire among the respondents and after data collection, interpretation and analysis of data has been taken place by the means of applying statistical techniques Chi square test using software IBM SPSS. In the result, is has been concluded that there is an association between the gender and age and the level of satisfaction in case of taking the online classes.

Keywords: Covid -19, Online Class, Education, Pandemic Situation, Opportunity, Challenges.

1. INTRODUCTION:

When the cases of corona virus increased day by day it was a matter of concern for every one and for government also which in turn, a decision was taken by the government to implement the complete lockdown and close all the institutions, to maintain the social

EFFECT OF QUEUING THEORY APPLICATION: WITH SPECIAL REFERENCE OF BANKING SECTOR

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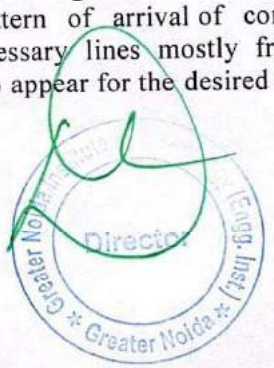
Abstract-- Lines of waiting customers are continuously terribly long in most of the banks. The impact of queuing in reference to the time spent by customers to access bank services is more and more turning into a significant supply of concern. This can be as a result of keeping customers waiting too long might result to cost to them (waiting cost). Providing an excessive amount of service capability to operate a system involves excessive cost. However not providing enough service capability leads to excessive waiting time and cost. During this paper, the analysis of the queuing system shows that the number of their servers was not adequate for the customer's service. It observed that they need 5 servers instead of the 3 at present. It suggests a need to increase the number of servers in order to serve the customer better.

Keywords-- ***Queuing System, waiting time, Arrival rate, Service rate, Probability, System Utilization, System Capacity, Server***

1. INTRODUCTION

Queue System Overview

A queue will be mentioned as a waiting line and a social phenomenon that's very rampant on our contemporary environmental societies where there are insufficient facilities or unavailability of it to literarily meet the requirements of the top users of a given good and/or service [1, 2]. Customers are referred to as arriving units during a queue, that is, persons who are in demand of a specific service at a service delivery Centre and would need to patiently wait on a queue or during a line if the there's no promptness within the delivery of the services. In service system, queues represent the unmet need(s) of the customers that may also invariably provides a distraction from the values that a corporation provides. A queue is unavoidably found wherever there are pressing demands surely service deliveries and good acquisition [4]. This conspicuously exposes the lack of the service providers to fulfill the requirements of the end users (customers). Queues at a given service delivery Centre increase as a results of variance within the pattern of arrival of consumers, and therefore the times of service alongside unnecessary lines mostly frustrates and discourages the end-users, hence, making them to appear for the desired service from



Study of mechanical properties of pultruded jute-glass reinforced unsaturated polyester bio-composites with hybrid filler loading

Navin Kumar, Ravinderjit Singh Walia, Surjit Angra

World Journal of Engineering
ISSN: 1708-5284
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Abstract

Purpose

The purpose of this study is to develop jute-glass hybrid fibre reinforced polyester-based bio-composites using an indigenously developed pultrusion set-up and to present a detailed discussion on their mechanical characterization.

Design/methodology/approach

The work was carried out to observe the hybridization effect of natural and synthetic fibres in combination with hybrid fillers loading mainly on strength and other properties. The used hybrid fillers were a combination of 9 Wt.% of carbon black%, 6 Wt.% of eggshell ash powder and 6 Wt.% of coconut coir ash powder. A lab-based developed pultrusion set-up was used to develop these hybrid GJFRP composites of 1,500 mm length. The developed composites were tested for tensile strength, compressive strength and impact strength.

Findings

The maximum tensile, compressive and impact strength obtained are 88.37 MPa, 56.13 MPa and 731.91 J/m from 9 Wt.%, 9 Wt.% and 0 Wt.% of hybrid fillers loading, respectively. Breaking energy was found maximum as 7.31 J in hybrid glass-jute hybrid fibre reinforced plastic composites with no filler loading and it was observed that filler loading was decreasing the impact strength of developed hybrid composites. Shrinkage and its variations in the diameter of the finally developed cylindrical shape composites were observed after cooling and solidification. Scanning electron microscope was used to observe the internal cracks, bonding of fibres and resin, voids, etc.

Tribological characterization of pultruded hybrid glass-jute fibre reinforced plastic composites from room temperature to 75°C

Navin Kumar, R.S. Walia, Surjit Angra

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Abstract

Purpose

The aim of the present study is to find the tribological properties of newly developed polyester-based hybrid glass-jute fibre reinforced plastic composites loaded with different weight per cent of hybrid filler particles were investigated under a dry sliding medium from room temperature to 75°C.

Design/methodology/approach

The study was carried out using a pin-on-disc wear test set-up. The design of experiments was carried out in a controlled way using a central composite design based on response surface methodology to observe the effect of various parameters i.e. sliding velocity, sliding distance, the temperature of counterface and different applied load conditions during dry-sliding.

Findings

The maximum wear resistance was found at 9 Wt% loading of filler, 4 ms^{-1} sliding velocity, 30 N applied load, 54°C temperature of the counterface and 1,100 m sliding distance condition. Optimum values of hybrid filler loading, sliding velocity, applied load, the temperature of the counterface and sliding distance for the minimum coefficient of friction value and minimum friction force are 9 Wt%, 4 ms^{-1}, 30 N, 54° C, 1,100 m and 12 Wt%, 3 ms^{-1}, 29 N, 59°C and 1,100 m, respectively. The worn surface morphology was studied using scanning electron microscope, for wear dominant mechanisms.

Originality/value

The tribological properties of newly developed polyester-based hybrid glass-jute fibre reinforced plastic composites loaded with different weight % of hybrid filler particles, were investigated under dry sliding medium from room temperature to 75°C has not been attempted yet.

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Parametric optimization of friction stir processing on micro-hardness of Al/B_4C composite

Sudhir Kumar, Kapil Kumar, Manish Maurya and Vishal

From the journ
https://doi.org/

Citations 1

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Abstract

Friction stir processing was used to prepare aluminium metal matrix composite reinforced with B_4C particles. The micro-hardness of the composite was improved by selecting the process parameters. Friction stir processing parameters, namely tool rotational speed, tool tilt angle and different pin profiles, were explored by using Taguchi's L9 orthogonal array and analysis of variance. Optical microscopy and scanning electron microscopy were employed for microstructural analysis. X-ray diffraction was used to evaluate the residual stress. Experimental results illustrated that increased rotational speed, reduced tilt angle and square pin profile of the tool gave more uniform dispersal of B_4C content with maximum micro-hardness. Small amounts of compressive residual stress developed at the stirred and thermo-mechanically affected zones confirmed the adequate improvement in micro-hardness. Micro-hardness of fabricated Al 6063/B_4C composite surfaces was enhanced by 30% as compared to Al 6063 alloy.

Keywords: Friction stir processing; Al 6063/B4C composite; Microstructure; Micro-hardness; Fractography

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Study on effect of variation of geographical and climatic conditions on chemical constituents and biological activity of Emblica officinalis

Dipti Bharti, R. Singh, C. Arora • Published 25 September 2021 •
Research Journal of Chemistry and Environment

Alkaloid and flavonoid contents of E. officinalis of leaf samples collected from five different geographical and climatic conditions have been compared in the present study. Comparison has also been made in terms of percent yield and number of constituents present in alkaloid and flavonoid samples as well as for antifungal potential against Fusarium oxysporum and Rhizoctonia solani. Alkaloid content is found to be maximum in samples collected from Banasthali, Rajasthan, an extremely hot and dry climatic zone. HPLC profiles indicate presence of maximum number of constituents in alkaloids separated from E. officinalis collected from Banasthali, Rajasthan. Flavonoid content has been found to be highest in samples collected from Palampur, Himachal Pradesh in extremely cold climatic zone followed by that of Banasthali, Rajasthan. Antifungal activity of alkaloids and flavonoids isolated from samples collected from Banasthali and Palampur has been found to be maximum for F. oxysporum and R. solani respectively. These studies reveal that geographical and climatic zones having extreme climatic conditions are more suitable to grow E. officinalis which is to be used as raw material for developing pesticidal formulations to control wilt and scurf diseases of potato. Collapse

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PM2.5 AND PM10: EXISTANCE, TREATMENT AND PROBLEMS

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Abstract : These days, air pollution is becoming the most harmful substance present in the atmosphere that can affect humans, climate, crops, climate and other living beings. Today, we will talk about the Allergic Rhinitis (AR) caused by the air pollution that nearly affects the life quality of millions of people nationwide. Basically, it occurs when a person's immune system reacts to allergens present in the air like dust mites, pollen and moulds producing the lining inside the nose to become inflamed. Undesirable indoor air openness causes around 3 million people to bite the dust every year. In this way, individuals with unfavorably susceptible rhinitis and dirtied air might be connected.This summary summarizes up the International Expert Consensus explanation on the treatment of hypersensitive rhinitis from contaminated air. An epidemiologic proof connections air contamination and environmental change to sensitivity and rhinitis in the upper aviation routes. The connections between air contamination, rest, and AR will be examined by means of the utilization of components. Today, pretty much every issue has an answer. For the treatment of unfavorably susceptible rhinitis, you ought to follow treatment proposals and lower your openness to toxins. Fexofenadine, a non-steadying oral antihistamine, lightens the impacts of air contamination related respiratory issues like irritated, watery eyes, wheezing, and hacking. Regardless of whether this is valid, further research into elective pharmaceutical treatments for AR and air contamination is presently inaccessible.

IndexTerms - **Cadmium; HEPA; Intervention; PM(2.5); RCT; SHS. Oxygen requirement, PM2.5, PM10, NO, SO,CO, O3.**

I. INTRODUCTION

Consistently, 10,000 liters of air go into the lungs, fundamental for human existence and prosperity. The nature of the air we inhale straightforwardly affects our respiratory health just as other indispensable organs. No inquiry concerning it: Great health and wellbeing rely upon clean air. Air pollution, in any case, keeps on addressing a significant risk to the health of the populace all through the country. Starting at 2012, air pollution has been demonstrated to be the world's single most prominent natural health concern, the World Health Organization (WHO) says.

Respiratory health issues because of air pollution are broadly archived. The WHO brief shows that, as well as being connected to strokes just as ischemic heart disease, air pollution additionally assumes a significant part in tumors, like cellular breakdown in the lungs and malignancy of the respiratory framework. An investigation tracked down that in the previous decade, the unfriendly impacts of air pollution on mind capacity, discernment, and conduct had drastically risen.

ESCAPE is one of the largest proceeding with projects in the world devoted to estimating the impact of air pollution on human health, and in just the previous six years, they have delivered important information. The discoveries of the research, which was distributed in various diaries, demonstrate an ascent in the danger of cerebrovascular and coronary occasions, alongside an increment in respiratory diseases, because of air pollution.

Air pollution was evaluated as one of the best 10 danger factors for ailment, as per the latest appraisal of the largest ever populace put together research with respect to the conveyance, hazard factors, and reasons for an expansive variety of diseases all around the globe, the Global Burden of Disease (GBD) study. South Asia's primary danger from pollution was household air pollution (HAP).

The WHO Rules for Indoor Air Quality arrangement with the nature of indoor air inside homes, working environments, schools, medical clinics, and other public and private establishments where individuals invest a great deal of energy. A wide variety of health issues might arise when hazardous synthetics are made as an outcome of development materials, building, inside hardware, or human exercises such the utilization of powers for cooking or warming.

Air Quality implies that the weighted upsides of individual characteristics of air pollution (for instance poison fixations) are changed into a solitary number or number. Explicit focus ranges are grouped into classifications of illustrative air quality under the AQI system. The agricultural country is India. India. Air pollution in India is additionally ascending with urbanization and industry.Numerous hazardous gases are discharged into the environment through cycles of industrialisation. Car emanations, agrarian field fires, building site residue and waste burning are significant supporters of air pollution in India. 22 of the 30 most dirtied urban communities in the world are in India with the convergence of particle matter.

Semiconductor devices

Dr. Dhiraj Gupta, Nikhil Kumar Gupta
Himanshu Sharma, Aryan Tiwari, Akhilesh Yadav, Rishikesh Singh
Student and Teachers, Department of Electrical Engineering
GREATER NOIDA INSTITUTE OF TECHNOLOGY

Abstract:- As We knows today world is approaching towards usage of better reliable compact and portable devices semiconductor device is all about the advancement of old version of devices and the controlling of the operation as per the need of modern world.

I. INTRODUCTION

Semiconductor devices are well-known equipment of power electronics which helps us to rebuild and transform our lives in such a manner so that the operation of a bigger devices is to be reduced and the multi operational function can be possible.

Is semiconductor is a device that lies between the conductivity of then of a conductor and conductivity of insulator a semiconductor material has conductivity between the extreme of the conductor energy gap of a semiconductor is a very is from 0.5 to 1 electron volt that for Silicon that is of 1.21

II. POWER DIODE

In power diode be used in - layer to increase the depletion layer so that it blocks very high negative voltage. Non-Punch through diode have lesser depletion region n-region while in punch through diode depletion region is almost equal to the n- region.

III. CONDUCTIVITY MODULATION

In case of 5 through diode because of conductivity modulation the excess charge present in then and negative lead the overall resistance decreases then power loss decreases. This is only present for the minority carrier charges.

IV. SILICON CONTROL RECTIFIER

Silicon controlled rectifier is also termed as a thyristor it is a semi-controlled switch that only it controlled by the people during on state a person doesn't control the locking or see the ending capacity or when its thyristor has to stop.

V. TRIGGERING METHODS OF THYRISTORS

A. forward voltage triggering triggering.

In this method we used to keep on increasing the voltage at its peak value so that the test thyristor gets on by itself this result use loss of power in the circuit so usually this method will not be preferable for the triggering method.

B. Gate triggering

In this method we create and path for anode current to flow at higher rate is used by providing Anode current path through it get current will keeps on increasing the density of the conduction of current through the circuit and the anode current will flow through it so this method will be helpful for the gate triggering purposes and the thyristor will get on.

C. dv/dt triggering.

this type of the triggering method we used to increase the depletion region of semiconductor so that it behaves like capacitance once it behaves like a capacitor then we can control on its voltage to get control on the current as we have an control on the current so we have to decide now when to home on the SCR.

D. Light triggering

In this method light area was creating more number of charges that helps to move on the flow of electron and the flow of electron will get generate the current.

This is called a light activated silicon-controlled rectifier this method is more important and more useful for this system where we have to get on the Many thyristors simultaneously at a particular time. Light activated silicon-controlled rectifier (LASCR) is more convenient and reliable.

VI. SOME IMPORTANT PARAMETERS

Latching current- when we applied Gate signal when the anode signal reaches to the latching state the regeneration process starts and win until theReaches state there will be no reason reason so I can say that in latching current is the minimum current at which the regeneration will start.

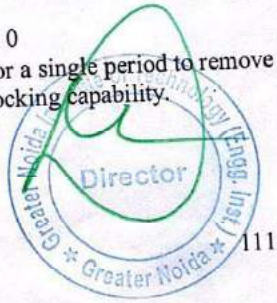
Holding current- holding current is the maximum current at which the the thyristor circuit will turn off for their communication process beyond this limit that is the holding current there will not be no computation circuit process going on.

Q- What Does Means Computation Failure

Ans- commutation feels when the circuit turn off time is less than computation time some exercise charge still presents at the junction even after removing negative voltage because of this exercise charge silicon-controlled rectifier losing its blocking capability that is silicon-controlled rectifier is not able to block the positive voltage and just behave like diode.

VII. COMMUTATION HAS 2 ROLES

- bring down auxiliary current to 0
- apply reverse voltage at least for a single period to remove the Stored voltage to regain blocking capability.



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Vehicle Accident Spotting and Rescue System using Internet of Things

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[4]Assistant Professor of Electrical Engineering, Greater Noida Institute of Technology

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Abstract: *As we know today's world is approaching towards the increasing number of automobile users. This increase in number of users are causing to rapidly increase in number of accidents occurring in this real world. To recover from these accidents we came through this project which mainly consists of GPS, Arduino ,GSM, Accelerometer and ultrasonic Sensor.*

The key point of this project is Sensors and accelerometer will detect the vehicle position and Location coordinates will be spotted by the GPS, further Global sim module will deliver a text to a smart phone

***Key Words**: GPS, GSM, Ultrasonic Sensor, Arduino*

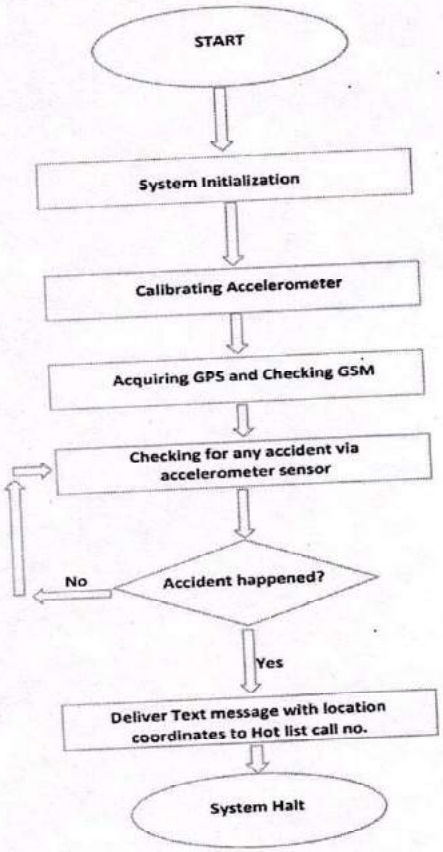
Introduction: Few days before I and my friend were reading about some facts regarding India and there we got a point in column having that India has about 1% of the global vehicle population but it has about 6% of the total global accidents and its increasing on day by day at a rapid rate. Though there are many reasons which cause death to these accident's victim but one of the major reason is the time delay between their accident and their Hospital Arrival so, to overcome this harsh problem we come up with an idea through this project by reducing this delay time by sending the accurate location of accident to nearest Police Station or hospitals.

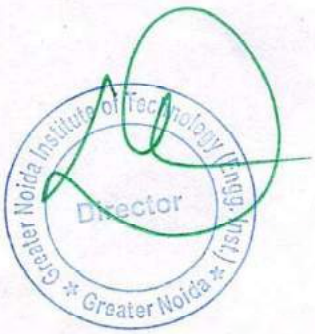
Problem: Though there were few systems before which were getting to know about the occurrence of accidents via GSM but there was not any possibility for knowing the information where this accident had occurred but in present case we can get to know about the exact location via GPS and further the state of vehicle is determined by the other sensors.

Literature Review: In some bad weather condition or in Slummy area as well where it is very hard to know about the exact location if any accident happens. There was no any well and proved method by which that belonging can be rescued at that place where he or she is. But now by with the use of ultrasonic sensor and accelerometer we can find the condition of the vehicle and further the exact location tracked by GPS can be shared by the using GSM in message form to the nearest police station or care taker

Methodology:

Flowchart





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A comparative analysis of melanoma detection methods based on computer aided diagnose system

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Highlights

- Presents current techniques used in skin cancer detection with CAD.
- This survey specifies specially automated techniques for classification.
- A comparative study for each and every method with the method is presented.
- This study can support in filling the gaps in literature work and increase performance of existing methods.
- In addition, such methods may cover up numerous problems regarding skin lesion classification, which alter CAD systems into more absolute specialist systems for diagnosing such lesions based on dermoscopic images.

Abstract

2021 International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)
Department of Electrical & Electronics Engineering, Galgotias College of Engineering and Technology, Gr. Noida, India

Cooperative Fusion rules in Spectrum Sensing

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***Abstract*—Cognitive radio networks (CRNs) uses Spectrum sensing(SS) for assessment the vacant spectrum in the licensed band .Cooperative spectrum sensing(CSS) is the best method for evaluation of white space when multiple secondary user work in the collaboration .All local node scan the licensed band give their decision to central fusion center. Central fusion center then aggregate the local nodes decision by soft fusion or hard fusion rules and give the final conclusion whether white space is available or not. Cooperative spectrum sensing enhances the spectrum detection efficiency by reducing the effect of fading and shadowing using spatial diversity and also reduced noise uncertainty problem. The simulation result in this article shows a relative comparison between various soft fusion and hard fusion rule. Soft fusion rule has high value of the detection efficiency in comparison of the hard fusion scheme at the cost of bandwidth.**

Keywords— Cognitive radio networks (CRNs), Spectrum sensing (SS) , Cooperative spectrum sensing(CSS)

I. INTRODUCTION

Due to the static allocation of the frequency band licensed band remains underutilize. Due to the intense use of wireless application the underutilize spectrum must be utilize that is only possible by the dynamic freq allocation as done in the Cognitive radio networks (CRNs). The idea of vacant spectrum detection was first proposed by [1]. In this proposal the energy calculation of the received signal is performed and then compares with predefined threshold to evaluate whether the licensed user is present or not. The basic transmitter based spectrum sensing (SS) technique are energy detection, match filter and cyclostationary feature detection [2] based technique.

A transmitter based, blind, non–coherent spectrum sensing technique energy detector. It does not need preceding information of input signal. In this technique the received signal is being evaluated for its energy content and then judge against a fixed detection threshold value to evaluate whether the channel is occupied or not. This technique has low implementation complexity and hive high value of the detection efficiency but detection efficiency despoiled in the case of at low signal to noise ratio region. Other two detection technique namely match-filter and that of cyclostationary both are coherent and also required proceeding information of the input signal. Match filter is a band pass filter having the transfer function that is the time shifted edition of input signal is convolved with the input signal then output of this filter compare with detection threshold to get information about the existence of primary user match filter based technique has high implementation cost but execute fine in low signal to noise region. In cyclostationary feature detection based technique feature of received signal is being evaluated to check the availability of the licensed user. It has also the limitation of high implementation complexity. Transmitter based detection technique are suitable for only single cognitive radio user. The performance of these methods degrades under the case of noise uncertainty that is created due to low signal to noise ratio and also in the case of channel uncertainty that is created due the deep fading and shadowing.

All the limitation of the transmitter based detection technique can be overcome if multiple cognitive radio user work under the collaboration with each other as done in cooperative spectrum sensing (CSS). Cooperative spectrum sensing uses spatial diversity principal to overcome the effect of fading and shadowing. Due to the collaboration of various cognitive radio user cooperative spectrum sensing give high value of the detection efficiency.

In the cooperative spectrum sensing (CSS) multiple secondary user carry out the detection task in the allotted spectrum and transmit their detection result to the central fusion centre. Central fusion center then combine the result of various secondary user by using soft fusion or hard fusion rules and give the aggregate decision whether the allotted spectrum is vacant or not [3].The cooperative spectrum sensing can perform in the three ways in centralize coordinated cooperative model central fusion center will be responsible to give concluded result each secondary report to central fusion center in the another method centralize uncoordinated model there is no fusion center every secondary user share their decision to another secondary user using multiple clustering algorithm in third type of cooperative model that is uncoordinated decentralize there is no coordination between multiple secondary user [3].

In the present article we have simulate the model of collaborated cooperative spectrum sensing for the centralize coordinated model fusion at the central fusion center is being done on the basis of maximum gain fusion (MGF), equal gain fusion (EGF), AND fusion, OR fusion, majority fusion rule .Simulation result have been plotted in the form of ROC curve that will describe relative detection efficiency under various fusion rule for cooperative spectrum sensing.

II. SYSTEM MODELING

Due the low implementation complexity energy detector will use as the local detection node. All the detection node will report to the central fusion center central fusion center then give the throughput in the term of aggregate detection probability. Figure 1 represent cooperative sensing model[4].

All the received signal energy is measured in finite time duration by removing unwanted signal component using a band pass filter then compare with a fixed decision threshold (λ).

Indian Geotechnical and Geoenvironmental Engineering Conference

IGGEC 2021: **Proceedings of Indian Geotechnical and Geoenvironmental Engineering Conference (IGGEC) 2021, Vol. 2** pp 75–82

Performance Evolution and Analytical Approach of Air Pollution Control System in Al Foundry

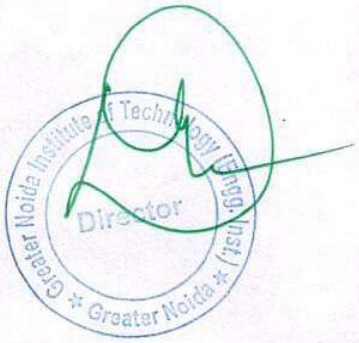
Anas Khan ✉, Shaurya Kumar Singh, Davinder Singh & Tarun Kumar

Conference paper | First Online: 09 November 2022

Part of the Lecture Notes in Civil Engineering book series (LNCE,volume 281)

Abstract

The point of this work is to give an outline of the reusing cycle for aluminium (Al), from scrap overhauling through projecting. The article examines ongoing progressions and forward leaps in aluminium reusing advances. Aluminium reusing helps the climate and the economy. The degree of risky contaminations in reused aluminium combinations is expanding, which is a critical drawback when contrasted with new amalgams. Ceaseless development of undesired materials might



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Davinder Singh

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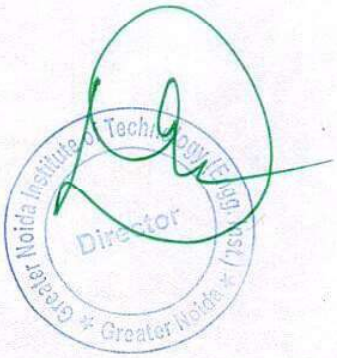

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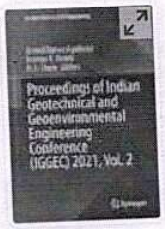

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Part of the Lecture Notes in Civil Engineering book series (LNCE,volume 281)

Abstract

The point of this work is to give an outline of the reusing cycle for aluminium (Al), from scrap overhauling through projecting. The article examines ongoing progressions and forward leaps in aluminium reusing advances. Aluminium reusing helps the climate and the economy. The degree of risky contaminations in reused aluminium combinations is expanding, which is a critical drawback when contrasted with new amalgams. Ceaseless development of undesired materials might

Reference

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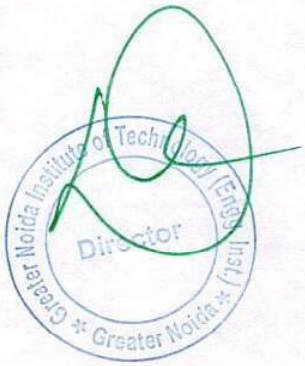

2021 International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)
Department of Electrical & Electronics Engineering, Galgotias College of Engineering and Technology, Gr. Noida, India

IoT based Healthware and Healthcare Monitoring System in India

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Abstract— **The Indian healthcare scenario has been gradually changing in terms of the use of advance healthcare and healthware systems. In accordance with the recent surrounding conditions and increasing health issues rate, accelerate the use of healthware and healthcare system. The growth of healthcare systems in India is obstructed due by lack of medical professionals, hospitals, poor accessibility to medicines, and unavailability of quality healthcare in distant and rural areas. The Internet of Things (IoT) can play a vital role in improving the poor healthcare system in India by providing a proficient, integrated, well connected, patient-centered system. The IoT technology has emerges with various IOT based healthware, medical monitoring system, and smart homes for elderly patients suffering from chronic disease which serves as an efficient solution to qualitative, effective and accessible healthcare system. The present study provides a review of the available healthware and healthcare system in India and their efficacy for healthcare space.**

Keywords—Internet of Things (IoT), Electronic Health Record (EHR), Health Data Center (HDC)

I. INTRODUCTION

IOT explores new scope of patient care through real-time health monitoring and access to patient's health data at any time. This data is a used by doctors to improve patient's health by providing best possible care. IoT enabled devices have made remote monitoring in the healthcare sector possible. The idea of IoT is envisaged with the interconnectivity advancement of multiple devices. Earlier multiple computers are connected together which lead to World Wide Web (www), then further advancement in mobile technology leads interconnectivity to a more border domain and finally the connectivity of daily objects to internet for smart homes, health care institutes, aerospace and various transportations introduces IoT [1]. The rapid advancement in the field of digital electronics, IPv6 and wireless networks advances the growth of IoT. The IoT has many benefits in our routine life but there are some points of foremost concern to get a feasible IoT environment that are: privacy, security, connectivity, data handling, protocols and control mechanism.

Kevin Ashton proposed the concept of IoT in 1999, and he referred the IoT as uniquely identifiable interoperable connected objects with radio-frequency identification (RFID) technology [2]. IoT is a combination of internet with the forthcoming technologies [3]. IoT comes in to picture to meet the quality and demand in various field as environmental montoring, secure communication, health monitoring, traffic monitoring, smart homes, wearables, smart city, smart grid, smart retail and agriculture smart supply chain [4].

Connecting everyday things embedded with electronics, software and sensors to the internet enabling them to collect and exchange data by connecting all the devices to the same platform. The benefit of IOT includes efficient resource utilization, minimizing human efforts, development of artificial intelligence through IOT and improved security.

The main features of IOT comprises of three modules connect, analyze and integrate. Connect means device visualization, high speed messaging and endpoint management. In analyze domain real time analysis of incoming streams with event aggregation, filtering and correction has been done. Data enrichment of raw data with contextual information by generating composite stream and event data store processing also lies in the analyze domain. The last domain is integration domain which deals with enterprise connectivity i.e., dynamically dispatch critical IOT data and event to applications and process flows. Application Programming Interface (API) based integration with cloud application and IOT devices along with command also covered up in integration domain. Figure 1 shows the basic features of an IOT base system which includes three sub modules such as connect: to connect various objects to IOT platform, analysis of the collected data and use it to build business intelligence and integrate various models to improve user experience.

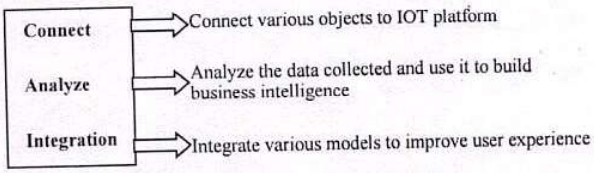

Fig. 1. Basic features of an IOT base system

II. EMERGENCY OF IOT IN HEALTHCARE

IOT is enabling the current healthcare system to be more users friendly for people. Recent advances in sensor and communication technology help to collect patient data overtime and enable preventive care to provide better understanding of effects of therapy on a patient. IOT in healthcare allow healthcare devices to automatically obtain patient data when and where needed by doctors. Automation reduces risk of error in the diagnosis and treatment. The

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IoT Based Smart Indoor Environment Monitoring and Controlling System

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***Abstract*—The population explosion is affecting the air quality adversely, also various kinds of dangerous gases spreads in our environment which are released by the industries and factories etc. causes air pollution. In this study an Internet of Things (IoT) technology based indoor monitoring and controlling device is introduced which greatly help the people life and their works. IoT is the latest or unique technology which connects device to the internet without human interruption. It enables devices to interact, collaborates and learns from each other experiences just like human beings.**

In the present scenario most of the people spend more than 90% of their time in artificial environment and if any changes in the quality of the environmental conditions occur, it leads to spread out multiple kinds of health problems or diseases which affect the human body for example, cancer, asthma, paralysis etc. To eliminate all these conditions, there is a need of continuous monitoring of indoor air quality which can be achieved by IOT based devices. In the present study, the implementation of an IoT based indoor ambience monitoring and controlling platform is presented to achieve good indoor quality, and it also have benefits such as less costly, less time consuming, more efficient and has been able to achieve paperless workflow in the world of busy environment without involving human to human interaction.

Keywords— Internet of things, Indoor Environment, Air Quality, Microcontroller.

I. INTRODUCTION

The total energy consumption in the world is increasing rapidly because people spend their most of the time in buildings like home, school, colleges, offices and multiplex markets etc. which leads to the necessity of to have good interior environment quality with less energy consumption. In the present study, a design method is presented in which more than two low cost smart sensors are controlled by using single device and higher environmental quality can be achieved whenever any kind of changes occur in the quality of the environment such as temperature, pressure, humidity light and gases etc.

The main component of this device is IoT (Internet of things) which controls the whole process of the project with the help of ATmega328p microcontroller. Microcontroller is the heart of the device which is used to control or manage the output of all the sensors and send it to Liquid Crystal Display (LCD) for displaying responses of the sensors. It uses Atmega328 microcontroller which contains total 28 bits. Sensors are primary unit of the proposed module. Sensor is an electronic device that converts original message into electrical signal which can examine by the instrument and can be readable by human or transmitted for further processing. It is used to sense or detect the changes in the surroundings such as temperature, pressure, humidity, light and gases etc.

When the power supply is ON all the sensors get ready to detect or sense the changes in its surroundings. If any changes are detected by the sensors, then all the responses with the help of ATmega328p microcontroller are send to the liquid crystal display for displaying the output on the screen and also provide it to ESP8266 which provides internet connection and then give it to the mobile phone, laptop, personal computer (PC), tablet through internet. The data from internet can be display on web or on the smartphone, tablet etc. where the server sends the data.

The most commonly used programming for microcontroller is C and C++ because it is platform independent, object-oriented, robust, interpreted language and more secure than other language. For the programming of the Arduino Uno IDE software is used to run and execute the program. IDE stand for Integrated Development Environment which is most commonly software of the Arduino Uno to run the program. Therefore, the device is able to monitor and control the environment quality which does not affects the human's life and work.

II. BACKGROUND STUDY

Pollution is increasing day by day due to change in environmental quality which affects the body of the human which causes asthma, cancer and paralysis etc [1-4]. Such problems are avoided by using such type of device which can monitor or control the environmental quality accurately [5]. This is achieved by using smart controlling and monitoring systems. IoT is the most advanced and latest technology which is able to monitor the conditions and resolve it in real time [6].

Internet of things (IoT) is a combination of two words, internet and things [7]. Internet is global network which is used in all over the world for connecting people from one place to another over the network. IoT is a machine learning technique which enables devices to interconnect, collaborates and learns from each other experiences just like human beings. Salient features of IoT include:

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A review on content-based image retrieval: Relating low level features to high level semantics

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ABSTRACT: The technique through which a system can find similar images to a query image among an image dataset is known as Content Based Image Retrieval (CBIR). This technique works by highlighting a few features from the image in question to the images in the dataset to provide the best matching outcome. This review deals with economical and correct retrieval in CBIR.

1 INTRODUCTION

As there was a sudden spike in the use of image acquisition, the digital image information also up-graded itself. The need of economical retrieving system was the need of hour, so researchers came up with Text-based and Content-Based retrieval techniques. In Text based image retrieval (TBIR), the images are annoted with a text description and the result is displayed after matching that annotation of the image with text query of user. In Content based image retrieval (CBIR), user gives an image as an input and the image is then matched by system in its database to find the exact image on basis of the description of image and other features such as colour, texture and shape of images to provide an output. Figure 1 shows framework of CBIR:

(a) Image-Database: Digital device can be used to store acquire data in database.
(b) Image Pre-processing: Enhancement of image before the retrieval process.
(c) Image Acquisition: A feature vector database is created with features like texture, colour or shape of the images. It can be features divided into two parts i.e. High level and low level features.
(d) Similarity Matching: It tells us the percentage about how much an image is same.
(e) Output/Retrieved Images: Final outcome after the process.
(f) User Interaction/Feedback: User give their feedback on the result being relevant or not.

CBIR system allows the user to get their desired output by matching the content of image. Content at this point refers to colour, spatial location, texture or shape (Liu et al., 2007; Vassilieva et al., 2009).

The foremost intention is to reduce semantic-gap. The paper is alienated into 5 sub-parts. Semantic gaps deals in Section 2. Low level semantics cover in Section 3 and high level semantics covers in section 4. The performance measure is cover in Section 5 and paper is concluded in last segment.

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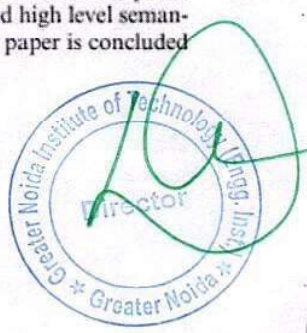

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A Review on Different Preprocessing and Feature Extraction Technique for SSVEP BCI Inference System

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Abstract

The steady-state visual evoked potential (SSVEP) is a periodic signal contaminated with recorded electroencephalography (EEG) signal. Accurate detection of SSVEP signals from noise contaminated EEG signal is the key challenge to improve the performance of an SSVEP-based BCI system. Therefore, the use of a signal processing algorithm plays a significant role to detect the SSVEP signal with great accuracy. This paper describes the recent development in the use of various existing detection algorithms for the SSVEP BCI system. The signal processing technique related to preprocessing and feature extractions is discussed in this paper. This study report that technique that can be applied for non-stationary and nonlinear signals analysis are more employed as compared to traditional Fourier transform to improve the performance for SSVEP BCI system. Spatial filtering techniques are useful for channel selection and to eliminate the nuisance signal from multi-channel EEG signal.

Keywords

Steady-state visual evoked potential (SSVEP)
Canonical correlation analysis (CCA)
Brain computer interface (BCI)
Electroencephalography (EEG)
Empirical mode decomposition (EMD)

1. Introduction

The AQ1 brain-computer interface (BCI) system enables the subject to communicate with the computer directly through brain signals [1,2]. The steady-state visual evoked potential (SSVEP) signal is an evoked signal contaminated with the recorded electroencephalography (EEG) signal used to develop the BCI system [3]. In recent times, the SSVEP-based BCI systems have become renowned among other BCI systems due to the relative high-information transmission rate (ITR), minimal training time, and high signal-to-noise ratio (SNR) associated with SSVEP [4]. AQ2

The SSVEP is a periodic wave that induces into a non-invasive EEG signal when the subject observes the visual-stimulus flicker at a particular frequency [5,6]. The SSVEP signal appears in the recorded EEG signal when its frequency matches the stimulation frequency

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Fake News Detection: Needs for Individuals and Businesses in the time of Covid-19 and its Future Applications

Publisher: IEEE Cite This PDF

Saurav Jha ; Shiv Narain Gupta ; Vivek Gupta ; Priyesh Tiwari All Authors

Abstract: Today social media plays a very important role in everyone life through which we create online communities to share every kind of information. No one can be one sure abou... View more

▸ Metadata

Abstract:
Today social media plays a very important role in everyone life through which we create online communities to share every kind of information. No one can be one sure about the news they are receiving is true or not? In India, WhatsApp has limited that a person cannot forward a text to more than 5 people at once [1]. This was done to curb the rise of false information. In this paper a machine learning models is create to segregate false and real news. A performance comparison for all the model has been performed in the terms of accuracy. The present article also explores the application of the fake news detector in the real world application.

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Contents

In the earlier days the information was communicated via the physical mode like letters. Through the rise of technology and cheaper data rates in the last decade [2], people in India are more connected. So In the present days the internet and social media is the popular mode of communication to share any kind of information. However, when a vast majority of country blindly believes what they read on the internet to be true, it is very difficult for the government to stop any mishaps from occurring. In the last decade only, the case of mob lynching is at an all-time high and some people push their propaganda over the internet to influence the masses. It is not just the duty of government to stop these but also for citizens to verify and check what they read on these apps. The fake news is changing businesses as well, for example, a popular consumer product company stocks fell by 3.7% when a piece of fake news surfaced that they use animal parts in their product. The news was curbed at the earliest with company coming out with an official statement denying all these allegations but the damage was already done. To make sure this won't happen we need to train people in understanding how to verify any news and that's why our simple to use and efficient fake news detector model comes in handy. Due to the easier to publish the fake news these news influence people on a great extent than anyone can fathom, from elections (Cambridge Analytics case) to Brexit [3]. Now it's an urgent requirement to set up a process to check the authenticity of the news.

Signature Coming Breaking

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March 18-19, 2021

AN APPLICATION OF TAGUCHI IN THE SELECTION OF PROCESS PARAMETERS BASED ON TENSILE STRENGTH IN EPS-ASSISTED-INVESTMENT CASTING PROCESS

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ABSTRACT:

This research work focuses on the optimization of three process parameters- density of slurry, pouring temperature and cooling environment in EPS-Assisted Investment Casting Process, by using Taguchi Method. The compositions of ceramic powder (Aluminum Silicate and Calcium Sulfate dehydrate) and Potassium Silicate binder have been selected. After coating on patterns, the foam has been removed at a very slow and uniform heating rate of 2 °C/min. A-359 aluminium alloy has melted and poured in the shells. The tensile strength of samples has been measured. The observed optimized process parameters are 2.25 gm/cm^3 density of slurry, 800 °C pouring temperature and 27 °C/min cooling rate.

Keywords: Density of Slurry, Pouring Temperature, Cooling Environment of Castings, Tensile Strength.

1. INTRODUCTION:

In modern industrial era, there is a great challenge to produce high dimensional accuracy as well as surface finish of casting components. In this direction a lot of casting technologies have been implemented. EPS-Assisted Investment Casting Process is one of them [1-2]. It is the hybrid process of investment casting and evaporative pattern casting process. This process eliminates the disadvantages of both investment casting and evaporative pattern casting. Since, the expandable polystyrene pattern is removed before the pouring of molten metal. So, porosity and blow holes as well as pin holes type defects have been reduced [3-6]. These defects have been formed due to the gas generated during evaporation of expandable polystyrene pattern. Wax has low softening and melting point as well as low brittleness. These limitations of wax pattern bounds to make modifications in investment casting process [7-9].

Table 1: Composition of A-359 Aluminum Alloy

Al (%)	Si (%)	Mn (%)	Mg (%)	Ti (%)	Fe (%)	Cu (%)	Zn (%)
Balance	9	0.10	0.5	0.2	0.2	0.2	0.1

In this research paper, A-359 aluminium alloy has been chosen as casting metal due to low melting point, excellent fluidity, higher strength to weight ratio, good grain and stable structure, reduced surface roughness and corrosiveness. The composition of A-359 aluminium alloy is given in table-1.

Substrate material selection and design optimization of patch antenna

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Abstract- *In this paper parametric analysis of different substrate materials used for microstrip patch antenna are analyzed based on its physical properties, also parametric calculation performed for selection of substrate working at operating frequency of 5.8 GHz. Proposed microstrip patch antenna was optimized by varying its design structure from rectangular patch to E-shaped structure. Method of moment based electromagnetic simulator IE3D was used for parametric calculation and optimization of proposed patch antenna design.*

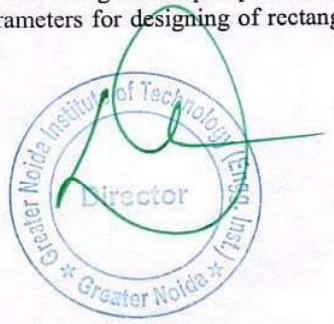
1. Introduction

Patch antenna consists of conducting patch on a ground plane separated by dielectric substrate and it radiates electromagnetic signals at high frequencies. This type of miniaturized design of patch antenna was first conceived in 1953 by G. A. Deschamp in USA [1]. Later on in 1955 H. Gutton and D. Baissinot patented an aerial antenna of similar design working in UHF band in France [2]. In 1975 J. Q. Howell elaborated design of rectangular shaped patch antenna and circular shaped patch antenna [3]. The patch antenna can be used as an transmitting and receiving device [4]. ISM Band frequency 5.8 GHz is chosen for designing of patch antenna as radio can support upto 1300 Mbps wireless speed and in 2.4 GHz it is between 450 Mbps to 600 Mbps[9]. Different substrate materials are considered for designing of patch antenna having dielectric constant lies between 2 to 12 i.e., $2 < \epsilon_r < 12$ [6]. Patch antenna can be designed in the shape of rectangle, circle, triangle etc. Further its geometry can be modified using analyzing its radiation properties and its broadband applications [5]. Different parametric results like return loss, radiation pattern, gain, VSWR etc. are analyzed on simulating its design on electromagnetic simulator IE3D.

2. Design flow of Patch Antenna

As operating frequency selected for patch antenna design is 5.8 GHz. Rectangular shaped patch antenna dimensions are calculated using the antenna design equation [7]. Parameters for designing of rectangular patch antenna are-

Resonating frequency (f_r) = 5.8 GHz (ISM Band)
Width of Rectangular patch antenna (W) = 29 mm
Length of Rectangular patch antenna (L) = 18.35 mm
Height of dielectric Substrate (h) = 1.580 mm



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Single OTA Based Dual Mode First-Order All-Pass Analog Network

Publisher: IEEE

Shiv Narain Gupta ; Bhartendu Chaturvedi ; Jitendra Mohan All Authors

Abstract: Operational transconductance amplifier, a resistor and a capacitor are being used in this proposed work to construct a dual mode first-order all-pass analog network. The ... **View more**

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Abstract:
Operational transconductance amplifier, a resistor and a capacitor are being used in this proposed work to construct a dual mode first-order all-pass analog network. The presented circuit has a distinguishing feature that allows it to operate in both voltage-mode and current-mode. In order to get all-pass filter response in both modes, the circuit does not require any physical alterations. The non-ideal as well as parasitic analyses are also included to evaluate the real time performance of proposed structure. The importance of design has been highlighted by using Monte-Carlo analysis to explore the impacts of capacitor changes as well as the effects of temperature variations. Using ± 1 V power supply and 0.18 µm CMOS process parameters, the theory of the proposed circuit is validated using PSPICE simulation.

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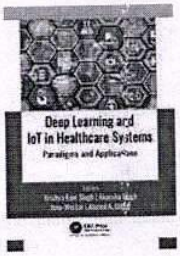

Case Studies: Healthcare and Deep Learning

By Ashish Tripathi, Arun Kumar Singh, K. K. Mishra, Pushpa Choudhary, Prem Chand Vashist

Book Deep Learning and IoT in Healthcare Systems (https://www.taylorfrancis.com/books/mono/10.1201/9781003055082/deep-learning-iot-healthcare-systems?refId=140e849f-0900-4358-bc33-eb5176522068&context=ubx)

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ABSTRACT

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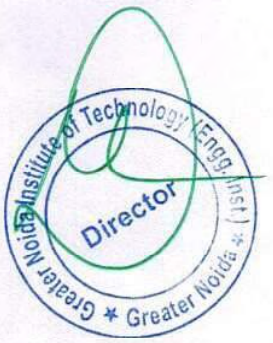

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2 Food security and farming through IoT and machine learning

From the book Internet of Things and Machine Learning in Agriculture

Ashish Tripathi, Arun Kumar Singh, Khararee Narayan Singh, Krishna Kant Singh, Pushpa Choudhary and Prem Chand Vashist

https://doi.org/10.1515/9783110691276-002

Abstract

Agriculture plays a vital role in the Indian socioeconomy. In 1871, the Department of Agriculture and Commerce was started by Lord Mayo, the fourth viceroy of India, and A. O. Hume. On the basis of Famine Commission reports of 1880, 1898, and 1900, respectively, the government identified and set up a Department of Agriculture. In 1905, the Agriculture Research Institute became the Indian Agricultural Research Institute (IARI). From the IARI, the green revolution stemmed. After independence, the main challenge has been to generate enough healthy food with high nutrition for the Indian population. Article 47 states that public health with increased nutrition and standard of living is the first duty of the state, and thus the National Food Security Act 2013 has become a high priority of the government. Therefore, the varieties of high yielding crops were promoted in conjunction with excess use of chemical fertilizers, pesticides, and irrigation without knowing the negative impact on future farming and soil health. In recent years, some fruitful initiatives like the usage of innovative technologies and positive government policies have been taken in the agricultural sector to maximize the overall production rate with the required quality of soil and minimize the input cost. But, due to continuous growth in population, there is a huge need to produce nutrition-enriched crops to fulfill the hunger as well as maintain the soil health by promoting the use of biofertilizers and green manure, and controlled use of irrigation as per the necessity. In this chapter, our focus is to discuss a long-term strategy by incorporating research and innovation for a sustainable agricultural system based on technologies such as the Internet of things and machine learning that can play a significant role to advance sustainable farming and food nutrition. This may include

Emergence of Cyber Physical System and IoT in Smart Automation and Robotics
pp 189–201

IoT for Smart Automation and Robot

Ashish Tripathi ✉, Anand Bhushan Pandey, Arun Kumar Singh, Pardeep Malik, Krishna Kant Singh & Prem Chand Vashist

Chapter | First Online: 05 May 2021

Part of the Advances in Science, Technology & Innovation book series (ASTI)

Abstract

The technology, which is behind this drastically changing world, is the Internet of things (IoT) and Internet of things connected devices. These devices are capable of communicating over the Internet by using various protocols designed for wireless networks. In recent years, IoT devices have flooded the market, and their services to the society and the world infrastructure are becoming vital. The growing demand for automation has accelerated the deployment of IoT devices across the world. Not only the intelligent IoT devices and sensors but the robots also have become the backbone of smart automation systems such as home automation, industrial automation, and city automation (smart cities). The increasing number of these smart devices and growing infrastructure is creating security and privacy challenges, but at the same time, a number of leading companies

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Machine Learning and the Internet of Medical Things in Healthcare
2021, Pages 1-22

Chapter 1 - Machine learning architecture and framework

Ashish Tripathi [1], Arun Kumar Singh [1], Krishna Kant Singh [2], Pushpa Choudhary [1], Prem Chand Vashist [1]

https://doi.org/10.1016/B978-0-12-821229-5.00005-7

Abstract

Machine Learning (ML) is a branch of Artificial Intelligence that enables computer systems to learn from past experiences and improve accordingly without the direct intervention of the programmer. ML enables machines to behave very similarly to human beings. In order to extract the required information from the huge amount of data, ML can be used to design algorithms based on the trends of data and relationships among the data. ML can be applied in various fields such as intrusion detection, bioinformatics, health care, marketing, game playing, and so on. It enables the computers or the machines to make data-driven decisions rather than being explicitly programmed for carrying out a certain task. These programs or algorithms are designed in a way that they learn and improve over time when they are exposed to new or unseen data. Due to the huge amount of data, the significance of ML can be seen in various sections of the society. Especially in industries, ML is assisting exploration of the hidden patterns of the data, and through this the overall performance of the business can be improved. It is cost-effective, affordable, and simple computing techniques allow the analysis and handling of a huge amount of complex data. ML is not only helping to understand and identify the hidden patterns of a diverse set of data but also encourages automation in analysis in place of humans. Also, ML is helping industries to avail of the opportunities and make it profitable in future endeavors.

In this chapter, we first review the fundamental concepts of machine learning such as feature assessment, unsupervised versus supervised learning, and types of classification. Then, details of the ML architecture and framework are discussed.

Previous Next

Keywords

Machine learning; supervised learning; unsupervised learning; classification techniques

Recommended articles Citing articles (0)

Advances in Smart Communication and Imaging Systems pp 281–288

Real Time Physical Ffitness Monitoring App: BeTough

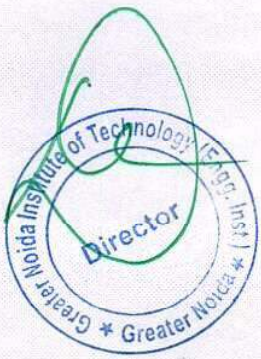
Pushpa Choudhary ✉, Akhilesh Kumar Choudhary, Arun Kumar Singh & Ashish Tripathi

Conference paper | First Online: 14 April 2021

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 721)

Abstract

State of health is called physical fitness basically it is an ability to perform a specific task like sports, occupation, and daily activities. Physical fitness can be achieved by good nutrition, proper exercise, and proper rest. In this paper, an app is proposed for awareness of fitness known as "BeTough" is a fitness movement to encourage people to take a step ahead for their better health. BeTough is a platform where fitness data of a person is recorded and monitored. It also has a series of functions such as improving the scientific guidance, rationally



Malaria Detection Using Image Processing And Machine Learning

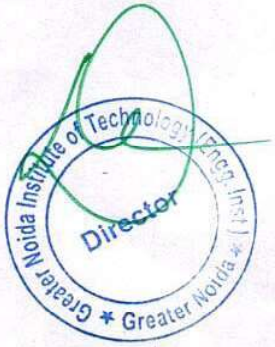
Publisher: IEEE

Praveen Kumar Maduri ; Shalu ; Shobhit Agrawal ; Alok Rai ; Shubham Chaubey All Authors

Abstract: Malaria which has now become a common human disease is diagnosed in the present scenario starting with a clinical screening and then by medical treatment. Automated class... **View more**

Metadata

Abstract:
Malaria which has now become a common human disease is diagnosed in the present scenario starting with a clinical screening and then by medical treatment. Automated classification of malaria parasites using images is a bit challenging task due to the large amount of variability found in the display of skin abrasion. Many deep convolution neural networks show possibility for general highly variable tasks across many fine-grained object categories. Here we are working by using CNN network and datasets. CNN which is known as convolutional neural network is used to differentiate images on the basis of image pixel patterns. Our model mostly focusses on image processing using keras image generator for creating real time images. We basically train our model to easily differentiate between positive and negative images from the given datasets. Detecting malaria by image processing is very fast and reliable method as it does not require any experience. The main aim of using image processing is that our model can detect cells from multiple images taken from microscope via thin blood smear and detect them as positive and negative human blood cell and also it performs classification on human blood cell by using deep learning.



8 RAJASTHAN SCIENCE CONGRESS (20-22 October 2021)

CARE - Citizens Awareness of Renewable Energy

Aneep Kumar[a,b] and Shobhna Choudhary[b,c]

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ABSTRACT

This study investigates the citizens' awareness level regarding renewable energy sources (RESs). This was in view of the fact that the use of renewable energy technology provides a perf example of how economic well-being and a strong commitment to our environment can complement one another in an effort to reduced emission, provision of sufficient power supply, a clear environment, strong and growing economy; and on the other hand, reducing our dependence on fossil fuel and enhancing our security of energy supply. Citizens perspective of science (CP is an important concept among science communicators. Citizens awareness of renewable energy (CARE) is proposed as an important sub-concept of CPS. A total of 308 respondents from diver backgrounds participated in this study. The results clearly reveal that low awareness level of the participants regarding the RESs. The result revealed that greater proportion of the responde nearly 60% are don't know that CARE is important or not for them. The responses also demonstrate that mostly participants think renewable energy helps in making local environment bett Furthermore, several separate important questions for a CARE research project can be identified: i) Is CARE important? ii) Which issues of CARE are the most important ones, according renewable energy scientists? iii) What understanding of renewable energy has the general public today, worldwide? iv) How to achieve CAR

Keywords: Citizens perspective of science, science communicators, Citizens awareness of renewable energy, Renewable energy

INTRODUCTION

Importance of Citizens Awareness of Renewable Energy

The key finding is that greenhouse gases (GHG) emissions are growing rapidly and that little time is left to turn things around. With current climate and development practices, global GHG emissions will continue to grow over the next few decades. Most of these increases come from burning fossil fuels (coal, oil and gas), but deforestation is also a problem. The intergovernmental panel on climate change (IPCC) report released makes it clear that the world cannot continue on its current path, If we continue what we are doing now we are in deep trouble. There are several reasons why public understanding of renewable energy might be important as follows:

- Renewable energy provides reliable power supplies and fuel diversification, which enhance energy security, lower risk of fuel spills, and reduce the need for imported fuels.
- Renewable energy also helps conserve the nation's natural resources.
- Anthropogenic influence on the world's climate, in particular climate warming due to release of greenhouse gasses like carbon dioxide CO_2 and methane CH_4.

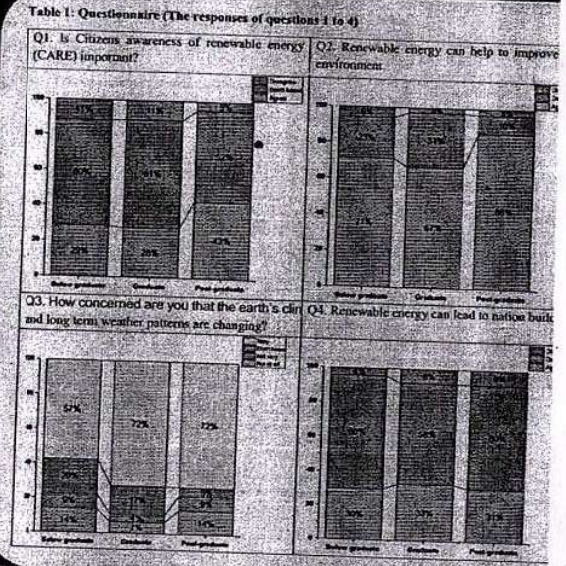
METHODOLOGY

- To measure the citizens' awareness level of the RESs, we have conducted a survey type methodology for this research. Basic aim of this methodology is to incorporate people from diverse education backgrounds to make the study results more significant, consequential and reliable.
- For conducting this research, we prepared a questionnaire consisting of four questions. How well data is sampled depends on the availability of a sampling frame, the sample size and selection procedures.
- The aim of the sample in this study was to produce data that could be subjected to a variety of statistical techniques, purposive sampling was considered to be the most effective method for this research work.
- Using purposive sampling procedure, the study as in most sampling approaches, a targeted specific educated population, thus the ages between 15-30 years was taken as the unit of analysis.

RESULTS

A total of 308 participants from diverse educational background have participated in this study. Table 1 presents a questionnaire which consists of four questions related with citizens' awareness regarding RESs. It also includes received responses and their analysis and interpretation.

Table 1: Questionnaire (The responses of questions 1 to 4)



DISCUSSIONS

Below are the possible means on educating the general public on renewable energy technologies and its benefits.

- **How Could Public Understanding of Renewable Energy Be Achieved, and Which Means Are Potentially Useful?**
  There are of course several different channels that can be used in conveying attitudes towards and knowledge of renewable energy subjects: Newspapers, TV programs, books, interactive exhibits in science centres, lessons in the school. Different media certainly attract different target groups.
- **Educating the General Public**
  A number of ways to educate large populations are readily available. Some proven examples:

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Sexual-predator Detection System based on Social Behavior Biometric (SSB) Features

Mudasir Ahmad Wani*, Nancy Agarwal, Patrick Bours

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Abstract

This study designs an online sexual predator detection system using Social Behavior Biometric (SSB) features. Social biometric focuses on extracting the pattern a user exhibits while interacting and communicating through social networks. The paper addresses the online sexual predator problem by mining the vocabulary and emotional behavior, which could assist in identifying if the user is a benign or predator. The feature-set consists of vocabulary terms that appear differently in predator and victim content. In order to strengthen the detection model, the paper also focuses on distinguishing the two classes of users based on emotions reflected in their conversation. The experiments are performed on the PAN 2012 corpus. Two datasets are created with respect to vocabulary-based and emotion-based features. The results obtained on the test set have proved that by integrating the vocabulary and emotion-based attributes, the performance of the system is significantly enhanced. While comparing, the proposed approach has outperformed top existing methods by obtaining F_1, F_2, and $F_{0.5}$values of 0.95, 0.94, and 0.96 respectively. Furthermore, we also recorded the best accuracy compared to state-of-the-art studies for our proposed SBB-based approach with 99.86%, 99.51%, and 99.88% for Decision Tree (DT), Support Vector Machine (SVM), and Random Forest (RF) respectively.

Keywords: Online Sexual Predators; Emotion mining; Lexical analysis; Machine Learning;

1. Introduction

Social networking applications play an essential role in our daily lives by providing a platform to connect, communicate and socialize with other people easily. We may or may not know our online contacts also in the real world. According to an online abuse report (2019) [2], around 90% of the population in the age group 11–16 years possess a social media account. Alongside amazing opportunities, these sites also open doors for various safety risks to their users. For example, the anonymity characteristic of social networks allows a person to behave in whatever manner

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Predatory Conversation Detection Using Transfer Learning Approach

Nancy Agarwal, Tuğçe Ünlü, Mudasir Ahmad Wani & Patrick Bours ✉

Conference paper | First Online: 02 February 2022

905 Accesses | **1** Citations

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Abstract

Predatory conversation detection on social media can proactively prevent the netizens, including youngsters and children, from getting exploited by sexual predators. Earlier studies have majorly employed machine learning approaches such as Support Vector Machine (SVM) for detecting such conversations. Since deep learning frameworks have shown significant improvements in various text classification tasks, therefore, in this paper, we propose a deep learning-based classifier for detecting predatory conversations. Furthermore, instead of designing the system from the beginning, transfer learning has been proposed where the potential of the pre-trained BERT (Bidirectional Encoder Representations from Transformers) model is utilized to solve the predator detection problem. BERT is mostly used to encode the textual information of a document into its context-aware mathematical representation. The

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Linearization of Photonic Link Based on Phase-Controlled Dual Drive Dual-Parallel Mach–Zehnder Modulator

Sarika Singh[1] · Sandeep K. Arya[1] · Shelly Singla[2]

Published online: 13 April 2020

Abstract
This paper presents analytical analysis for a linearization method of a microwave photonic (MWP) link based on dual-drive dual-parallel Mach–Zehnder Modulator. Electric phase shifters are utilized to suppress intermodulation distortion terms and to further increase linearity of the link. A simulation model is designed to evaluate spurious free dynamic range (SFDR) against third order intermodulation distortion as it is a key performance measurement parameter of MWP link. A suppression of 68 dB is found in intermodulation terms and SFDR enhances by 16 dB which ensures the improvement in performance of link against intermodulation terms.

Keywords MWP · SFDR · IMD · DD-DPMZM

1 Introduction

A potential solution to meet user's ever rising demand for higher bandwidth is to exploit high frequency band of radio spectrum as low frequency spectrum is already over occupied [1]. These high frequency waves i.e. millimeter (mm waves) offers broad bandwidth at cost of lesser distance travelled [2]. This limitation can be overcome by modulating high radio frequency (RF) signal upon an optical carrier [3]. This modulated signal is carried over an optical fiber up to a base station and then received on a mobile station wirelessly [4]. This technique is termed as radio-over-fiber (RoF) technology and offers low insertion losses, low transmission losses and remains immune to electro-magnetic interference [5].

The key requirement for designing an efficient RoF link is to find out a method to modulate RF signal while suppressing all possible losses [6]. However, most commonly used modulator in RoF system is Mach–Zehnder modulator (MZM) and perceived as one of the external modulator [7]. These modulators introduces numerous non-linear terms during modulation process due to modulator's inherent non-linearity but considered as promising

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Cooperative Spectrum Sensing Optimization Using Meta-heuristic Algorithms

Vivek Gupta[1] · N. S. Beniwal[2] · Krishna Kant Singh[3] · Shivendra Nath Sharan[4]

Published online: 8 April 2020

Abstract
Spectrum sensing helps to sense the unutilized spectrum in an opportunistic manner for cognitive radios. The various cognitive radios work in a cooperative manner to improve the efficiency of sensing by making use of the heterogeneity of multiusers. Meta-heuristic methods are being widely used for optimization problems in different domains. The selection of the best meta-heuristic algorithm results in high performance. These algorithms can also be used for optimizing the spectrum sensing in cognitive radio network. In this paper, two meta-heuristic algorithms namely grey wolf optimization (GWO) and dragonfly algorithm (DA) are used for cooperative spectrum sensing in cognitive radio network. These algorithms evaluate the optimal weighting vectors used in the data fusion center. This is further used for allocation of spectrum to the secondary users. The proposed methods are compared with genetic algorithm and particle swarm optimization based cooperative spectrum sensing optimization. The results show that both the proposed methods for cooperative spectrum sensing optimization based on DA and GWO have better convergence rate. Also, the maximum probability of detection is achieved with DA and GWO. Further it is observed that GWO performs even better than DA.

Keywords Cooperative spectrum sensing · GWO · DA · PSO

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Bio – Inspired Optimal Weighted Fusion in Cooperative Spectrum Sensing For Cognitive Radio

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Abstract

Software defined radio (SDR) uses the under-utilized spectrum by the dynamic spectrum allocation. Cooperative spectrum sensing is extensively used in software defined radio (SDR) for detecting white space in the licensed spectrum in a efficient manner. Selection of Fusion rule at Fusion center effect efficiency of spectrum sensing. In this research article we proposed a optimal weighted Fusion rule in which the weight of local decision node are altered until we get highest detection probability at the Fusion center. A Biological heuristic algorithm Cuckoo Search (CS) is used weight alteration. Simulation is being performed for proposed Fusion rule under the various parameter variations and compared with conventional hard, soft fusion rule. It is found that proposed Optimal Weighted Fusion rule work very effective than any Fusion rule.

Keywords: *Cooperative Spectrum Sensing, Software defined radio (SDR), Fusion Centre, Hard Fusion, Soft Fusion, Optimal Weighted Fusion.*

1. Introduction

In the recent Technical Environment the effective utilization of the allotted spectrum is urgent need. Software defined radio (SDR) increase the spectrum utilization efficiency by the dynamic allocation of the licensed freq band. The spectrum sensing was first proposed by Urkowitz [1]. In this proposal The received signal energy with fixed sensing time interval is evaluated and compare with pre-defined threshold to ensure whether the spectrum is vacant or not .Several spectrum sensing (SS) method have been investigated like Energy detection (ED), Match filter (MF), Cyclostationary or feature detection out of these method the Cooperative spectrum sensing is best even in very low signal to noise ratio (SNR) condition [2]. Cooperative spectrum sensing is receiver based spectrum sensing technique that is perform when various secondary user perform the spectrum sensing task individually and final decision is taken collaboratively. Local node or secondary users are Energy detector due to less realization complexity [3]. Secondary user perform spectrum sensing at individual level and all the individual local results are transmitted to Fusion center to generate the global result whether the white space are available or not for the use of secondary user [4]. Fusion center is core element of Collaborative Cooperative spectrum sensing that is used for generating the global result after combining the local node decision. At the fusion center local node decision can be fuse by Hard Fusion rule like AND, OR, MAJORITY and likelihood ratio (LRT) proposed in [5-6]. In all these rule one bit soft decision is transmitted from the each local node to the Fusion center where all the local result is logically combined to generate the global result. Fusion center can also fuse the local

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Conventional Combining Scheme in Cooperative Spectrum Sensing

Vivek Gupta, Narendra S. Beniwal, S. N. Sharan

Abstract: *Spectrum Sensing (SS) is a key constituent of software defined radio (SDR) or Cognitive radio (CR). Spectrum sensing (SS) investigate the white hole in allotted spectrum to the primary user. Cooperative spectrum sensing (CSS) has work in a best manner than any other spectrum sensing (SS) technique to detect white space or spectrum hole in the licensed spectrum. In this paper we compare various combining scheme that are to be perform at the Fusion centre (FC). Fusion centre (FC) is the central part of Cooperative spectrum sensing (CSS) that combines individual node decision. Simulation has performed for hard and soft combining scheme. According to the simulation the soft combining scheme performed better then hard combining scheme but the complexity and bandwidth (BW) requirement in the soft combining is more than hard combining scheme. In the proposed paper we also explore detection error that is to be present in various combining scheme.*

Keywords: *Spectrum sensing (SS), software defined radio (SDR), Fusion centre (FC), hard combining, soft combining.*

I. INTRODUCTION

Wireless application is increasing day by day therefore effective utilization of frequency band is very necessary but in Static allocation of frequency band some of the frequency band remains underutilize therefore dynamic allocation of frequency band is need of hour. Cognitive radio (CR) is the solution of above problem it uses dynamic allocation of the frequency band. Spectrum sensing(SS) is the central part of cognitive radio (CR) it monitor the presence of primary user (PU) in the accessible spectrum if primary user(PU) is found to be absent then cognitive radio will hand over the spectrum to the secondary user (SU) without destructive intervention with primary user (PU).The concept of signal detection was first given by [1].In the above proposal the energy of received signal is being measured in time window to judge whether the primary user(PU) is present or not . There are various spectrum sensing (SS) technique have been developed like energy detection (ED), match filter (MF) cyclostationary or feature detection [2].

Energy detector(ED) is a blind, non-coherent spectrum sensing technique it does not require prior knowledge of input signal. In the energy detection spectrum sensing (SS) energy of received signal is being measured for a time interval then it is compare with predefined threshold to decide whether the primary user are present or not energy detector (ED) have low implementation cost and have better detection probability (p_d) but at low signal to noise ratio (SNR) Energy detector(ED) cannot differentiate between primary user signal (PUS) and that of noise [3]. Match filter (MF) detection scheme is coherent detection scheme of the spectrum sensing (SS) where prior knowledge of the input signal is very necessary. In match filter detection convolution is being performed between unknown primary signal and that of time shifted version of the transfer function of match filter and output is being compare with the predefined threshold the match filter (MF) detection perform better then energy detector at low (SNR) region but the drawback of this technique is it has high realization complexity [4]. Cyclostationary or feature detection method feature of received signal is used to differentiate between the signal and noise it is also coherent detection technique but has high complexity in Computation. Prior information of the input signal is necessary [5] in the feature detection method.

Cooperative spectrum sensing (CSS) is a receiver detection based spectrum sensing technique that is performed when various Cognitive radio users (CRU) perform Spectrum sensing .Each individual Cognitive radio user give the sensing information to the central server that is also known as the fusion center (FC) central sever then aggregate all the individual cognitive radio (CR) and give the final decision whether the spectrum is vacant or not [6]. Three topology are being used in the cooperative spectrum sensing (CSS) that are Centralize coordinated topology in which there all node give their decision to central hub that give final decision whether the white space is present or not next is decentralize coordinated system in which there is no central hub each node communicate their decision to each other by some gossip or clustering algorithm third one is decentralize uncoordinated topology in which neither there will be a server to aggregate all the information nor each node share their information to each other [6] . At the Fusion center (FC) individual Cognitive radio (CR) can combined be combined by the soft combining or hard Combining scheme .In proposed work there is a relative comparison is being performed on the soft combining and hard combining scheme. Spectrum sensing (SS) is typical due to the time variation feature of the channel and shadowing effect that can be overcome in the cooperative spectrum sensing (CSS) . As we know that spatial diversity of various CR user is present in (CSS).

In section 2 individual node modeling and system model is designed .In section 3 various combining rules are explored in section 4numerical result have discussed and in section 5 conclusion from complete article have represented.

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WIRELESS NETWORKS

THIRD ORDER INTERMODULATION POWER VARIATIONS OF RADIO OVER FIBER LINK BY EMPLOYING MZM AND DD-MZM MODULATOR

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This paper highlights and demonstrates optical single sideband technique in Radio over Fiber (RoF) link which can become the backbone of upcoming next generation wireless and broadband communication networks. The RoF link consists of two tone radio frequency signals, operated on 9 GHz and 8 GHz, Mach Zehender Modulator (MZM), Dual Drive Mach Zehender Modulator (DD-MZM), optical fiber and photodetector. The severe issue in RoF transmission is intermodulation distortions and the third order intermodulation (IM3) errors which have its spectrum near to desired RF signals, are most performance degradation factors. This paper has its consideration on IM3 errors and a comparative analysis is drawn to illustrate the IM3 power variations with respect to optical modulators: MZM and DD-MZM in RoF link. The proposed model is designed in OptSIM software to confirm and validate the analysis and results. The results show that the RoF link based on DD-MZM can reduce 10.6 dB the IM3 errors as per its bias voltages in comparison with RoF link based on MZM.

KEY WORDS: *Radio over Fiber (RoF), Mach Zehender modulator (MZM), Dual Drive Mach Zehender modulator (DD-MZM) and 3rd Order Intermodulation (IM3)*

1. INTRODUCTION

The wireless mode is becoming a dominant mode for subscribers and explosive growth in wireless mode is continued. The wireless mode provides flexibility in various applications such as eHealth, smart cities, autonomous vehicles, Internet of things, and broadband and mobile users. All these applications require low latency, high data-rate instantaneous communications, and massive connectivity [1,2]. The important substitute for these requirements is achieved by the RoF link. The RoF link in which RF signals are modulated by optical signal at the central station and this optical signal

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DYNAMIC RANGE MEASUREMENT OF RADIO OVER FIBER LINK BY EMPLOYING 120^{O} PHASE SHIFT METHOD

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A reliable method to enhance the spurious-free dynamic range (SFDR) of the 120° phase shift based on the radio over fiber (RoF) link, has been proposed, analyzed and demonstrated. The computer simulation results of the proposed method are presented for a different frequency of input RF signal exhibiting an enhancement in the fundamental power and suppression in 3rd order intermodulation errors. The results also show that the proposed method can bring an enhancement of 7.13dB in SFDR compared with the conventional method at 10km optical fiber length. Thus, the proposed phase shift method can give a tremendous perspective in the implementation of a cost-effective RoF link.

KEY WORDS: *radio over fiber (RoF), dual drive mach zehender modulator (DD-MZM), 3rd order intermodulation (IM3), spurious free dynamic range (SFDR)*

1. INTRODUCTION

The explosive growth in mobile data traffic due to smart devices, the last ten years are witnessed and is projected to increase by several orders of magnitude by the year 2030 [1,2]. To address this expansion, there are requirements of cost-effective and green-oriented links with higher capacity, higher energy efficiency, lower latencies and wider coverage. The RoF link can be considered as an important substitute in which RF signals are modulated by optical signals at a central station and this optical signal is transmitted from a central station and a set of base stations via optical fiber. The base stations are simple and cost-effective structures that only consist of an optical-to-electrical converter, radio frequency amplifiers, and antennas. But the performance degradation parameter: 3rd order intermodulation (IM3) distortion error which is not filtered [3-5] and key responsible to degrade a dynamic range of RoF link.

Many research in view of overcoming nonlinear distortion and enhancement of dynamic range are adopted [6-10]. Each method has its advantages and disadvantages. But most of them result in more system complexity. In this paper, the RoF link using a 120° phase shift method is used due to its received spectrum at the photodetector. The simulation result for the RoF link using a 120° phase shift against intermodulation

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ANALYSIS AND IMPLEMENTATION FPGA IMPLEMENTATION FOR IMAGE PROCESSING ALGORITHM

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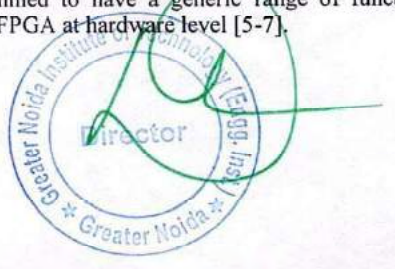
ABSTRACT: The Field Programmable Gate Array (FPGA) platform has recently been a powerful tool for video image-related algorithms. The groundbreaking FPGA software technology allows all such applications to capture some aspects of video image manipulation. The software was useful in video development with increasing image size and distance. High-speed video processing includes real-time applications such as those for this project. However, vast volumes of data obtained using satellite and land tenure systems are popular. The configuration of the FPGA system comprises of software inputs, program development, and software deployment, deployment of device programs and testing of designs. Validation of the project entails validating and validating the period that happens during the project process. The control middle filter theory uses the feedback signal to discriminate between neighboring stimuli for each feedback. A neighbor's architecture is a "gate" enclosing the whole input signal. Not just the initial and post-installation windows are the most visible 1D markers, but also 2D (or larger) indications like images, clear window patterns (such as "box" or "patterns"). Alternatively, determine easily after all window entries are ordered numerically, it's just the mid-value. There's more than one standard with an equal amount of entries. These modules are designed using VHDL and synthesized using Xilinx Integrated software environment (ISE). The design is simulated using ISIM. The design implementation is done on Xilinx Vertex-6 XC6VCX75T device.

KEYWORD- Xilinx Vertex-6 XC6VCX75T device, Field Programmable Gate Array (FPGA), Image-Related Algorithms.

I. INTRODUCTION

Recently, Field Programmable Gate Array (FPGA) technology has become a viable target for implementing appropriate algorithms for video image processing applications. FPGA's unique architecture allows the technology to be used in many of these applications that span all aspects of video image processing. The software is less effective in the area of video editing with the rise in picture sizes and the bit range. Real-time systems such as those which are the goal of this project are necessary for the high velocities required in video processing. Furthermore, the processing of a vast volume of data collected by satellites and land dependent detection systems is a major concern. Software Device Processor (DSP) technologies are used to systematically minimize the quantity of data to be interpreted, meaning that only the necessary data is sent to a human analyzer. Much of the video analysis is eventually required to take place on DSP devices, with no human involvement. This is obviously beneficial, as analysts of human data are expensive and may not be entirely accurate. FPGAs are also used as tools for the execution of real-time image processing systems as their architecture can leverage spatial and temporal parallelism. The tool used is window shooting technology to pierce and add filters through pixels in an image. As the bit depth for image sizes increases, programs become less useful and hardware systems have to replace them in real time. It is very difficult today to operate real-time image processing algorithms on serial processors, since picture sizes may be very wide even at high resolutions. Take a regular, 24 frames per second (not quite Full HD) 720p video feed. Processing this stream includes minimum operations of 66 million per second. Many applications for image processing demand that many (dozen) operations be conducted on each pixel. This adds to incredibly intense load management for a single serial processor. The usage of Field Programmable Gate Array (FPGA) technology is an acceptable solution to this. Recent years have seen significant improvements to the size and functionality of FPGAs. This has led to increased interest in their use as deployment platforms for applications for image processing, especially those requiring real time processing. Although anything expressly built for graphics production, such as a graphics processing unit (GPU), has the drawback of being programmed to have a generic range of functions, as compared to the real programmability and configuration of an FPGA at hardware level [5-7].



JOURNAL OF CRITICAL REVIEWS

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PERFORMANCE COMPARISON OF HIGH SPEED AND LOW POWER FORWARD ERROR CORRECTION (FEC) THROUGH VITERBI DECODE COMMUNICATION CHANNEL THROUGH XILING

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ABSTRACT: The FEC channel coding is widely used in the network of communication. FEC decoder's key function is used to retrieve data from errors through the communication system. Convolution code in any digital communication system is the most effective forward error correction tool. Present codes have been decoded using decoders of Viterbi. Recognizing and decoding together Viterbi constitutes a successful FEC tactic when AWGN corrupts the message in a loop. In order to obtain a more accurate decoder, General Viterbi algorithm (VA), requires an exponential improvement in hardware efficiency. The changed form of subscription uses a pointer principle. In order to maintain transport drums and road metrics, additional head registers are needed. VHDL is used in the various modules that incorporate the software space of Xilinx Integrated (ISE). Model Sim is the proposed architecture for this research. The Xilinx Spartan 2E xc2s15-6cs144 concept launch has been completed. The average frequency of service was 195.886MHz. The investigation of Viterbi is limited to the minimum duration of the problems. For the duration of the problem, Viterbi decoder with changed register will continue to research an exchange process.

KEYWORD: FEC channel, Viterbi Decode, AWGN corrupts, Automatic Repeat Request (ARQ), Convolutional Codes

I. INTRODUCTION

Forward error correction (FEC) (also called channel coding) in communication and information theory is an error detection method for transmitting data. This is on a one way contact system and the recipient does not have the right to order a retransmission when the fault is found, which is separate from an automated replay order (ARQ). Moreover, in this method, the sender adds repetitive data to its messages, also known as error correction code that is created systematically. Forward Error Correction (FEC) is, to be exact, to use the system that applies the data to relay the frequency information, the receiver would be able to create the data where there is a mistake. FEC technology increases the efficiency of all the contact device. This innovation achieves substantially improved output and service quality in terms of power enhancement, productivity improvement, reliability improvement, message latency reduction, bandwidth utilization, signal strength, and traffic congestion prevention [one]. The Encoding error rate is lower, the error correction code occupies the highest ratio and the decoding threshold specifications are lower for the same power, that is, the receiving antenna's opening requirement is lower. And it's simpler to receive; vice versa.

1.1 Forward Error Correction (FEC)

Forward Error Correction (FEC) is a form of error correction to identify and fix a small amount of errors in the data transmitted without the need for retransmission. In this approach the sender sends the data frame with a repeated error correction message. Based on redundant bits the receiver performs the necessary checks. If it finds the data to be error-free it will run an error-correcting code generating the actual frame. It then removes redundant bits before the message is passed to the upper layers. Repetition helps the recipient to find a small range of errors that may exist somewhere in the communication and such errors are often resolved without retransmission. Forward Error Correction (FEC) offers the receiver with the opportunity to resolve errors by needing a reverse channel to allow retransmission of data but at the cost of higher defined forward channel bandwidth. Thus, FEC is implemented in circumstances where retransmission is expensive or impractical, such as one-way contact connections, and multi-cast transfer to various receivers. FEC operation can be extended in the future to a physical bit source, or to a digitally modulated carrier demodulation. Of the above, FEC will in principle be an essential part of the original analog-to - digital transfer. The ECC specification specifies the highest number of mistakes or incomplete bits that can be corrected, and various direct error correction codes

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IMPLEMENTATION OF PID CONTROLLER USING AN FPGA

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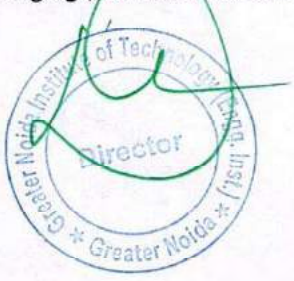
ABSTRACT: Modern device inventions including the Field Programmable Gate Array (FPGA) take place with microelectronic technological advancements and can be seen as tests for machine control algorithms. FPGAs do not pass this rule. Initially, FPGAs were built as an evolution of CPLDs (Complex Programmable Logic Devices), although each new addition of up to a billion transistors has grown considerably in recent years. Moreover, the increased integration rate in these circuit breakers is primarily due to energy-related growth. One of the recommendations was to use FPGA to allow samples easier to identify in many production and development sectors. Most vehicle control panels are PID buttons. During this time cycle, the PID code must be generated electronically. Current computer control systems often require improved, accurate component measurement. FPGA-based solution is included in the current system to integrate a temperature regulator. Integrated software designers usually have three stages of developing automatic control systems. Block sequence will use the plant process reaction. As a result, well-integrated implementation time is substantially high. We investigate the arithmetic model to use a slightly digitized PID system for future work. Benefits High processing speed of FPGA, reduced hardware power with enhanced networking.

KEYWORD: FPGA circuits, CPLDs (complex programmable logic devices), PID system

I. INTRODUCTION

First developments have been rendered in the automated application of microprocessor power algorithms. Such numerical methods addressed the issues relevant to the use of analog searches. These are therefore of considerable economic value and have greater versatility in architecture. New digital technologies such as FPGA (Field Programmable Gate Array) [1] are possible with technological advances in microelectronics, and can be used as goals for implementing digital control algorithms. The Field Programmable Gate Array (FPGAs) does not overcome this rule. Originally, FPGA circuits were established as the normal progression of CPLDs (Complex Programmable Logic Devices), but with increased sophistication in increasing modern application before the last iterations have exceeded the billion transistors. Nonetheless, the higher degree integration is primarily attributed to power development equivalent to such circuit estimates. Some of the approaches suggested was the use of FPGAs for fast sampling, and they continue to find a place in other manufacturing and technological sectors. PID controls are mainly the production device controllers [9]. At this perspective, the PID algorithm would need to be digitized. Current computer control systems typically need better and faster components for the computation. With the usage of several modern control algorithms such as adaptive control, fuzzy control and slider mode control this form of feature is indispensable. While the PID controllers are the newest, they are now the controls most commonly utilized in automotive control systems. The goal FPGA system used in this paper is Xilinx Design's newly produced Spartan-3A and debugging into a low-cost, robust feature set that Diligent makes available. The board offers all the resources you need to get the Spartan-3 model concepts planned and tested easily.

The term FPGA stands for Field Programmable Gate Array and is a type of semiconductor logic chip that can be programmed to transform virtually any type of digital circuit or system, similar to PLDs. PLDS is limited to hundreds of gateways, but FPGAs back thousands of gateways. A FPGA architecture configuration is generally defined using a language, such as HDL (Hardware Description Language), similar to that used in ASIC (Special Application Integrated Circuit).



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RESEARCH ARTICLE-ELECTRICAL ENGINEERING

A Novel Hybrid Fuzzy PD-TID Controller for Load Frequency Control of a Standalone Microgrid

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Received: 19 October 2019 / Accepted: 1 July 2020

Abstract
Uncertainties related to the power output from the renewable energy sources and low inertia of a standalone microgrid (SMG) demand a robust control strategy for continuous frequency control of the SMG. Consequently, this paper proposes a novel hybrid fuzzy proportional derivative–tilt integral derivative (FPD-TID) controller for the load frequency control (LFC) analysis of a SMG. Inspiration for the proposed controller comes from combining the advantages of both the FPD and the TID controllers. Gains of the proposed controller are optimized using a robust chaotic crow search algorithm (CCSA). In order to validate the proposed control scheme, comparative frequency deviation responses of the SMG are presented considering multiple disturbances. Also, the proposed controller is put to test for its sensitivity and robustness subject to a $\pm$ 30% variation in the SMG parameters and disconnection of various SMG subsystems, respectively. Since operational stability of the SMG is highly desirable under such circumstances, the proposed control scheme aims to achieve a trade-off between its performance and the operational stability of the SMG. The operational stability of the SMG is established through eigenvalue and root locus analysis.

Keywords Chaotic crow search algorithm · Hybrid FPD-TID controller · Load frequency control · Standalone microgrid

Abbreviations and Nomenclature

f	Nominal frequency (Hz)
RES	Renewable energy source
SMG	Standalone microgrid
LFC	Load frequency control
CCSA	Chaotic crow search algorithm
FDR	Frequency deviation response
DG	Distributed generation
PID	Proportional integral derivative
WTG	Wind turbine generator
PV	Photovoltaic
DEG	Diesel engine generator
EV	Electric vehicle
FC	Fuel cell
BESS	Battery energy storage system
FESS	Flywheel energy storage system
AE	Aqua electrolyzer
CB	Circuit breaker
J_P	Performance index
ITAE	Integral of the time multiplied absolute error
T_{sim}	Simulation time (s)
ΔP_D	Incremental load change (pu MW)
D	Load damping coefficient (pu MW/Hz)
H	Inertia constant of the MG (s)
R	Governor speed regulation coefficient (Hz/pu MW)
T_G	Governor time constant (s)
T_T	Turbine time constant (s)
T_{DEG}	DEG time constant (s)
T_{EV}	EV time constant (s)
T_{BESS}	BESS time constant (s)

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A novel fractional order proportional integral derivative plus second-order derivative controller for load frequency control

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ABSTRACT

This paper proposes a novel fractional order proportional integral derivative plus second-order derivative (FOPID+DD) controller for the load frequency control (LFC) of a hybrid power system (hPS). The investigated hPS incorporates conventional and certain distributed generation sources. Parameters of the proposed controller are optimised using a newly developed and powerful water wave optimisation (WWO) algorithm. The effectiveness of the proposed control scheme is established by considering multiple disturbances and nonlinearities like generation rate constraint, governor dead band and time delay related with the hPS. The performance of the proposed controller is compared with other controllers that are well studied in the literature. Simulation results reveal that the frequency dynamics of the hPS are enhanced with the proposed controller in terms of reduced frequency deviations and improved transient specifications. The sensitivity of the proposed controller is validated subject to wide variations in the hPS parameters.

ARTICLE HISTORY
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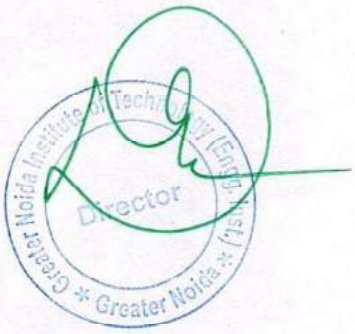
KEYWORDS
FOPID+DD controller; hybrid power system; load frequency control; WWO algorithm

Nomenclature

f	nominal frequency (Hz)
Δf	frequency deviation (pu Hz)
OF_{ITAE}	integral time absolute error based objective function
OF_{ISE}	integral square error based objective function
OF_{AGG}	aggregated objective function
$tsim$	simulation time (s)
ΔP_D	incremental load change (pu MW)
K_{PS}	power system gain (Hz/pu MW)
T_{PS}	power system time constant (s)
T_G	governor time constant (s)
T_T	turbine time constant (s)
K_R	reheater gain
T_R	reheater time constant (s)
R	governor speed regulation coefficient (Hz/pu MW)
T_{DEG}	DEG time constant (s)
K_{DEG}	DEG gain
T_{BESS}	BESS time constant (s)
K_{BESS}	BESS gain
T_{FC}	FC time constant (s)
K_{FC}	FC gain
T_{AE}	AE time constant (s)



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A Robust Cascade Controller for Load Frequency Control of a Standalone Microgrid Incorporating Electric Vehicles

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CONTENTS

Abstract—Intermittency in the output power of renewable and green energy sources (RGES) and low inertia of a standalone microgrid (SMG) result in large frequency deviations. Use of energy storage systems (ESSs) alleviate the SMG frequency deviations in an adorable manner but their high cost and low power density calls for alternative sources to balance the mismatch between power supply and demand. In recent years, utilization of the battery of an electric vehicle (EV) to minimize the frequency deviations has gained a lot of attention. Consequently, this paper proposes a robust and newly developed bio-inspired Salp Swarm Optimization (SSO) algorithm based PI-PD cascade controller for load frequency control (LFC) of the SMG integrated with the EVs. To demonstrate the efficacy of the proposed controller, its performance has been compared with other well-known controllers and algorithms considering diverse SMG operating scenarios. Simulation results distinctly prove the superiority of the proposed controller over the other controllers. Also, robustness of the proposed controller has been tested subject to ±50% variation in certain SMG parameters. Results clearly justify the robustness of the proposed controller. Additionally, operational stability of the SMG has been appraised through Eigenvalue and Bode diagram analysis for all the scenarios.

Keywords: cascade control, electric vehicle, energy storage systems, integral square error, load frequency control, PI-PD cascade controller, renewable and green energy sources, salp swarm optimization, standalone microgrid, total energy model

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1. INTRODUCTION

Increasing energy crisis and environmental degradation due to exhausts of the fossil fuel based conventional power plants have become a matter of serious concern all over the world [1]. This has led many researchers to shift their focus toward the application of RGES to resolve this issue. A microgrid (MG) employing the RGES could prove to be a promising solution for the above problem. The Consortium for Electric Reliability Technology Solutions (CERTS) first introduced the concept of the MG as an assemblage of microsources and loads operated at medium voltage (MV) and low voltage (LV) distribution side [2].

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Nuglets: A Virtual Currency

Abhishek Singh, Dhwani Agrawal

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Abstract - *In mobile ad-hoc network, there is always an assumption being made that all the nodes are belong to a single mastery. Therefore, to cooperate in order to support basic functions of the network is expected from the nodes such as routing. Here in this paper, we take an account that every belongs to an individual master and tries to maximize the benefits it gets from its network. For this, concept of virtual currency is being introduced.*

Keywords: *Virtual currency.*

1. INTRODUCTION

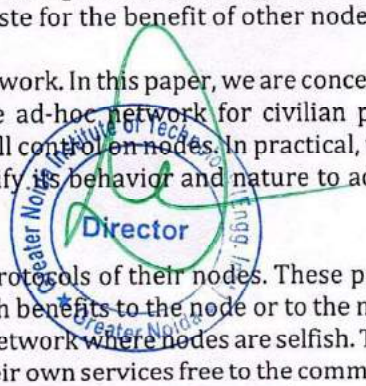
A mobile ad-hoc network is usually a wireless network created by some nodes in a self-organized structure which is independent of any established infrastructure. Working of mobile ad-hoc networks is deliberately depend upon the cooperative behavior of their nodes that's why all the services that are assumed to be necessary to a network are provided by the network itself. Communication between two nodes A and B depend on the intermediate nodes that forward packets for the beneficiary of A and B.

So, applications of mobile ad-hoc networks can be visualized mainly for the situations that are much critical such as in military or in rescue operations. In this type of application areas, all the nodes present in the network are belong to a single master (such as single rescue team manager) and they share a common goal. Because of this, nodes are naturally cooperated with each other.

Since, because of this progress in technology, deployment of mobile ad-hoc networks on a huge platform for civilian scenario will be possible very soon. Such applications will include network of cars, provision of communication facilities in remote areas. In these types of networks, nodes simply do not belong to a single authority or master. Each node belongs to a different authority: to its user and they so not share the same goal. And these networks could be much bigger and have larger lifetime and they could be completely self-organized means they can be run by operation of its end users.

In these types of networks, there is no need to assume that nodes are cooperating and provide services to each other. Service provision is not in the interest of the nodes, because it consumes energy and it does not have any direct advantages. Nodes in the mobile ad-hoc network are battery powered in general, so, energy consumption is must since energy is the precious resource that they may not want to waste for the benefit of other nodes.

Lack of cooperation may have very worse effect on the operation the network. In this paper, we are concerned for the problem of non-cooperating nodes in large, self-organized, mobile ad-hoc network for civilian purpose. Assumption is that nodes are belong to the different mastery, which has all control on nodes. In practical, the user can interfere with the hardware and software of the node and can modify its behavior and nature to adapt the better goal on his own.



On the other hand, users are not interested in altering the low-level protocols of their nodes. These protocols have to be participated in the network, but they do not provide very much benefits to the node or to the network. Modification in these can be disturbance to the network. This results in a network where nodes are selfish. They use the services which are provided by the other nodes but do not provide their own services free to the community. In such network, it is more necessary to simulate for cooperation. In this paper, we have an economic approach for this type of network. We introduce a virtual currency called nuglets. It is a mechanism for charging/rewarding service usage.

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A Survey on Various Machine Learning Algorithms

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Abstract - *Apparently, we are living in the most defining and developing period of human history. This is the period where computing generation reached from large mainframes to PCs to cloud. But what makes it defining is not what happened, but what is coming our ways in future. There is no doubt that machine learning/ artificial intelligence has rapidly gained more vogue in the previous couple of years. As the hottest mania in the tech industry at present, machine learning extremely powerful to make predictions and calculated suggestions which is generally based on the very large amount of data. This paper tells about how the machine learning algorithms adaptively enhance their performances as the inputs available for learning increases.*

Keywords: *Machine learning algorithms.*

1. INTRODUCTION

In the era, where almost all manual works are being automated, the definition of manual is reshaping. Machine learning algorithms can help computers to play games, perform surgeries and get smarter and more private.

We are living in the world where technology is changing very rapidly like day-by-day. One of the main features of these transformations is how computing techniques and tools have been democratized. In the past few years, data scientist has assembled evolutionary data-crunching machines by seamlessly executing advanced techniques. The results are amazing.

Machine learning is a data analytics technique through which computers learns to do what comes naturally to humans and animals i.e. learn from experience. Machine learning algorithms use computational methods to remember information which is directly from the data without depending on a predetermined equation. The machine learning algorithms adaptively enhance their performances as the inputs available for learning increases.

There is no doubt that artificial intelligence/ machine learning has rapidly gained more popularity in the previous couple of years. As Big Data is the trending mania in the tech industry at present moment, machine learning is very strong for calculated suggestions and make predictions which is based on the large amount of data. Some of the very common and famous examples of machine learning are Netflix's algorithms to make movie suggestions based on movies you have watched in past or Amazon's algorithms that recommend books based on the books you have bought or searched before.

2. EVOLUATION OF MACHINE LEARNING

Machine learning was born from pattern recognition and the theory that computers can learn without being programmed to perform some specific tasks. But researchers who are concerned in artificial intelligence wanted to see that if computers could learn from data. The repetitive side of machine learning is important because models learn from computations to generate reliable, repeatable decisions and results.

While there are many machine learning algorithms have been around for a very long time, the capability to automatically apply complex mathematical calculations to big data is a new development.

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Removal of crystal violet from aqueous solution using iron based metal organic framework

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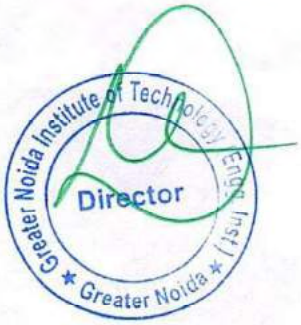
ABSTRACT

Iron-benzene dicarboxylic acid (BDC) metal-organic framework (MOF) has been synthesized by solvothermal method at room temperature and tested for the adsorptive removal of the organic dye crystal violet from aqueous solution. Dye removal efficiency and adsorption characteristics were determined to investigate factors such as the effect of dye concentration, contact time, temperature, dose, and pH. Maximum dye removal efficiency was recorded to be 100% with an initial dye concentration of 5 mg/L. Langmuir, Freundlich, and Temkin adsorption isotherm models were used to investigate the adsorption process. The adsorption isotherm of crystal violet onto Fe-BDC-MOF can be described by Freundlich isotherm model and Langmuir isotherm model. Pseudo-second-order kinetic model with rate constant 1.22×10^{-2} g/mg.min is found to be the best fit for the adsorption. Thermodynamic parameters viz. free energy; enthalpy, and entropy have been calculated with the help of adsorption isotherm data. The values of enthalpy and entropy have been obtained as 0.0947 kJ/mol and 0.325 kJ/mol/K, respectively, indicating an endothermic process with an increase in randomness at the solid-solution interface during adsorption. Negative value of ΔG illustrates the process to be spontaneous. Column adsorption capacity of Fe-BDC-MOF has been recorded 26.65 mg/g.

Keywords: MOF; Crystal violet; Adsorption; Kinetics; Thermodynamics



* Corresponding author.

Chapter 77
A Study on Coal Ash Slurry Flow at Higher Solid Concentrations in Pipeline

Navneet Kumar, Kanwar Pal Singh, V. K. Dwivedi, J. K. Yadav, Sudhir Kumar and Navin Kumar

Abstract In India, thermal energy accounts for more than 70% of electricity production and millions of tons of coal are burned in these thermal power plants. Thus, large quantities of coal ash (fly ash and bottom ash) are produced and the current level of production is about 120 million tons per year. Out of this, approximately 20% is bottom ash and the rest 80% is fly ash. The ash produced in India usually has higher specific gravity as Indian coal has a much higher content of non-combustible matter. Also, the majority of the thermal power plant in India disposes of both the materials, namely fly ash and bottom ash to ash ponds using the same pipeline. The knowledge of slurry rheology is very vital for the design of a slurry pipeline particularly for the dense phase conveying system. Since the pilot plant loop tests at these concentrations are tedious, time-consuming, and complex in nature, the slurry pipeline designers have been adopting the empirical approach for slurry pipeline design based on the rheological model of the slurry. From the vast study of literature, an attempt has been made to highlight the various influencing parameters like concentration of solid, rheological properties, and chemical additives that affect the flow of coal ash slurry in the long-distance pipelines.

Keywords Coal ash · Slurry · Rheological behavior · Shear rate · Shear stress

77.1 Introduction

A slurry pipeline system is used for conveying solid particles using fluid which is generally water as a carrier. Slurry pipeline transportation has been one of the progressive technologies for conveying a large number of materials over long distances [1–3]. The mineral ores in mining and process industries, coal ash in thermal power

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Optimization of process parameters of A-359 aluminium alloy in EPS-assisted-investment casting process using Taguchi method

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Abstract. The purpose of this research is to optimize the process parameters such as pouring temperature, pouring time and the thickness of coating using Taguchi mod in expandable polystyrene assisted investment casting process. In this paper, zircon flour and mullite sand with potassium silicate binder and coarse fused-silica sand stucco are used as coating materials. Problems like cracking, breaking, bending, expanding and distending in shell are eliminated by preheating the shell and slowly rise in temperature, during foam removal process. For maximum impact strength, the optimum values of process parameters- pouring temperature, pouring time and thickness of coating layers are 750°C, 15 seconds and 5 mm respectively.

Keywords: Expandable Polystyrene Pattern, A-359 Aluminium Alloy, Pouring temperature, Pouring time and Thickness of coating layers, Taguchi Method.

1. Introduction

In present time, the dimensional accuracy and surface finish of casted complex shape products have become a critical issue to reduce machining cost. So, different types of casting processes have been introduced. In this row, two types of castings are preferred named as evaporative pattern casting (EPC) and investment casting process. But evaporative pattern casting is facing problems of pin holes, porosity, ash content etc. in castings [1-2]. In investment casting process, these defects can be reduced. Generally, wax patterns are used in investment casting. But due to low softening point, the change in shape of wax pattern takes place. Another problem is to handle the big and complex shapes of wax pattern [3-4]. To remove these problems, there is a great opportunity in investment casting to use Expandable Polystyrene pattern, instead of wax pattern. This hybrid casting process is called EPS Assisted Investment Casting Process [5-6]. To achieve good characteristics of casting, Al-Si system of aluminium alloys is preferred. The range of Si may vary 4% to 13%. In this research work, A-359 aluminium alloy has been selected because of it has low melting point, high strength, good fluidity, low ductility,decreased corrosion resistance and surface roughness, good grain structure and ability to increase the strength by heat treatment [6]. The composition of A-359 is shown in table-1.

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Post Quantum Cryptography: A Literature Review

Shipra Srivastava *
Anoop Tiwari **
Prabhat Srivastava ***

ABSTRACT

The world is moving away from the classical computers whose basis is binary digits to a completely innovative way of computation whose working principle is based on qubits or quantum bits. As this quantum computer technology is in its early budding days which seem very promising as it can solve a complex problem using lesser processing time. Whereas, in a conventional computer it would take hours of processing time. An attack from a quantum computer to traditional cryptography will not be able to withstand the computational power. So, the researcher and scientists around the world are researching cryptography which is quantum secure, where the quantum computer fails to break such security. This paper discusses the algorithms that pose a threat to classical cryptography and a brief explanation about the current quantum secure algorithms that can handle the future world from the threats. This paper focuses on the devastating effects on Shor's and Grover's algorithm which lead to the further development of quantum secure Symmetric and Asymmetric algorithms.

Keywords: Quantum safe cryptography, quantum secure Symmetric Algorithm, quantum secure Symmetric Algorithm, quantum resistant AES, Lattice based encryption.

Introduction

Cryptography is the technology that prevails in this era of computation to keep the information hidden from unapproved excess. The subject cryptography is a vast subject that is responsible for almost every aspect of a website to e-mail system to the electronic transaction to online shopping to online messaging implementing its protocols to keep the current architecture safe from any attempts of hacking and theft. This technology makes sure at the foremost to convert plaintext to encrypted text from the sender end and decrypted at the receiver end. It uses many protocols and techniques to encrypt and decrypt a plaintext. The algorithm which encrypts a plaintext is called 'cipher' and the output of the algorithm is called 'cipher-text' [2]. With an example of Bob and Alice, where Alice sends an important hidden message to Bob using an open unsecured channel where anyone can check the message. In this kind of situation, a secure way is to use encrypting the message. Using a hidden bit called 'key' which is shared by Alice to Bob. Alice transforms the plaintext message to ciphertext by using the key. Bob after receiving the message can transform the ciphertext using his key to plaintext [1] and their secret message remains hidden from other intruders in the channel.

In cryptography, its security is dependent on the key's secrecy which was played the most important role during World War II. The information sending over the unsecured channel was the only option back then, by using some mechanical devices to encrypt the messages. The messages and information that were transmitted were to determine the faith of World War II. One such machine that was used by German to encrypt messages was Enigma which was used to communicate by their military. The Germans considered Enigma as unbreakable, as the allied forces were working to decrypt the Enigma codes. In London, Bletchley Park a team of cryptanalysis headed by Alan Mathison Turing successfully decrypted the messages of Enigma which became the turning point of World War II.

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Medical Image Security Analysis and Enhancement for Telemedicine Applications

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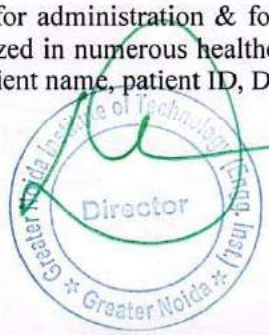
Abstract:
With the remarkable development of digital medical images and high-speed transmission networks and computer technologies in current year, authenticity and security of the medical images have been big issues for E-health application. In order to this many different remarkable watermarking strategies and concepts have been introduced by researchers. In this paper we concentrate on the possibilities for assurance of medical images using the principle of digital watermarking. There are many methods it looks from their basic perspective. One of them perspective is security to ensure authenticity and copyrights. Other we discuss watermarking methods classification which are based on different parameters such as: insertion domain (spatial and frequency domains)..

Keywords: Watermarking, security, DICOM, medical images, transform domain.

1. Introduction

Due to exceptional improvement of the computer technologies and transmission networks, the present-day medical systems are based on sharing of the medical data across the different parts of the world among distinctive doctors or health professionals for different purposes via unsecured transmission networks like Internet. So, it is necessary to provide security to assure medical information during the transmission, because of any modification of the medical information will affect in the specialist diagnostics [27]. It is very important to secure physical access & electronic access to whole part of system, starting with capturing modalities, data storage, communication media, server, and ending with doctor's diagnostic workstations. This is possible to be made with standard & proven methods, which are used in communications, it is important to secure data of medical images itself. Currently, data hiding techniques provide remarkable grandness for data assurance of medical images [1].

The digital watermarking is data embedded into the host object like audio, video, image, or other computerized information, without any changing its visual quality. With help of watermarking strategies medical images are secured beside the electronic patient information (EPI) [2] [3]. The watermarking of medical images has been broadly identified as an important strategy for improving information security, authenticity, picture devotion and content confirmation in present E-health framework where digital medical images are kept, recovered and transmitted over communication network. Medical image watermarking saves the quality of images which are essential for medical diagnosis and treatment [29]. In order to study of medical images, it is necessary to build advanced data storing & archiving called picture archiving & communication system (PACS). PACS may be a medical imaging innovation which give temperate capacity & helpful get to pictures from numerous modalities which is described in [1] [2]. Data of medical images are generated by several modalities like CT scan, MRI, X-rays, and ultrasound. As standard for transmission, storing medical images & data used international standard protocol called DICOM. DICOM (Digital Imaging & Communications in Medicine) may be standard protocol for administration & forwarding of medical images & related information over public network and is utilized in numerous healthcare offices. DICOM images contain information and metadata in header such as patient name, patient ID, Date of Birth,



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Risk Management in Metro Rail Construction

Case Study : Delhi Metro Corridor from Kalkaji to Botanical Garden

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Abstract— This paper deals with a method of identifying project risk associated with various construction stages in overhead metro rail construction and the processes required or existed to control the risks. The sources of major risk are quantified in terms of probability and severity rating in the construction of metro railways. A case study of the Delhi metro corridor of DMRC magenta line of phase-3 from botanical garden to Okhla NSIC in the capital city of India has been considered for this project work. The methodology for this work is based on the risk response extracted from the experts who were associated and involved in this metro railway projects.

Keywords—Project risk, Probability and Severity rating,Risk response, Metro rail.

1. INTRODUCTION

Project risk management is the art and science of identifying, analyzing, and responding to risk throughout the life of a project and in the best interests of meeting project objectives. Risk management is an essential and integral part of project management in major construction projects. For an infrastructure project, risk management can be carried out effectively by investigating and identifying the sources of risks associated with each activity of the project. These risks can be assessed or measured in terms of probability and impact. Depending upon the severity of each of the risks obtained, specific risk mitigation measures are proposed. It includes the recognition of potential risk event conditions in the construction project and the clarification of risk responsibilities. Risk identification develops the basis for the next steps: analysis and control of risk management. Corrects risk identification ensures risk management effectiveness. The responsible entity/authority of the project should take appropriate decision/action pertaining to the adoption of the mitigation measures for reducing the likelihood of occurrence of the identified risks involved in the project.

In this project report, Construction of Elevated metro of DMRC magenta line of phase-3 from botanical garden to Okhla NSIC has been considered for formulation of Project Risk Management. The major activities consist of survey works, launching of parapets, piling works, geotechnical investigation, pile cap and pier works, pier caps ,construction of decks, casting of segments, launching of segments, plate load test of pile, initial pile load test, minor repairing and repairing of segments etc. In each activity , various risks are identified and their hazard concern is analysed with severity and probability explanation and their rating on risk level 1 to 5.

2. METHODOLOGY

A. Collection of Data

Collection of data is based on the survey and questionnaire of Construction Company namely - Delhi Metro Rail Corporation Limited and Afcons Infrastructure Limited, which includes the risk factors at the construction site. The data is collected from Delhi Metro Rail line - Construction of Elevated metro of DMRC magenta line of phase-3 from botanical garden to Okhla NSIC.

B. Questionnaires and Risk Identification

The risk factor of questionnaire were based on different construction methods that are adopted in overhead metro construction such as method of piling, erection and fixing of parapets, construction of pile cap, construction of pier and pier cap, grade slab construction, casting of segments, launching of segments, stressing of girders etc. covering risks as work at height , hit by person, hit by equipment , hit injury to workmen, road accident, improper handling of heavy reinforcement bars, transportation of girders from casting yard to site location, traffic control, launching of segments at night, shifting of launching truss, presence of unauthorized person .

C. Risk Analysis

The mean and average value of the risk factors from the questionnaire survey is assessed in the form of risk severity and probability rating as High, Medium and Low. Risk Level is defined according to their severity from 1 to 5.

D. Risks Response Planning

Having recognized the risk and evaluated probabilistically its possible impact, the contractor will prepare appropriate risk management strategies and precautions. These

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A Prototype for Data Integrity in Cloud Environment

Shashi[1,*], Suryakant Yadav[2] and Anuranjan Mishra[3]

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Abstract

Currently in world wide computing (Cloud) has a great impact on life. Everyone can access the all services of cloud if he/she is on different location. Client user can access the cloud services as per their requirement. If one user on cloud, Integrity of data is an important aspect. Data integrity is the upkeep of and the confirmation of the exactness and consistency of, data over its whole life-cycle, and is a basic perspective to the outline, execution and use of any framework which stores, forms, or recovers data. In this research paper, a fitting technique that guarantees the integrity of data and in addition rightness of calculations done by the cloud service provider is introduced.
Integrity is a method for protecting the consistency of the put away data in cloud server and guaranteeing the innovation of the data put away in the cloud server. It implies that the data can be altered just by approved people, along these lines expanding the certification, confirmation and dependability of the cloud service providers.

Keywords: Data Integrity, Authentication, Storage, Data.

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1. Introduction

In this, the integrity of the outsourced data put away in the un-confided in remote cloud servers has been guaranteed. It has been finished by executing a strategy that gains a proof of data ownership by creating metadata of the data in the In this, the integrity of the outsourced data put away in the un-confided in remote cloud servers has been guaranteed. It has been finished by executing a strategy that gains a proof of data ownership by creating metadata of the data in the cloud. This evidence checks that the data put away in the remote cloud server are not changed by unapproved clients, along these lines guaranteeing the data integrity. Along these lines, this verification protocol keeps the remote cloud stockpiling servers and unapproved people from harming, distorting or changing the data without the learning of the data proprietor by directing incessant security minds the data stockpiling. This evidence confirms that the data put away in the remote cloud server are not adjusted by unapproved clients, accordingly guaranteeing the data integrity. Along these lines, this verification protocol keeps the remote cloud stockpiling servers and unapproved people from harming; distorting or changing the data without the information of the data proprietor by leading regular security minds the data storage.

2. Integrity Checking Methods

2.1 Message Authentication Code (MAC):

To confirm the data integrity, MAC for the whole data is created by the DO before putting away the data record in a remote server. It is held by the DO in the neighborhood stockpiling, however the first data is put away in the remote server. Keeping in mind the end goal to confirm the integrity of the data, the data proprietor recovers the whole data from the remote server, re-figures the MAC

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A Comparative Study on Cost Analysis of RCC and Composite Structures in India

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Abstract- We all know that the 70% Indians are live in rural areas, according to census of 2011, so it is cleared that maximum construction in India is going to low rise buildings. And we also know that our construction techniques are too old and too slow.

But now a days the future of construction is steel concrete composite structure, this construction technique is accepted by most of the developed and developing country, because it is economical, take less time in completion, it reduces cost and amount of material as compare to RCC structure for high rise buildings, and also steel concrete composite structure is more durable as compare to the RCC structure and at the time of earth quake the seismic behavior of steel concrete composite structure is very satisfactory as compare to RCC structure. While, for less than G+12 building construction it is not economical, instead of it shows high cost for the construction as compare to RCC or no major difference in cost and create the complexity in construction.

So, in this paper we study about different commercial buildings i.e; G+11, G+15 & G+20 to analyse them by using software Staad Pro.

Key Words: Steel concrete composite structure; RCC structure; cost analysis; high rise buildings; low rise buildings

1.INTRODUCTION

As we all know that concrete is good at compression and easily fail at tension

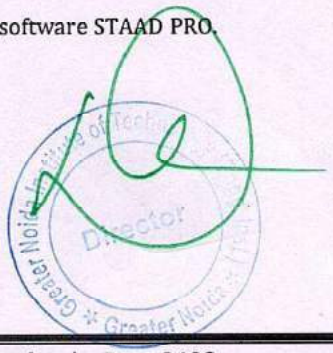
but steel is good at compression and as well as at tension, so when we bind these two material together they work as single unit and shows very good results as compare to RCC and this process of binding different types of material or heterogeneous materials is known as composite construction, so now we are deeply study about the cost analysis of composite structure and RCC structure for low rise buildings, because in India 3/4 population is live in rural areas so the low rise building construction is always in demand and due to this the consumption of steel in India is low as compare to other countries.

In this paper we analyse three various building models i.e; G+11, G+15 & G+20 by using software STAAD PRO.

2. COMPONENTS OF COMPOSITE STRUCTURE

A composite structure consist different components as follows:

1. Composite deck slab
2. Composite beam



Arduino Uno Based Time Glove Machine

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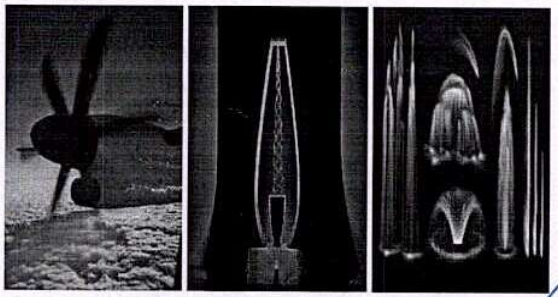
***Abstract:** This paper presented a time glove machine which is based on stroboscopic principle. The stroboscopic effect is a visual phenomenon caused by aliasing that occurswhen a moving object is represented by a series of short samples as distinct from a continuous view, and the moving object is in rotational or other cyclic motion at a rate close to the sampling rate. For this we utilize Arduino UNO ATMega 328 as a brain of the system, accelerometer for synchronization, Relay as switching circuits, 100 watt LED Module and programming using embedded C.*

***Keywords:** Time glove machine, Arduino Uno, Relay Module, Internet of Things etc.*

I. INTRODUCTION

Time glove machine is a machine which does not really cause a temporal rift in the space time continuum. This is based on stroboscope, nothing but a visual phenomenon, whichoccur when continuous motion is represented by a series of short samplesor instantaneous samples. In other words, its electronic flashes that freeze the motion of any moving object; they can be used to set the timing on engines and to see what is happening inmechanical objects when they are in motion.It also accounts for the "wagon-wheel effect", so-called because in video, spoked wheels (such as on horse-drawn wagons) sometimes appear to be turning backwards. A strobe fountain, a stream of water droplets falling at regular intervals lit with a strobe light, is an example of the stroboscopic effect being applied to a cyclic motion that is not rotational. When viewed under normal light, this is a normal water fountain. When viewed under a strobe light with its frequency tuned to the rate at which the droplets fall, the droplets appear to be suspended in mid-air. Adjusting the strobe frequency can make the droplets apparently move slowly up or down.



(a) (b) (c)

Fig. 1. (a) Wagon Wheel, (b) Strobe Light and (c) Water Droplet

For example the picture of Wagon wheel effect, a strobe fountain and a stream of water droplets are shown in figure 1.

II. SYSTEM ARCHITECTURE

The architecture of system is broadly divided into two basic parts: hardware architecture and software architecture. Both hardware and software are integrates together to give purposeful embedded system.

A. Hardware architecture

i. Arduino UNO

The embedded system is composed of Arduino UNO belonging to the ATMEL family. It is a8-bit microcontroller having 32 kb of flash memory. It is a single board capable of performing flexible operations as an open source platform forms the brain of the embedded system. It has 14 digital pins and six anlaog pins which are used to interface with the other devices. It operates on operating voltage of 5V and requires dc input current per I/O pin is 20mA.

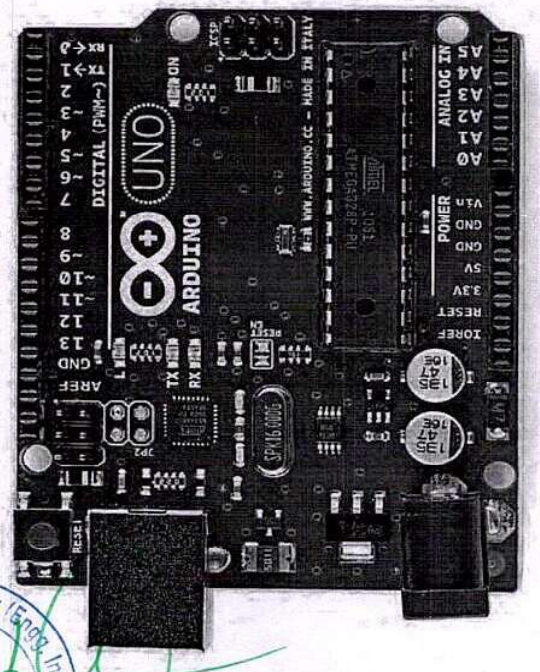


Fig. 2. Arduino UNO board

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International Conference on Computational Intelligence and Data Science (ICCIDS 2019)

Reliability Analysis of Wireless Link for IOT Applications Under Shadow-Fading Conditions

Amit Sehgal[a]*, Rajeev Agrawal[a] , Rakhi Bhardwaj[b] , Krishna Kant Singh[a]

[a]G.L.Bajaj Institute of Technology & Management Plot No. 2, Knowledge Park III, Gr. Noida, 201310, India
b Greater Noida Institute of Technology , Knowledge Park III, Gr. Noida, 201306, India

Abstract

Sensor nodes in IoT applications exhibit limited computing power, communication range and energy resource. These are some of the major constraints in the deployment of these systems. This leads to a multivariable optimization problem. Further, the variations in geographic conditions such as ground, terrain, atmosphere and mobility between various nodes introduces severe randomness in received signal strength at particular nodes. To mitigate this random nature of wireless link, probabilistic channel models are explored and analyzed. For more realistic estimation, multiple factors such as fading, shadowing, interference and noise must be considered simultaneously. In this paper, the reliability of wireless link in such environment is analyzed by capturing effect of these parameters through compound probability distributions. Expressions for Link and node outage have been obtained and measured through network simulation for reliability analysis. The comparative study with the other available fading models shows that the proposed model is more suitable in approximating real phenomenon of wireless link design.

Keywords: Internet of Things, Wireless Sensor Nodes, QoS, Compound Fading, Multipath Fading, Shadowing, Link Outage, Node Outage

1. Introduction

Developments in sensing technology and communication standards such as adaptive and ultra low power circuits, low power-long range wireless communication, distributed computing with low power and low cost processors has made Internet of Things (IoT) a bridge between virtual world and real physical world [1, 2, 3]. Still, the dynamic characteristics of signals in wireless channel introduce many new challenges. Major challenges of IoT devices are

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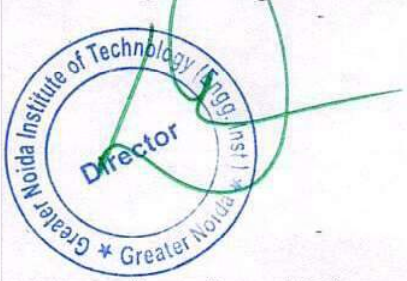

10.1016/j.procs.2020.03.362

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DEPARTMENT OF BASIC SCIENCES, JAGANNATH UNIVERSITY
BAHADURGARH, HARYANA (INDIA)

Monday, 18-05-2020 to Wednesday, 20-05-2020

ABSTRACT No. – 40

Wide-band Patch Antenna Design and Optimization

Anil Kumar Dubey

Department of Electronics & Communication Engineering, GNIOT, Greater Noida

anilkumardubey10@gmail.com

ABSTRACT

In this paper microstrip patch antenna is proposed of dimension 30mm × 46.3mm of material having dielectric constant 2.2 for the military and satellite requirements. The proposed patch antenna is designed and simulated using electromagnetic simulator IE3D. Proposed designed patch antenna is analyzed by different designing parameters - return loss, voltage standing wave ratio and radiation pattern. Wide-bandwidth of patch antenna is achieved by optimizing designing parameters -defected ground structure.

Key words: Patch antenna, Return loss, VSWR, etc.

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Analytic and Simulative Modeling of RoF System with Intensity Modulation Including Fiber Dispersion Effect

Computer Communication, Networking and IoT pp 519-526 | Cite as

- Rajeev (1)
- Shelly Garg (2)
- Vishal Jain (1) Email author (vishaljain.ece@piet.co.in)

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2. Greater Noida Institute of Technology, , Greater Noida, India

Conference paper
First Online: 19 June 2021

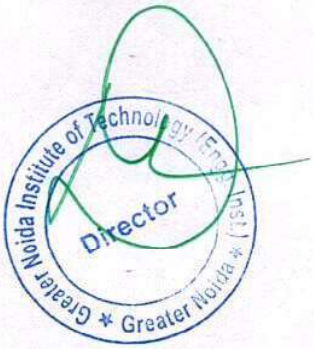
Part of the Lecture Notes in Networks and Systems book series (LNNS, volume 197)

Abstract

Radio over fiber (RoF) network is integration of two networks named as wireless and optical fiber networks. The conversion of the light signal from electric signal at the transmitter is the most challenging task in the radio over fiber system. Radio over fiber transmission of double sideband (DSB) optical signal undergoes frequency-dependent signal fading due to fiber dispersion. In this paper, fiber dispersion effect on RF signal amplitude is theoretically analyzed while using intensity modulation. Numerical and simulation result indicates that the variation of relative RF signal amplitude with respect to depth of modulation and length of the fiber is sinusoidal in nature. Analysis shows the dependence of RF signal amplitude on the modulation index, radio frequency of RF signal, and the length of the optical fiber. It is seen that the RF signal fundamental amplitude which is free from the harmonic sidebands, suffers from the dispersion induced fading only but the variation of the RF signal harmonic amplitude which include the harmonic sidebands with second order as well as the harmonic sidebands with fourth order, has the cyclic property with respect to fading. This cyclic variation depends on modulation index and is due to the harmonic sidebands that are generated through the nonlinear response of the intensity modulation.

Keywords

Optical fiber communication Electro-optic modulation non linear dispersion Intensity modulation Direct detection (IM-DD) Optical modulation



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PAPER • OPEN ACCESS

Optimization of process parameters of A-359 aluminium alloy in EPS-assisted-investment casting process using Taguchi method

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Optimization of process parameters of A-359 aluminium alloy in EPS-assisted-investment casting process using Taguchi method

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Abstract. The purpose of this research is to optimize the process parameters such as pouring temperature, pouring time and the thickness of coating using Taguchi mod in expandable polystyrene assisted investment casting process. In this paper, zircon flour and mullite sand with potassium silicate binder and coarse fused-silica sand stucco are used as coating materials. Problems like cracking, breaking, bending, expanding and distending in shell are eliminated by preheating the shell and slowly rise in temperature, during foam removal process. For maximum impact strength, the optimum values of process parameters- pouring temperature, pouring time and thickness of coating layers are 750°C, 15 seconds and 5 mm respectively.

Keywords: Expandable Polystyrene Pattern, A-359 Aluminium Alloy, Pouring temperature, Pouring time and Thickness of coating layers, Taguchi Method.

1. Introduction

In present time, the dimensional accuracy and surface finish of casted complex shape products have become a critical issue to reduce machining cost. So, different types of casting processes have been introduced. In this row, two types of castings are preferred named as evaporative pattern casting (EPC) and investment casting process. But evaporative pattern casting is facing problems of pin holes, porosity, ash content etc. in castings [1-2]. In investment casting process, these defects can be reduced. Generally, wax patterns are used in investment casting. But due to low softening point, the change in shape of wax pattern takes place. Another problem is to handle the big and complex shapes of wax pattern [3-4]. To remove these problems, there is a great opportunity in investment casting to use Expandable Polystyrene pattern, instead of wax pattern. This hybrid casting process is called EPS Assisted Investment Casting Process [5-6]. To achieve good characteristics of casting, Al-Si system of aluminium alloys is preferred. The range of Si may vary 4% to 13%. In this research work, A-359 aluminium alloy has been selected because of it has low melting point, high strength, good fluidity, low ductility,decreased corrosion resistance and surface roughness, good grain structure and ability to increase the strength by heat treatment [6]. The composition of A-359 is shown in table-1.

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Regression Analysis of COVID-19 using Machine Learning Algorithms

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***Abstract*— The outbreak of the Novel Coronavirus or the COVID-19 in various parts of the world has affected the world as a whole and caused millions of deaths. This remains an ominous warning to public health and will be marked as one of the greatest pandemics in world history. This paper aims to provide a better understanding of how various Machine Learning models can be implemented in real-world situations. Apart from the analysis done on the world figures, this paper also analyzes the current trend or pattern of Covid-19 transmission in India. With the help of datasets from the Ministry of Health and Family Welfare of India, this study puts forward various trends and patterns experienced in different parts of the world. The data to be studied has been obtained for 154 days i.e. from January 22, 2020, till June 24, 2020. For future references, the data can be further analyzed, and more results can be obtained.**

Keywords— ***COVID-19, Machine Learning, Data Analysis, Trend Analysis***

I. INTRODUCTION

According to the World Health Organization (WHO), viral and infectious diseases continue to appear and pose a serious threat to public health and well-being. Coronavirus is a broad family of viruses which causes ailments ranging from common cold and flu to severe respiratory issues. According to NCBI, "In the last 20 years, there have been several viral epidemics that have been reported such as the Severe Acute Respiratory Syndrome Coronavirus or better known as SARS-CoV which was declared a pandemic by WHO in 2002 - 2004 and H1N1 influenza in 2009. With most recently, Middle East Respiratory Syndrome Coronavirus better known as MERS-CoV which hit its first outbreak in Saudi Arabia in 2012" [1].

In the chronology of modern times, cases of unrecognized low respiratory infections were first detected during the mid December 2019 in Wuhan, the largest metropolitan city in Hubei province of China. This strange new pneumonia was named "COVID-19" by WHO. WHO declared this surge a Public Health Emergency of International Concern (PHEIC) on January 30, 2020 as it had affected almost 20 countries of the world [2]. There are no specific treatments of this virus so far, but one can reduce the spread of infection by maintaining personal hygiene and social distancing. There have been recoveries around the world, but the pandemic is still not under control.

Since this pandemic has affected the whole world not only in terms of health and hygiene but also in terms of the global economy. Apart from the adverse effects of COVID-19, there have been certain constructive influences around the world. As the world was facing loses, our nature gained something from this pandemic, the harmful particulate matter was eliminated from the environment and most importantly the largest ever ozone hole detected was closed during this pandemic. So it becomes really important to understand the features and characteristics of this disease and predict/estimate the further spread of this disease around the world and how it is going to impact the coming generations and the lives of the people when things become normal.

The timeline of the events of COVID-19 across different nations [2] is shown in Fig 1. and the percentage of confirmed cases per country is shown by Fig 2.

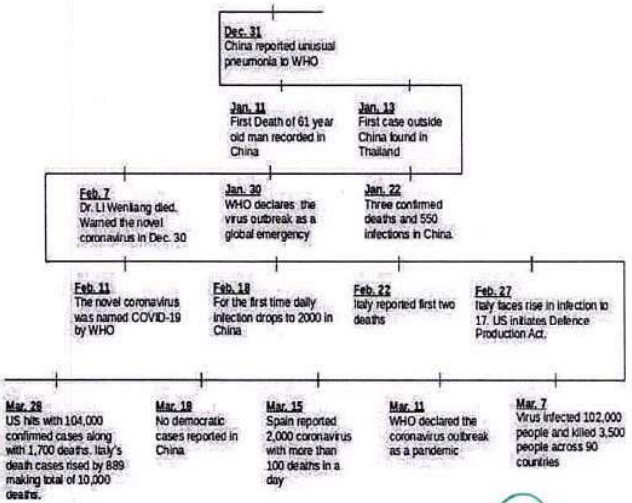

Fig. 1. Timeline of the events of COVID-19 across different nations

A Comprehensive Decomposition towards the Facets of Quality in IoT

Publisher: IEEE

Aneerban Chakraborty ; Rakshana Bagavathi ; Uma Tomer **All Authors**

Optimization of FDM 3D printing process parameters using Taguchi technique

Kuldeep Sharma, Kapil Kumar, Rishi Kumar Singh and M S Rawat

Greater Noida Institute of Technology, Greater Noida, UP, India

Abstract. Fused deposition modelling (FDM) is a fast growing and low-cost 3D printing technology in order to comply most prominent demands of today's industries in terms of capability to fabricate complex parts along with high flexibility in design. The dimensional accuracy, is an urgent need of final parts printed by FDM process, that is primarily influenced by the process parameters. Optimizing the process parameters which significantly influence the dimensional accuracy is the primary goal of this study in order to achieve the ultimate final part quality. This experimental study investigates the effect of different process parameters viz. layer height, raster angle, nozzle temperature and surrounding pressure on thickness of the final part for Poly Lactic Acid (PLA) filament. Experiments, based on Taguchi's L9 orthogonal array, were performed and subsequently experimental data have been analysed by ANOVA. It has been observed that the layer height is the most significant factor in order to achieve the dimensional accuracy.

Key words- FDM, Taguchi Method, ANOVA

1. Introduction

3D (3 Dimensional) printing or Additive manufacturing (AM) has gained great popularity over the past few years due to its ability to produce complex objects with ease, available sizes, flexibility of usable materials, easy handling and wide range of applications such as engineering industry, medical sciences, food industry, construction, aeronautics, textile industry, automotive industry and so on [1]. There are various methods of Additive Manufacturing such as stereolithography, syringe extrusion, selective layer sintering, fused deposition modelling(FDM)/fused filament fabrication(FFF) being used over the field of its applications as per the requirements of industry but Fused Deposition Modelling (FDM) has become the most widely employed rapid prototyping technique among other methods [2]. FDM uses a temperature controlled head to extrude semi liquid thermoplastic through a nozzle of fixed orifice in layer by layer formation, shown in figure 1[3], the movement of printing head is controlled by a computer aided manufacturing (CAM) software[4].

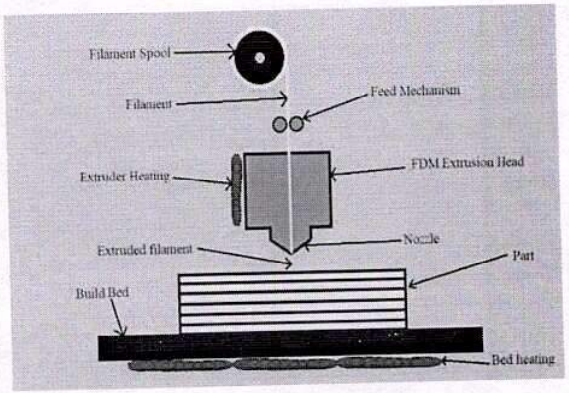

Figure 1 FDM Process Schematic

Researchers are continuously working towards improving different characteristics of FDM produced parts by tweaking with different process parameters and stating a range of optimum settings for a FDM machine and material at which the strength or production time or production cost or any other aspect is

A Review on Cyber Physical System Attacks: Issues and Challenges

Publisher: IEEE Cite This PDF

Sunil Singh ; Neha Yadav ; Pawan Kumar Chuarasia All Authors

Abstract:
Recent advancement of cyber physical systems open doors to various safety measures, threats, attacks and vulnerabilities are such major key challenges now days. The globally adoption of cyber physical systems basically forms a basis for cyber social attack in order to breakdown secure channel and control actions. Hence loopholes and vulnerabilities in trending cyber physical systems are targeted to make systems unstable and unsafe state. The subjection of CPSs causes new critical issues for research and academics. However expeditious growth of CPS devices a question marks on security, integrity and confidentiality. The paradigm which forms basis for CPS are Smart phones, Defense System, Meteorology, Big data, Smart Technologies and Smart Vehicles. The purpose and analysis behind this paper to find out security issues and challenges of CPSs. Comparison of various cyber physical attacks and analysis on several parameters has been done. Key noted issues are results of cyber attacks, CPS attack traceability and the review on communication security architecture.

Published in: 2020 International Conference on Communication and Signal Processing (ICCSP)

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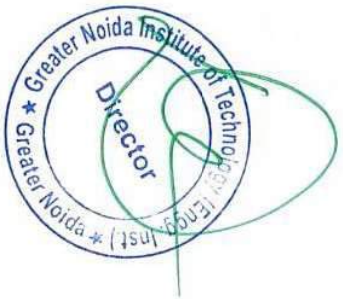
INSPEC Accession Number: 19914133

DOI: 10.1109/ICCSP48568.2020.9182452

Publisher: IEEE

Conference Location: Chennai, India



Security through Optimization Techniques of Firewall Rule Sets

Publisher: IEEE

Arjun Singh ; Divyanshi Singh ; Arun Kumar Singh ; Harikesh Pandey ; P. C. Vashist **All Authors**

Abstract: In the computer age, security is an essential requirement of network infrastructure for communication. A firewall works as a shield in multinational corporate network sec... **View more**

Metadata

Abstract:

In the computer age, security is an essential requirement of network infrastructure for communication. A firewall works as a shield in multinational corporate network security. Firewall mainly is a security policy that consists of a set of rules which form a secure network by inspecting and filtering the incoming traffic to the network. A firewall is configured to maintain a set of rules to preserve its integrity. Firewall complexity increases the number of rules in the rule set, which then hampers the overall performance of the firewall. Studies have proved that there is a critical requirement of constructing a network configuration and put to rout the structure in a manner that the chances of security loopholes are minimized. As a firewall is mainly designed for multinational corporate networking, altering the rules in any firewall requires rigorous analysis of both inter and intranet firewalls. Thus we put forward a probate solution and sum up the efficacy of the algorithm through simulation. Accordingly, the asserted algorithm minimizes the initial firewall rule set by multiple times when compared to others.

Published in: 2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM)

Date of Conference: 09-10 January 2020

INSPEC Accession Number: 19495346

Date Added to IEEE *Xplore*: 02 April 2020

DOI: 10.1109/ICCAKM46823.2020.9051476

ISBN Information:

Publisher: IEEE

Machine Learning and Cognitive Computing for Mobile Communications and Wireless Networks

Chapter 6

Significance of Wireless Technology in Internet of Things (IoT)

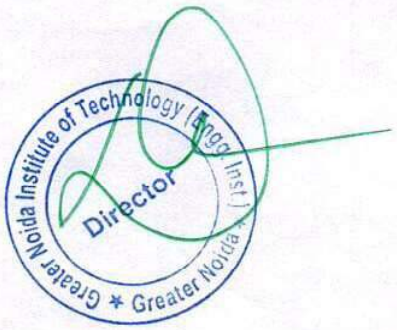
Ashish Tripathi, Arun Kumar Singh, Pushpa Choudhary, Prem Chand Vashist, K. K. Mishra

Book Editor(s):Krishna Kant Singh, Akansha Singh, Korhan Cengiz, Dac-Nhuong Le

First published: 17 June 2020
https://doi.org/10.1002/9781119640554.ch6

Summary

In recent years, it is found that wireless technology has played a significant role in the evolution of the Internet of Things (IoT) to make the society smarter in all aspects of people's lives. IoT is applicable in domains such as education, transportation, retail, smart farming, healthcare, smart wearable devices, smart homes, transportation, retail, and security. According to Cisco, in India by 2020, more than 50 billion devices will be connected to the Internet, including smartphones, computers, and any electronic devices/ things. Although the IoT is expanding rapidly and industries are investing money and effort to create new IoT applications, still it faces some issues such as the selection of appropriate wireless protocols, interoperability among wireless standards, security issues, inference among wireless devices, and trade-off among power consumption, rate of data transfer, and coverage range. So choosing the right wireless technology addresses the issues outlined above, for developing IoT applications can be very challenging. This chapter presents an overview of the key issues related to the selection of different wireless technologies in the development of IoT services. A number of research challenges have been identified as a major research trends in the IoT environment. Details of the hardware components are discussed. Also, the chapter discusses the significance of wireless technology in IoT followed by a complete overview of the various wireless-enabled IoT networks, connections, and protocols. Finally, concluding remarks are given.



Research and Challenges of Security & Privacy in Internet of Things (IoT)

Arun Kumar Singh ; Ashish Tripathi ; Pushpa Choudhary ; P. C. Vashist All Authors

Abstract: In today's modern lifestyle the internet is a very basic and needy requirement. The Internet of Things (IoT), it's a conception that indicates how it would be if all the ... **View more**

Metadata

Abstract:
In today's modern lifestyle the internet is a very basic and needy requirement. The Internet of Things (IoT), it's a conception that indicates how it would be if all the things (physical objects) of the world that are used in daily use are connected to the Internet. In this IoT, it is supposed to recognize all the connected devices that are connected with the Internet. The meaning of IoT is the connection among "things" such as controllers, machines, people, and sensors with restricted networks through the internet or other communication techniques throughout a novel approaches to built intelligence networks. All of the daily things used within these devices include washing machines, coffee makers, all wearable devices headphones, lamps, cell phones, and everything we can think of. So we can say that IoT is a conceptual environment of physical things that interacts with other things (devices). Security is a major concern of IoT nodes such as users, servers, objects and things with the association of confidentiality, integrity, and availability (CIA). Privacy is the subpart of security its role is very much important in various IoT Services and applications, which may be harmed by an eavesdropper.

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ISBN Information:

Publisher: IEEE

Conference Location: Dubai, United Arab Emirates

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Iterative Differential Evolution with Real Parameter Encoding

Publisher: IEEE Cite This PDF

Ashish Tripathi ; Arun Kumar Singh ; Amit Kumar Sirohi ; Prem Chand Vashist All Authors

Abstract: Evolutionary algorithms are a sub-discipline of artificial intelligence to solve various real-world problems. These algorithms are based on the Darwinian principle of evo... **View more**

Metadata

Abstract:
Evolutionary algorithms are a sub-discipline of artificial intelligence to solve various real-world problems. These algorithms are based on the Darwinian principle of evolution and so is the name evolutionary algorithm. Differential Evolution (DE) algorithm is a kind of evolutionary algorithms which are used for optimizing a problem mostly for real-valued functions. It uses random solutions and creates new solutions from the previous or existing solutions. This population based algorithm applies three operators namely selection, crossover and, mutation. In this work, a new strategy has been developed to improve the performance of the basic DE algorithm. Also, the resultant performance is compared to other optimization algorithms which show that modified DE is performing better than other existing algorithms.

Published in: 2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM)

Date of Conference: 09-10 January 2020

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Publisher: IEEE

Conference Location: Dubai, United Arab Emirates

Contents

ScienceDirect

An Industrial IoT Approach for Pharmaceutical Industry Growth
Volume 2

2020, Pages 191-230

Chapter 7 - Internet of Things: from hype to reality

Arun Kumar Singh [1], Neda Firoz [2], Ashish Tripathi [1], K.K. Singh [3], Pushpa Choudhary [1], Prem Chand Vashist [1]

Show more

Outline | Share Cite

https://doi.org/10.1016/B978-0-12-821326-1.00007-3

Abstract

The era of the Internet of Things (IoT) is sweeping over and replacing the Internet creating a world where smart things exist connected to each other intelligently. This was predicted by Eric Emerson Schmidt, the former C.E.O. of Google over 20 years ago. The physical world is now connecting to the digital world so quickly with the emergence of the IoT that it seems the Internet will become invisible soon, meaning the physical world will be connecting to the digital world seamlessly. The world will enjoy smart connectivity in the same way that the city of Barcelona has emerged to be the smartest city in the world. We are moving toward system-to-system connection, with smart networking reaching its peak. The idea of software-defined autonomous machines is about to become hugely important, which will become ubiquitous. With the advent of the IoT, we explore how it is becoming a reality and whether it has any limits. Maciej Kranz in his book on the IoT explains the very essential detailed and inclusive idea of the IoT, with IoT expanding to businesses, and covering and impacting on a variety of technology areas. Artificial intelligence and machine learning have a huge scope because of the enormous data generated by sensors and devices connected through the IoT. We will explore in this chapter the hype around the IoT and the reality. We will also discover improved metrics in the IoT that is allowing it to be a leader in the technological world. We are witnessing the fourth revolution in the digitization world and discuss the reasons behind its exponential growth. The protocols that differentiate them from others have evolved for IOT in a new set of patterns. This also creates security concerns and data are described as the new oil, raising further challenges of data privacy.

Previous Next

Keywords

IoT; Health IoT; IoT Hype; Reality; artificial intelligence; IT industry; RFID

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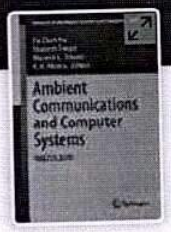


Ambient Communications and Computer Systems pp 357–368

Diagnosis of Cough and Cancer Using Image Compression and Decompression Techniques

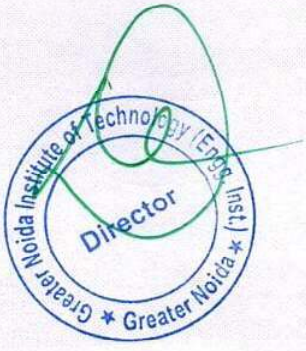
Ashish Tripathi, Ratnesh Prasad Srivastava, Arun Kumar Singh, Pushpa Choudhary & Prem Chand Vashist

Conference paper | First Online: 14 March 2020

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1097)

Abstract

This paper is dedicated to provide a technique with an innovative approach which can efficiently compress and recognize medical images. Since medical images are huge in size, therefore, compression of medical images is needed. Then, recognition capability is tested with the compressed and the uncompressed images. Basically, in this paper, two steps have been used to identify the disease. In the first step, the physical size of the medical image is reduced, and in the



Atom search optimization based study of frequency deviation response of a hybrid power system

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***Abstract*—This paper attempts a maiden application of a newly developed Atom Search Optimization (ASO) algorithm for the load frequency control (LFC) of a hybrid power system (HPS). The investigated HPS consists of conventional as well as distributed generation (DG) sources. An ASO algorithm based integer order proportional integral derivative (PID) controller is implemented as the LFC controller. A comparative analysis of frequency deviation response (FDR) of the HPS subject to multiple disturbances in load and wind power is presented. The simulation results demonstrate a superior performance of the proposed algorithm compared to the other algorithms. Additionally, operational stability of the HPS is established via Bode diagram and Eigen values.**

***Index Terms*—Atom search optimization, load frequency control, PID controller, hybrid power system**

NOMENCLATURE

f	nominal frequency (Hz)
$ITAE$	integral of the time multiplied absolute error
T_{sim}	simulation time (s)
K_{PS}	power system gain
T_{PS}	power system time constant (s)
R	governor speed regulation coefficient (Hz/pu MW)
T_G	governor time constant (s)
T_T	turbine time constant (s)
T_{DEG}	DEG time constant (s)
K_{DEG}	DEG gain
T_{BESS}	BESS time constant (s)
K_{BESS}	BESS gain
T_R	Reheater time constant (s)
K_R	Reheater gain
T_{WTG}	WTG time constant (s)
K_{WTG}	WTG gain
T_{AE}	AE time constant (s)
K_{AE}	AE gain
T_{FC}	FC time constant (s)
K_{FC}	FC gain

I. INTRODUCTION

Day by day burgeoning power demand is draining the conventional fossil fuels at an alarming rate. Sooner or later the fossil fuel deposits will become obsolete. Consequently, researchers all over the world are prioritizing the renewable sources of energy (RSE) for power generation. The RSEs possess an inherent advantage of availability in abundance and pollution free operation. Major RSEs include wind power and solar power. The RSEs along with DG sources like diesel engine generator (DEG), fuel cell (FC), etc. when operated at the medium voltage (MV)/low voltage (LV) levels forms a microgrid (MG). A MG is capable of operating in grid-connected as well as standalone modes. Clinging to the fact of bolstering power demand, it would be fruitful to operate the DG sources in coordination with the conventional power system in order to alleviate burden on the latter. Such a coordination of the conventional and DG power sources forms a HPS. In such a scenario the MG is said to operate in grid connected mode. For small disturbances, the frequency and voltage analysis may be considered as a separate entity. The intermittent nature of the wind and the solar powers may cause a mismatch between the power generation and load demand thereby deviating the system frequency from its steady state value. Thus, LFC in such a case becomes of utmost prominence. LFC aims to maintain a reasonably uniform system frequency by curtailing the mismatch between the power generation and the load demand.

Several control strategies including integer order [1], fractional order [2], degree of freedom [3], [4], robust [5], [6] etc. have been studied in the past for the LFC analysis of the power system. In order to optimize the controller gains innumerable metaheuristic optimization algorithms are available in the literature. Some of these are the JAYA algorithm [7], multi-verse optimization (MVO) [8], grey wolf optimizer (GWO) [1], salp swarm algorithm (SSA) [9], whale optimization algorithm [10], grasshopper optimization algorithm (GOA) [11] etc.

As per no-free-lunch (NFL) theorem, no metaheuristic algorithm is well suited for solving all the optimization problems [12]. Consequently, this paper proposes a maiden application of the ASO algorithm [13] for the LFC analysis of a HPS. The ASO is a novel physics-based metaheuristic optimization algorithm that takes inspiration from the basic molecular dynamics. The ASO mathematically models the atomic motion resulting from an interaction force and a constraint force. The algorithm is very simple to implement and hardly any parameter dependent. FDR of the HPS with the proposed algorithm is compared with other algorithms of

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Model order reduction based LFC analysis of an autonomous microgrid

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***Abstract*—This paper investigates the load frequency control (LFC) issue of an autonomous microgrid (MG). A conventional proportional-integral-derivative with filter (PIDF) controller is implemented to reduce the oscillations in the system frequency. Gains of the controller are optimized using a newly developed metaheuristic optimization algorithm known as sine cosine algorithm (SCA). A reduced order model (ROM) of the autonomous MG is derived and investigated. Time and frequency responses (TFR) of the ROM are compared with that of the normal order model (NOM) of the MG. Results demonstrate that the TFRs of the ROM approximately replicate that of the NOM of the MG. Frequency dynamics of the autonomous MG with the proposed SCA based controller are obtained subject to multiple disturbances and are compared with other algorithms of repute available in literature. Results clearly demonstrate the superiority of the proposed controller in terms of reduced frequency oscillations, peak over/undershoots (PO/PU) and settling time (T_{set}).**

***Index Terms*—Load frequency control, PIDF controller, autonomous MG, sine cosine algorithm, model order reduction**

NOMENCLATURE

f	nominal frequency (Hz)
$ITAE$	integral of the time multiplied absolute error
T_{sim}	simulation time (s)
D	load damping coefficient (pu MW/Hz)
M	inertia constant of the MG (s)
T_{DEG}	Diesel engine generator (DEG) time constant (s)
T_{MT}	Micro turbine (MT) time constant (s)
T_{FC}	Fuel cell (FC) time constant (s)
T_{WTG}	Wind turbine generator (WTG) time constant (s)
T_{PV}	Photo voltaic (PV) time constant (s)
T_{BESS}	Battery energy storage system (BESS) time constant (s)
T_{FESS}	Flywheel energy storage system (FESS) time constant (s)

I. INTRODUCTION

Our existing conventional power systems hold a major share in deteriorating the human as well as environmental well-being. Simultaneously, increasing energy crisis worldwide present even greater challenges. Thereupon, researchers are focusing primarily on renewable energy sources (RES) for power generation. The RESs possess a low carbon emission and are available in abundance. Major RESs include solar power and wind power. A MG consists of various distributed generation (DG) sources like WTG, PV, FC systems, etc. along with various energy storage devices and loads that are operated in a decentralized manner either in standalone or grid-connected mode. By virtue of its low inertia in reference to standalone mode of operation and the intermittent nature of the solar and the wind powers, frequency control in such a mode becomes complex and crucial as well. Hence, LFC is employed in the MG to minimize the frequency oscillations and thus, to restore the system frequency within certain prespecified limits.

To investigate the LFC issue in power system, several control approaches have been proposed in the past. Shankar and Mukherjee studied the optimal LFC performance of a hybrid power system employing classical controllers [1]. A two stage fuzzy approach was proposed by Annamraju and Nandiraju for the frequency control of an autonomous MG in [2]. A fractional order controller was proposed by Pan and Das to investigate the LFC issue in a hybrid power system [3]. Guha, Roy and Banerjee studied a 3 degree-of-freedom PID controller to stabilize the frequency fluctuations in a hybrid power system [4]. Various robust control strategies including model predictive control (MPC) [5], H_∞ and μ-synthesis approach [6] and internal model control (IMC) [7] have been successfully implemented for the LFC analysis of the power system. Growing complexities and nonlinearities in power systems demand a fast and accurate tuning of the controller parameters for the LFC analysis. Various meta heuristic optimization algorithms including differential search algorithm (DSA) [8], symbiotic organism search algorithm (SOSA) [9], dragonfly algorithm (DA) [4], black hole algorithm (BHA) [10], enhanced JAYA (EJAYA) algorithm [11] are available in literature for tuning the parameters of LFC controller.

Modeling of a complex power system for the LFC analysis demands an excelling understanding of the underlying dynamical behaviors of the system. Although such complex systems possess higher accuracy but at the same time loses simplicity. One of the commonly used approach to this problem is the model order reduction (MOR) process that aims at reducing the complexity of the system and simultaneously replicating the dynamical behavior of the complex system [12], [13]. Certain methods are available in the literature to obtain a reduced

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Robust PID Control of Single-axis Gimbal Actuator via Stability Boundary Locus

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Abstract: The gimbal or inertial stabilization platform (ISP) is used to stabilize the payload's line of sight (LOS) towards a stationary or moving target. It can be achieved if there is isolation between the payload and the base of the gimbal. This paper presents a single-axis gimbal loop in which the LOS rate is stabilized using a robust proportional-integral-derivative (PID) controller. The PID controller parameters are obtained by using a graphical technique known as stability boundary locus (SBL) approach such that the overall gimbal stabilization loop will have some minimum specific gain margin and phase margin. The PID controller is further designed in the presence of time delay. The proposed controller is compared with PI control scheme available in literature for rise time, settling time, percentage overshoot, ISE, ITSE, IAE, and ITAE. The simulations are carried out in MATLAB which exhibit better results in comparison with PI control based approach.

Keywords: Gimbal, PID control, Specific gain margin and phase margin, Stability boundary locus, Time delay.

1. INTRODUCTION

Gimbal is basically a pointing device used in many diverse industries like aerospace, medical, defense, remote sensing etc. The payload to a gimbal is typically a sensor like camera but it can be anything like radar, missile, gun, laser etc. which requires a highly accurate aiming to the target. A gimbal consists of rings pivoted at right angles to each other. A gimbal can stabilize an object or payload with respect to a single-axis or multiple-axis of rotation. A two-axis gimbal can stabilize a payload along pitch (elevation) and yaw (azimuth) axis whereas a three axis gimbal will have an additional stabilization axis known as roll axis. A gimbal is sometimes referred to as an inertially stabilized platform (ISP). Recently, a lot of research work have been done on the modeling and control of single and multiple-axis gimbal.

In Obiora and Achumba (2017), a fuzzy-PID controller is designed for aerial vehicle gimbal system. The dynamic modeling of aerial vehicle gimbal is done by using the independent joint control technique. An adaptive dynamic surface controller is synthesized for a two-axis pointing antenna gimbal system having actuator dynamics and parametric uncertainties by Khayatian and Arefi (2016). A gain scheduled controller is designed for three-axis attitude control of a double gimbal variable speed control moment gyro by using the LMI approach and H_2/H_∞ constraints by Sasaki et al. (2018). In Li et al. (2017a), a disturbance observer based state feedback controller is designed for composite decoupling control of double gimbaled variable speed control moment gyro (CMG) in a gimbal servo system. In Li et al. (2016), dynamic decoupling control of double gimbaled control moment gyro (DGCMG) in a gimbal system is achieved via state feedback linearization approach.

A fractional order proportional-integral (FOPI) controller has been designed for inertial stabilized gimbal platform by Caponetto and Xibilia (2017). In Cui et al. (2017), combined time delay control and internal model control (IMC) has been applied to a magnetically suspended CMG in a gimbal system for compensating the friction effects. In Ahi and Nobakhti (2018), active disturbance rejection control (ADRC) technique is implemented on the gimbal mechanism hardware. In Huang et al. (2018), extended harmonic disturbance observer with backstepping controller is fabricated for high precision anti disturbance control of gimbal system. In Fang and Ren (2011), composite technique of inverse system control and IMC has been implemented for high precision control of single gimbal magnetically suspended CMG. Neural network based sliding mode control approach has been implemented for disturbance rejection of a inertially stabilized platform (ISP) having actuator saturation in a gimbal system by Ding et al. (2019). In Abdo et al. (2015), two axes gimbal seeker system has been explored using cascade PID control design approach. In Zhan et al. (2014), optimal feedback stabilization control via linear matrix inequality (LMI) and convex optimization based technique is applied on a two axis gimbal system having saturation nonlinearity and various disturbances. In Majumder et al. (2018), integrated dynamic modeling

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Lecture Notes in Mechanical Engineering

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Performance of SoilTech MK III Polymer and Fly Ash on Problematic Soil

Taranpreet Kaur, Pardeep Singh, and Heena Malhotra

Abstract Roads are considered the best mode of transportation, and after USA, Indian road network is the world's second largest road network in the world. According to the Ministry of Road Transport and Highways, March 2019, India had about 142,126 km (88,313 mi) of national highway and expressways and 176,166 km (109,464 mi) of state highways (Rajput and Yadav in Int. J. Innov. Res. Sci. Technol. 2(3):9–13, 2015). Road's thickness depends upon its geotechnical properties and the load applied to it. Good pavement should follow some guidelines like it should be safe, economical, and comfortable. This research describes the impact of SoilTech MK III Polymer and Fly Ash as stabilizer on black cotton soil and on clay and the positive impact on the pavement as well as on the cost of the pavement. For this research, 20% Fly Ash and 0.2, 0.4, 0.6, and 0.8% SoilTech MK III Polymer were used. With the addition of Fly Ash and SoilTech MK III Polymer, the OMC value increases and the value of MDD decreases. CBR value also increases with the combination of these two materials. The optimum mix obtained to improve the construction of pavements with poor strength was 79.2:20:0.8 (Sample: Fly Ash: SoilTech MK III Polymer). Because of these stabilizers, the cost of pavement reduces up to 20–30%.

Keywords Black cotton soil (BCS) · Clay · SoilTech MK III Polymer · Fly Ash · California bearing ratio (CBR)

1 Introduction

It is always a challenge for highway engineer to improve the geotechnical properties of the problematic soil at that time. Stabilization is one of the best methods adopted by the engineers. Chemical stabilization [1], mechanical stabilization, and biological [2] are such methods which are implemented on weak soil to improve its properties so that the service life of the pavement can be increased [3, 4]. Various

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Us against the World: Detection of Radical Language in Online Platforms

Esther Theisen

Patrick Bours

Nancy Agarwal

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Section
Artikler

Abstract

In this paper, we have investigated if we can detect radical comments in an online social network. We used comments from 6 subreddits, 3 of which are considered radical and 3 non-radical. Using various structural features of the texts in the comments, we were able to obtain an F1-score of 91% when using SVM with a linear kernel and a precision of almost 98% when using Random Forest.

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The Organizing Committee congratulates Mr. Sushant Kumar of Delhi Technological University, India for his/her worthy Oral Presentation titled *"A case study: Sustainable development of groundwater in Begamganj block of Bina River Basin, Madhya Pradesh, India"* at the 3rd Go Green Summit held on 23rd - 24th March 2018 at Manila, Philippines.

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A Literature Review on IOT Innovation

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Abstract: ***The Internet of Things (IOT) is illustrated in many different ways, and it incorporates numerous parts of life from associated homes and urban communities to associated cars and roads, roads to devices that track an individual's conduct and utilize the information gathered for push administrations. IOT is a kind of "general worldwide neural system" in the cloud which interfaces different things. Numerous mechanical IOT applications have been progressively created and deployed in recent years. Internet of Things (IOT) has given a chance to build intense mechanical framework and applications by utilizing the developing presence of RFID, remote, versatile and sensor devices. The main objective of proposed framework is to provide a technology oriented and low-cost system to make an advanced industry for those who away from their industry and want to control devices.***

Keywords: Internet of Things (IOT), Server, Raspberry Pi, Webpage, Ethernet, Smart phone etc.

I. INTRODUCTION

The Internet of Things (IOT) is a recent communication paradigm in which the objects of everyday life will be equipped with microcontrollers, transceivers for digital communication, and suitable protocol stacks that will make them able to communicate with one another and with the users, becoming an integral part of the Internet.

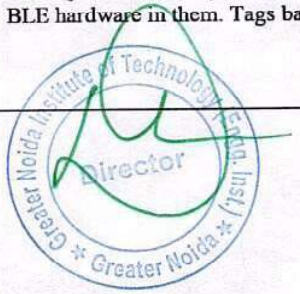
A novel paradigm named "The Internet of Thinks (IOT)" has been introduced in the field of wireless communications several years ago. This term was first coined by Kevin Ashton in 1999 in the context of supply chain management [1]. However, in the past decade, the definition has been more inclusive covering wide range of applications like healthcare, utilities, transport, etc [2]. Although the definition of 'Things' has changed as technology evolved, the main goal of making computer sense information without the aid of human intervention remains the same. A radical evolution of the current Internet into a Network of interconnected objects that not only harvests information from the environment (sensing) and interacts with the physical world (actuation/command/control), but also uses existing Internet standards to provide services for information transfer, analytics, applications, and communications. Fuelled by the prevalence of devices enabled by open wireless technology such as Bluetooth, radio frequency identification (RFID), WiFi, and telephonic data services as well as embedded sensor and actuator nodes, IOT has stepped out of its infancy and is on the verge of transforming the current static Internet into a fully integrated Future Internet [3]. The Internet revolution led to the interconnection between people at an unprecedented scale and pace. The next revolution will be the interconnection between objects to create a smart environment. Only in 2011, the number of interconnected devices on the planet overtook the actual number of people. Currently there are 9 billion interconnected devices and it is expected to reach 24 billion devices by 2020. According to the GSMA, this amounts to $1.3 trillion revenue opportunities for mobile network operators alone spanning vertical segments such as health, automotive, utilities and consumer electronics.

Enabling technologies for the IOT: - There are three types of technologies that enable the internet of things,

i. Near-field communication and Radio Frequency Identification (RFID) - In the 2000s, RFID was the dominant technology. After few years, NFC became dominant (NFC). NFC has become common in smart phones during the early 2010s, with uses such as reading NFC tags or for access to public transportation.

ii. Quick response codes and Optical tags - This is used for low cost tagging. Phone cameras decode QR code using image-processing techniques. In reality QR advertisement campaigns gives less turnout as users need to have another application to read QR codes.

iii. Bluetooth and low energy - This is one of the latest techniques. All newly releasing smart phones have BLE hardware in them. Tags based on BLE can signal



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RELATIVE COMPARISON OF NARROW BAND SPECTRUM SENSING TECHNIQUE: A SURVEY

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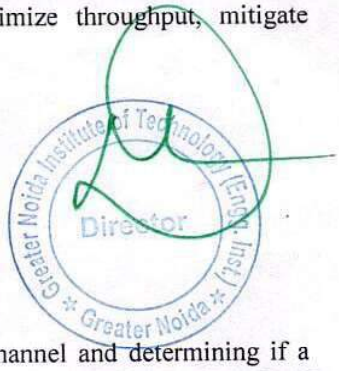
ABSTRACT

Radio spectrum is limited and precious resource. However, a fixed spectrum access has lead to underutilization of spectrum as a great portion of licensed spectrum is not effectively utilized. We need to come up with a means for improved utilization of the spectrum creating opportunities for dynamic spectrum access. Cognitive radio is the solution of the dynamic allocation of freq band.cognitive radio will search the white space in the licence band and allotted it to unlicensed or secondary user .present paper is review of cognitive radio and various narrow band spectrum sensing technique .

Keyword –Cognitive radio(CR), Spectrum Sensing (SS),dynamic spectrum access(DSA)

1.Introduction –The wireless application is increasing day by day so that the effective utilization of the freq band is very necessary but by the static allocation of the freq band some of the frequency band will be underutilize .Therefore dynamic spectrum access(DSA)[1] will be used in the cognitive radio(CR)[2]. Cognitive radio(CR)[2] is a radio or system that senses its operational electromagnetic environment and can dynamically and autonomously adjust its radio operating parameters to modify system operation, such as maximize throughput, mitigate interference, facilitate interoperability, access secondary markets" [3].



CR Consists of Four important Steps

1. Spectrum sensing
2. Spectrum decision
3. Spectrum sharing
4. Spectrum mobility

Spectrum sensing is the process of a cognitive radio sensing the channel and determining if a primary user is present, detecting the spectrum holes. Spectrum management is selecting the best available channel (for a cognitive user) over the available channels. Spectrum sharing is the

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Smart Education with artificial intelligence based determination of learning styles

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Abstract

The need of the hour in present day education environment is adaptivity. Adaptive educational systems aim to customize content and learning paths of students. These aid's in the minimizing disorientation and cognitive overload problems; thus maximizing learning efficiency. Present learning systems are lacking adaptivity; as they offer same resources for all users irrespective of their individual needs and preferences. Students learn according to their learning styles and determining these is a crucial step in making eLearning or traditional education adaptive. To determine learning styles, learning models have been suggested in literature, but there is no readily available software tool that provides the flexibility to select and implement the most suitable learning model. To fulfil this dire need, a framework of a tool is proposed here, which takes into consideration multiple learning models and artificial intelligence techniques for determining students' learning styles. The tool would provide the facility to compare learning models, to determine the most suitable one for a particular environment. It is suggested that this tool be deployed in a cloud environment to provide a scalable solution that offers easy and rapid determination of learning styles.

Keywords: Smart education; Artificial intelligence; Learning styles; Felder & Silverman; Kolb; Adaptive learning, Decision trees, Perceptrons

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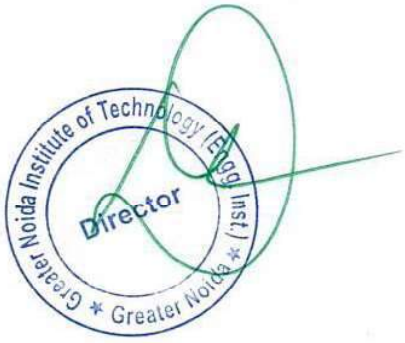

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Study of newly appeared γγ band in $^{104\text{-}108}$Mo

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Introduction

The neutron rich molybdenum isotopes around A ≈ 100 are found to exhibit different kind of nuclear structure. Thus it has always been a subject of keen interest for experimentalists and theoreticians to see whether the nucleus under consideration is axial, γ - soft or γ – rigid. Sometimes back spontaneous fission of ^{252}Cf with Gamma sphere detector array has yielded many high states in Mo nuclei including a fresh appearance of $K^\pi = 4^+$, γγ band besides the usual $K^\pi = 0^+$, yrast band and $K^\pi = 2^+$, γ band spectrum [1-3]. Modified soft rotor formula has been found successful in reproducing the energies of these various levels [4].

In the present work, we shall investigate whether a half century old predictions on the existence of $K^\pi = 4^+$, γγ band has become a reality [5]. According to ref. 2 the violation of axial symmetry of even nuclei generates two energy states for I = 2 (2_1^+, 2_2^+) one for I = 3 (3_1^+) three for I = 4 (4_1^+, 4_2^+, 4_3^+), two for I = 5 (5_1^+, 5_2^+), four for I = 6 (6_1^+, 6_2^+, 6_3^+, 6_4^+) etc corresponding to the rotation of the nucleus. 2_1^+, 4_1^+, 6_1^+ ..... make yrast band, 2_2^+, 3_1^+, 4_2^+, 5_1^+, ... make gamma band while 4_3^+, 5_2^+, 6_3^+ ..... make γγ band. Yrast band is normal while the other to bands i.e. γ band and γγ band are anomalous bands. We shall evaluate the values of energy of the levels of observed spectrum within the framework of Asymmetric Rotor Model (ARM) and compare them with experiment just to explore whether the nucleus under consideration are rigid or not. Since the energy predicted in ARM is large, the relative displacement of the odd spin levels with respect to even spin levels (odd – even staggering OES) will be taken as signature of nucleus being γ-rigid, γ soft or axial [6]. The staggering indices S(I) for the experimental as well as asymmetric rotor energy levels of γ – band and for γγ – band is expressed as –

$$S(I) = \frac{(E_I - E_{I-1}) - (E_{I-1} - E_{I-2})}{E2_1^+}$$

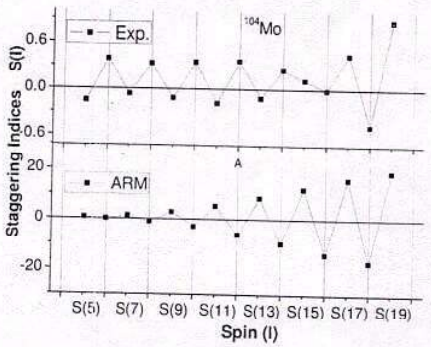

Fig. 1 (a)

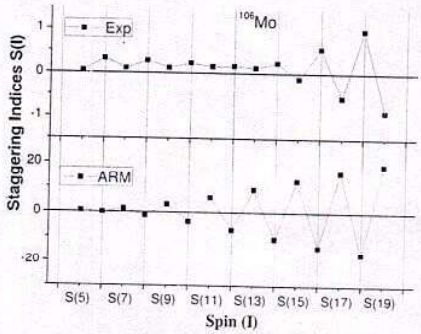

Fig. 1 (b)

On electric Quadrupole Transition between rotational states of $^{188\text{-}192}$Os

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Introduction

There has been a long-standing debate on the nature of the spectra characterizing Osmium isotopes. Some groups consider these nuclei as being γ – soft [1, 2, 3] while others as γ – rigid asymmetric rotor [4, 5]. The equilibrium values of the asymmetric parameter γ, predicted by Lender in ref. 3 are 20^0, 20^0, 25^0 while Faessler in ref. 5 are 19^0, 22^0, 25^0 respectively for ^{188}Os, ^{190}Os, ^{192}Os. The basic parameter that distinguish the rigid rotor from γ – soft nuclei are –

$\Delta E_1[= E3_1^+ - (E2_1^+ + E2_2^+)] = 0$ and

$\Delta E_2[= E3_1^+ - (2E2_1^+ + E4_1^+)] = 0.$

The modulus of $|\Delta E_1|$ and $|\Delta E_2|$ for $^{188\text{-}192}$Os are given as $|\Delta E_1|$ = 2, 11, 5 and $|\Delta E_2|$ = 2, 171, 302 respectively. Recently the triaxiality is associated with the odd – even staggering (OES) in γ – band considering the sign of $S(4)$ and $S(6)$ which is negative in γ – soft while positive in γ – rigid [6, 7].

We have calculated these $S(4)$ and $S(6)$ signatures of γ-rigid and γ – soft nuclei and found their values to be positive in all these nuclei under consideration and are tabulated in table – I.

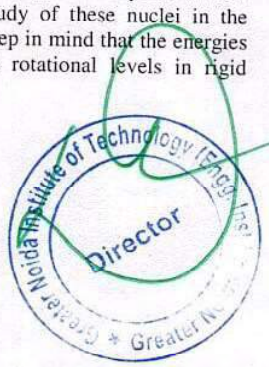
Table – I

The values of staggering indices $S(4)$ and $S(6)$ in $^{188\text{-}192}$Os nuclei

Nucl.	^{188}Os	^{190}Os	^{192}Os
S(4)	0.120	0.0096	0.055
S(6)	0.185	0.112	0.470

This observation supports our point of view underlying in the study of these nuclei in the present work. We keep in mind that the energies obtained for various rotational levels in rigid rotor model are too large and as such to bring them down the correction due to centrifugal stretching or the coriolis antipairing effect at large γ deformation with increasing angular momentum are necessary. These corrections were introduced by generalizing the variable moment of inertia by Faessler [5] or by introducing Lipas correction [8, 9] however the values of the quadrupole transitions between various rotational levels remains unaltered due to the correction applied [10]. Another parameter that comes in support of the present study is $\beta A^{2/3}$. According to Mayer – ter – vehn $\beta A^{2/3} < 4$ in vibrational nuclei and $\beta A^{2/3} > 7$ in well deformed nuclei and $4 < \beta A^{2/3} < 7$ is recommended fit for nuclei to be considered as asymmetric rotors [11]. In another approach these nuclei were taken as ideal triaxial liquid drop having $\gamma = 30^0$ and the liquid drop Hamiltonian written in intrinsic frame was separated into two terms describing the β and γ – variables. The potential in β consists of a centrifugal term and a sextic potential while the differential equation for γ as that for the Mathiew function [12] and the Osmium nuclei were treated in this Sextic Mathiew Approach (SMA).

In the present work, we evaluate the B (E2) values for $^{188\text{-}192}$Os nuclei between different rotational energy states using rigid triaxial rotor model [4 5] and list them along with the corresponding theoretical values obtained from SMA. These values are compared with the experimental data. The theoretical values of SMA and the experimental values are taken from the ref. 12 (Table – II). The values which deviate by more than a factor of two are underlined in table – II.



CERTIFICATE

OF PARTICIPATION

" NATIONAL CONFERENCE ON CLOUD COMPUTING AND INFORMATION TECHNOLOGY-2018"

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Robust PID Load Frequency Controller Design with Specific Gain and Phase Margin for Multi-area Power Systems

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Abstract: In interconnected power systems, the load frequency control (LFC) is considered a hugely beneficial ancillary service. The goal of the LFC in an interconnected power system is to limit the frequency of each area within certain bounds and to maintain the tie-line power flows within some pre-specified latitudes by balancing the power outputs of the generators so as to satisfy ever changing load demands. In the classical control theory, PID controller is said to be robust if it provides some specific gain and phase margin. In this paper, a novel methodology is proposed for the robust PID controller design having specific gain and phase margins for LFC in a multi-area power system. The proposed technique is based on stability boundary locus and PID controllers are designed for four-area power system having different types of turbines. The simulations are carried out using MATLAB and effectiveness of the proposed methodology is verified by the comparison with a recently published approach.

Keywords: Load frequency control, multi-area power system, PID controller, specific gain and phase margin, stability boundary locus.

1. INTRODUCTION

For the power system to be operated satisfactorily, the frequency should remain almost constant. The constant frequency enables consistent speed of synchronous and induction motors. The frequency of a system depends on the balance of active power. Since frequency is a common component everywhere in the system, a deviation in the active power demand at one point is echoed all over the system by a deviation in frequency. In an interconnected system having more than one independent control areas, frequency as well as power generation inside each area has to be regulated so as to uphold the scheduled power interchange. The control of frequency and generation is frequently mentioned as load frequency control (LFC) (Kundur, 1994).

LFC is an active area of research now-a-days. A PID controller design scheme based on the direct synthesis (DS) approach in frequency domain is presented by (Anwar & Pan, 2015). An observer based integral sliding surface is developed and a sliding mode LFC (SMLFC) controller is suggested for minimizing the frequency changes in wind power systems by (Cui et al., 2017). In (Guha et al., 2016), LFC problem has been explained in a multi-area power system where PI/PID controllers are tuned using grey wolf optimization (GWO) approach. In (Hussein et al., 2017), Proportional-Integral-Observer (PI-Observer) based state feedback controller has been synthesized for LFC problem of a single area isolated power system model. (Padhan & Majhi, 2013) estimated the power system dynamics using relay based identification technique and then a PID controller is designed for the LFC problem of single and multi-area power systems where PID controller gain parameters are acquired by enlarging the controller transfer function using Laurent series. (Prasad et al., 2017) tackled LFC problem in three area power system using nonlinear sliding mode controller (SMC) with matched and unmatched uncertainties and the proposed approach is validated on IEEE 39 bus power system. The neural network based integral sliding mode controller is used for LFC problem for nonlinear power systems with wind turbines by (Qian et al., 2016). A tilt-integral-derivative controller with filter (TIDF) is designed for LFC problem of multi-area power systems by (Sahu et al., 2016) in which TIDF controller parameters has been optimized by Differential Evolution (DE) algorithm.

A two degree of freedom internal model control (IMC) filter is designed for the LFC problem by (Saxena & Hote, 2013) in which the proposed control strategy is implemented on the reduced order model of the single-area power system. In (Saxena & Hote, 2017), IMC approach is used for the stabilization of perturbed LFC single-area and multi-area power systems and the proposed technique is further validated on the standard IEEE 39 bus system. In (Shayeghi et al., 2008), LFC problem has been solved in a restructured power system by implementing a particle swarm optimization based multi-staged fuzzy (PSOMSF) controller. In (Sondhi & Hote, 2016), a fractional order PID controller has been synthesized by taking the perturbed model of the single-area

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Constant Torque Control Schemes for PMSG Based Wind Energy Conversion System

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***Abstract*— In this paper, the operation of wind energy conversion system is introduced by modeling of constant torque control schemes. Proportional-Integral, Fuzzy logic and Artificial neural network based schemes are proposed to control the blade pitch angle and tip speed ratio. A MATLAB/Simulink model is developed for the wind turbine based power generation system by combining the designed controllers. The system performance is tested under different operating condition for each controller assisted wind energy conversion system and found satisfactory. Furthermore, a comparative study is made in terms of controller response and control parameters.**

Keywords*— *renewable energy, wind turbine, fuzzy logic controller, artificial neural network, constant torque controller, proportional-integral controller

I. INTRODUCTION

As the availability of the fossil fuels is declining continuously, there is an urgent need to consider the use of renewable energy (RE) sources to meet the current energy demand. Wind energy is the most promising alternative source of energy [1].

In [2], various control systems for medium & large-scale wind turbine (WT) generators have been discussed. The authors in [3] have proposed a blade pitch angle (BPA) controller using genetic algorithm, but other unconventional artificial intelligence based algorithms are not discussed. In [4], the authors have predicted the optimal tip speed ratio (TSR) and the power factor of a WT using artificial neural networks (ANN), but integration of BPA with TSR is not discussed. The authors in [5] have designed a BPA controller for aerodynamic performance optimization of a wind farm, but TSR controller is not discussed. Authors in [6] have designed real value model of WT with permanent magnet synchronous machine (PMSG), BPA and TSR controller are not discussed.

The comparison of PI, FL and ANN based constant torque control schemes for BPA and TSR has not been reported to the best of author's knowledge.

The research addition of this paper is to present a comprehensive analysis of PI, FL and ANN based constant torque control schemes for BPA and TSR of WT. Three cases are considered as BPA or TSR is controlled independently; and both BPA and TSR are controlled.

II. SYSTEM DESCRIPTION AND DYNAMIC MODELING OF WECS

The system under investigation is shown in Fig. 1 as:

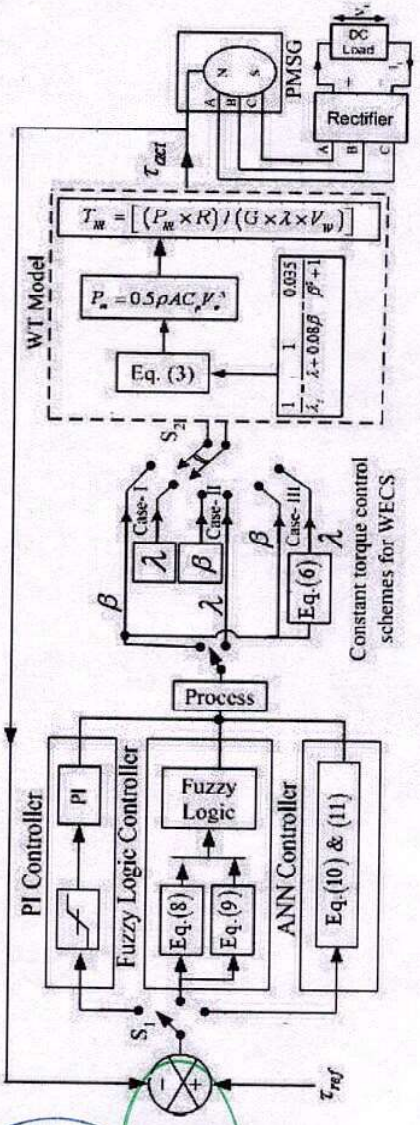

Fig. 1. PI/FL/ANN based constant torque control schemes for WECS

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Air Quality Index Analysis and Solutions for High Traffic, Industrial and Residential Regions in Delhi/NCR

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Abstract – Air Quality monitoring is important aspect these days as high pollution is causing bad health effects in the Delhi/NCR region. It is necessary to take steps for improve the air quality of the capital and also preserve natural trees for making the environment pollution free. There are a lot of traffic issues, industrial pollution and household pollution which contributes to the bad air quality index. Monitoring is generally done using devices which have sensors like ozone, PM10, PM2.5, CO, SO2, etc. here, a device with IOT is used to measure the sensor values and then convert to Air Quality Index. In this thesis, air quality index is calculated for various areas in Delhi/NCR which are namely, industrial area Patparganj, a high traffic area Wazirpur and a green area near Jawaharlal Nehru stadium. It is seen that there is high pollution in the areas of Patparganj due to industries and in Wazirpur are because of roads connecting major parts of the city and also in the area of Jawaharlal Stadium as its residential area in the surroundings and has greenery has lower pollution level. The analysis is performed for 5 days in each area. Hence, for these areas solution is provided to improve the air quality by the major use of filters and plantation is required in these areas.

Keyword: - Air Quality Index, Delhi/NCR, PM10, PM2.5, Oxygen

----------X----------

INTRODUCTION

Natural contamination and related human medical problems and environmental harm zone genuine worries since they have turned into a risk to biodiversity as well as become a danger to human populace itself. [1][2] These ecological issues are of uncommon significance since they influence both widely varied vegetation including individuals. They decrease anticipated existence of individuals, hinder development of the youngsters and aggravate the whole economic advancement process. The World Health Organization (WHO) evaluated that in excess of 25 percent of all mortalities in the creating scene are because of natural elements which is very disturbing. [3] The issue turns out to be much additionally exasperated because of spontaneous development of modern groups/townships wherein huge numbers of the ventures have been spurning standards and standards. The significant test in executing any strategy of Environment Action Plans (EAP) is the recognizable proof of contaminating ventures and their area. [4] This can be accomplished by evaluating the current contamination discharges started from various industry sources and taking remedial measures in like manner. Be that as it may, it is likewise a troublesome errand for controlling organizations because of absence of dependable data on the nature and sort of contamination radiating from various modern plants and production lines.

The open air contamination is a developing worry for some urban areas in created and creating nations of the world. While the created and creating nations vary as far as their encompassing models for different contaminations (the dimension at which they believe the contamination to be destructive), the general thought behind the gauges is to know about the harm caused to the general wellbeing and the earth. The urban air toxins emerge from a wide assortment of sources, however fundamentally connected to the burning procedures. [5] The biggest sources incorporate the engine vehicles, assortment of assembling forms (businesses, for example, block furnaces, concrete, metal handling, tanning, and so forth., private fuel utilization, biomass consuming and street dust (particularly in the creating nation urban communities). [6][7] The traffic-produced toxins incorporate nitrogen oxides (NOx), carbon monoxide (CO), unstable natural mixes (VOCs) and particulates (PM). Given the blend of NOx and VOC discharges, joined with solid daylight amid the

SFDR Enhancement of 120° Phase Angle-Based RoF Link by Using Linear Polarizers

Parvin Kumar, *Member, IEEE*, Shelly Singla, and Sanjay Kumar Sharma, *Member, IEEE*

Abstract—**A new scheme to improve spurious free dynamic range (SFDR) of high-performance radio over fiber (RoF) link based on 120° phase angle has been proposed and investigated. The proposed link consists of a dual electrode Mach–Zehender modulator (DE-MZM), linear polarizers, and optical filter. The performance is improved by generating an optical single sideband (OSSB) signal using 120° phase angle in DE-MZM. The suppression of third-order intermodulation (IM3) and other harmonics are significantly controlled by adjusting the state of polarization of both the polarizers. The resulting SFDR shows an improvement of 13.4 dB for the proposed linearized link when compared with conventional 90° phase angle-based DE-MZM link.**

Index Terms—**Radio over Fiber (RoF), dual electrode Mach Zehender modulator (DE-MZM), third order intermodulation (IM3), spurious free dynamic range (SFDR).**

I. Introduction

THE demanded key elements of future fifth generation wireless communication network are capacity, data rates, dynamic range of link, low losses, reliability, cost effective, eco-friendly, flexibility in design and implementation of link etc. [1]–[13]. The RoF link can become an important substitute in view of these requirements and it needs a high degree of linearity to attain demanded link performance [1]–[13]. But, nonlinearity of the optical modulator presents harmonic and intermodulation distortion in sub carrier modulation link which degrade the performance of RoF link significantly. Many researchers have contributed to reduce this nonlinear distortion [14]–[19]. However, it is still required to reduce IM3 in order to improve dynamic range of RoF Link. Due to optical fiber chromatic dispersion degradation, the OSSB technique is most desirable for long distance RoF link and this technique is free from frequency dependent power fading in comparison with optical double sideband technique [3]–[6], [8], [13], and [15]. In view of this, the OSSB RoF link has been investigated based on 120° hybrid coupler and DE-MZM which is considered as high performance link. A RF Signal is divided by the 120° hybrid coupler into two parts with equal power and a phase difference of 120°. Then, it is fed to the two RF ports of the DE-MZM. A phase difference of $n * 2\pi/3$-$\emptyset_0$ between optical components in upper and lower arm of DE-MZM is maintained, where n represents the order of sideband and $\emptyset_0$ is an additional phase difference through dc bias. An OSSB signal with -1^{st} and $+2^{nd}$ order sidebands suppressed is generated when $\emptyset_0 = \pi/3$ because the -1^{st} sideband in the two arms of the modulator have a $-180°$ phase difference and they destructively interfere while combining at the output port of DE-MZM. Similarly, $+2^{nd}$ order sideband also destructively interfere due to the phase difference of $+180°$ [14]–[17].

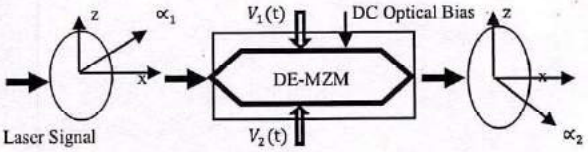

Fig. 1. Proposed linearized 120° phase angle based OSSB RoF link.

Fig. 1 shows the proposed mixed polarization based RoF link consisting of DE-MZM with two linear polarizers, placed before and after modulator adjusted an angle of α_1 & α_2, respectively. Further, linearization of OSSB RoF link based on 120° phase angle is achieved using two linear polarizers. It is identified that z-cut $LiNbO_3$ MZM exhibits an electrooptic coefficient r_{31} along the x-(TE) axis, which is approximately 1/3 of r_{33} coefficient of the z-(TM) axis. This anisotropy will allow for the RF signal to be simultaneously modulated in the both orthogonal polarized states by different amounts. The optical signal entering the modulator passes through a linear polarizer set to an angle α_1 with respect to z-axis, this will excite a superposition of TE and TM modes that will be modulated to different modulation depths. In other terms, the z-(TM) axis will carry more IM3 distortion, while the x-(TE) axis will carry less IM3 distortion. The optical signal is then passed through a second linear polarizer that is set to angle α_2 with respect to z- axis. The two angles are related to each other, so they will be selected in such a way as to maximize the RF subcarriers and suppress IM3 distortion. By carefully selecting α_1 and α_2 of the two linear polarizers, the combined IM3 distortion from two arms of MZM can be eliminated [15]. A significant improvement in SFDR confirms the performance enhancement of proposed link with mixed polarization.

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Color versions of one or more of the figures in this letter are available online at http://ieeexplore.ieee.org.

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Sarika Singh*, Sandeep K. Arya and Shelly Singla

Mitigating the Effects of Non-Linear Distortion Using Polarizers in Microwave Photonic Link

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Abstract: A scheme to suppress nonlinear intermodulation distortion in microwave photonic (MWP) link is proposed by using polarizers to compensate inherent non-linear behavior of dual-electrode Mach-Zehnder modulator (DE-MZM). Insertion losses and extinction ratio have also been considered. Simulation results depict that spurious free dynamic range (SFDR) of proposed link reaches to 130.743 dB.$Hz^{2/3}$. A suppression of 41 dB in third order intermodulation distortions and an improvement of 15.3 dB is reported when compared with the conventional link. In addition, an electrical spectrum at different polarization angles is extracted and 79° is found to be optimum value of polarization angle.

Keywords: MWP, polarizer, DE-MZM, IMD, SFDR

1 Introduction

Due to exponential rise in advancements of communication technologies, the techniques having potential to provide best services to the users can only survive in this present era. Due to wide range of applications offered by MWP link, it has got a concrete ground to stay longer in this modern time. These applications are merely antenna-remoting, signal processing, delay lines, low phase noise RF generation and frequency detection of RF signals [1–3]. Performance of MWP links are subjected to various impairments that can be induced due to nonlinearities in the transmission lines and optical modulator [4–6]. These errors could be linear or non-linear but non-linear errors such as harmonic distortion (HD) and inter modulation distortions (IMD) are of much concern as they have severe effect on SFDR, which is considered an important performance measurement parameter for MWP links [7–9].

Large no. of techniques has been demonstrated to suppress IMD3 components using Mach-Zehnder modulator (MZM), polarization and phase modulator in different ways viz. pre-post distortion method, adaptive predistortion and single DE-MZM employing direct detection [10–14]. Some other approaches incorporated single, dual, cascaded and parallel combinations of various modulators [15–19]. Main drawback of above techniques is the requirement of proper biasing control to suppress IMD3 and more no. of modulator increases the cost and complexity of system [20–23].

In this paper, we have demonstrated analytical model to improve link performance that consists of a DE-MZM and two polarizers, driven by two sinusoidal RF tone along with photodetector. A phase shift of 90° is introduced through hybrid coupler between two electrode inputs of DE-MZM which leads to optical single-sideband (OSSB) modulation. As optical double sideband modulation is susceptible to dispersion induced power fading, OSSB is preferred over the same. Also, polarizers polarizes optical signal before and after modulation at polarization angles θ_1 and θ_2 in order to maximize fundamental component and minimize third order IMD (IMD3) terms. The value of polarization angles is chosen carefully so that net IMD3 components are cancelled out at the output of second polarizer. A mathematical expression is derived for optimum value of polarization angles at which the maximum suppression in IMD3 components is reported. Simulation results are appended in sound consonance with analytical analysis. Furthermore, performance of proposed & conventional link is measured against IMD3 in term of SFDR.

2 Principle & system model

Figure 1 shows schematic of considered MWP link based on DE-MZM incorporating polarizers for the linearization

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RESEARCH ARTICLE

SNDR optimization of linearized Mach–Zehnder modulator for multi-tone RoF system

Shelly Singla[1] · **Parvin Kumar**[2]

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Abstract Radio-over-fiber (RoF) system will be recognized as backbone for next-generation networks by offering capacity, simplicity in design, cost-effectiveness, green communication, etc. But the crucial performance degrading bound for RoF system is third-order intermodulation (IM3) error when high signal input power is employed. In this regard, this paper presents an analytical analysis with verified simulation of three radio frequency signals incorporating dispersion and single sideband modulation technique. This paper illustrates the results to reduce nonlinear distortion errors by selecting the medium values of the modulation index and proper fixed frequency differences between input signals for transmission distances of 25 km and beyond. The performance of multi-tone RoF system is further improved by employing linearization technique. The two linear polarizers are placed before and after Mach–Zehnder modulator. The IM3 can be significantly suppressed by properly selecting the angles between two linear polarizers.

Keywords Radio over fiber (RoF) · Third-order intermodulation (IM3) · Radio frequency (RF) · Linearized Mach–Zehnder modulator (MZM) · Single sideband (SSB) and linear polarizer

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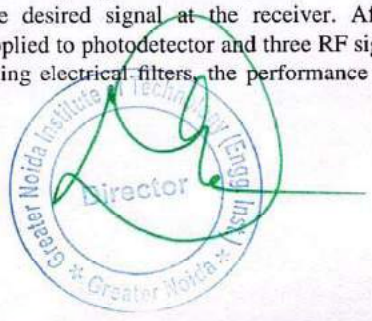
Introduction

Multi-tone RoF systems can be used for a wide range of applications such as CATV, wireless LANs and mm-wave applications. This is a consequence of the fact that the modulation technique used and data carried on each subcarrier are independent of the subcarriers used. The intermodulation error which is due to nonlinearity of MZM produces severe impact on the performance of multi-tone RoF systems [1–5].

The second-order intermodulation is filtered by symmetrical DE-MZM, but third-order intermodulation (IM3) terms need to be minimized and have severe impact [6–11]. Many attempts have been made in reducing IM3, and in this paper, nonlinear distortion errors are reduced by selecting values of the modulation index. Figure 1 shows schematic of RoF system using SSB modulation using MZM with three input RF signals. Here, three RF signals drive an MZM. Three RF signals are applied to $\pi/2$ hybrid circuit to get composite modulating signal. This composite modulating signal is applied to both electrodes of the MZM, with a 90° relative phase shift between the two arms. A dc bias is used to set the modulator at the quadrature point. Further, the linearization is employed in MZM. The proposed linearized MZM contains two linear polarizers: first fixed at angle $\propto_1$ and second fixed at angle $\propto_2$. The γ_1 is a dimensionless ratio of less than one and $\gamma_1 = \frac{1}{3}$ for $LiNbO_3$ as well as many poled electro-optic polymers [12]. With $\gamma_1 = \frac{1}{3}$ and properly selecting $\propto_1$ and $\propto_2$ angles, the IM3 from two arms of MZM can be significantly suppressed. An optical filter is used to filter out the desired signal at the receiver. After this signal is applied to photodetector and three RF signals are extracted using electrical filters, the performance of the system has



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Intercultural Competence In Lahiri's 'Hell Heaven'

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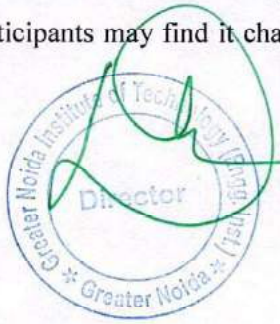
Abstract

With the advent of globalization, concepts like diaspora, displacement, identity have become prominent topic of discussion.In search of identity, diasporas make compromises, negotiations. Thepresent paper intends to explore the concept of identity and cultural hybridity in the works of JhumpaLahiri. An eminent Indo-American writer, Lahiri herself is a child of immigration and multiculturalism which enables her to portray the characters both in the light of native and alien culture. Her works project realities of human existence in a beautiful manner. In spite of being in a constant struggle of confusing identity, and dilemma between two worlds, the protagonists of her story strive towards a happier world full of zeal and zest. The story under analysis is „Hell-Heaven".The analysis reveals that Lahiri is a master playwright who depicts the lives of diasporas in an intricate manner.

Introduction

Under the influences of globalization, now-a-days it is quite common that the participants meet new and unfamiliar elements in their familiar context or even coming across new communicative contexts where the participants do not share but construct meanings is also not something unexpected. Under such circumstances, the normal behavior of a person may be interpreted differently by the other person and the participants may find it challenging to



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Online Retrieval and Indexing of Images using Multi Feature Vectors

Yatin Kumar Agarwal, Dilkeshwar Pandey, Manoj Singhal

Abstract*— In technology proliferated era of modern world, health care has witnessed huge developments. The cutting edge technologies have paved way for sophisticated and feature rich image processing in medical field using colour tomography and medical resonance imaging. The images obtained using radiological techniques can be stored in a database and the features and implications can be recorded in the database after the analysis of those images by physicians. These databases can be used in obtaining the meaningful analysis of the images obtained through radiology in rural areas of developing countries like India, where sophisticated medical facilities are a dream for many in developing nations. The dataset of images can be divided into training and testing set. Training set of data is utilized to obtain multi feature vectors based on Caffe. Caffe is used in this training with a focus on image recognition. The image feature is a simple image pattern based on which the description of image can be obtained. The features of an image are transformed to a vector space using computer vision algorithms. Moreover a framework has been evolved in this paper to extract the features from image using image descriptors-white box algorithms and neural nets-black box algorithms. We also present the pros and cons of our novel framework for online retrieval and indexing of images using multi feature vectors.

Keywords: Image processing, vectors, caffe, image descriptors, neural nets.

I. INTRODUCTION

In many applications of image processing, it is very much important to store images in a database. After storing in the database, it becomes necessary in many occasions to retrieve the images from database. For further processing or retrieval, mainly content based concept is employed but for indexing, most of the time concept based /description based or text based image indexing [1] is utilized. In text based image indexing keywords, description of images, captions or natural language text is used. In the image indexing methodologies, mostly a set of attributes of an image stored in the database [2] is used. In the second approach, an integrated feature extraction/object recognition subsystem was utilized. The third and relatively less used approach consists of image annotation [3]. Moreover, low level image features are utilized in the few of the image indexing approaches.

These image indexing techniques find widespread applications in the medical domain and health care sector , as huge data storage is available at low cost. Advancements in image acquisition techniques paved way for large sized image datasets. Especially in large sized image datasets in healthcare sector, lot of image analysis needs to be carried out, to extract meaningful information. This medical domain is considered to be one of the main areas where Content Based Image Retrieval (CBIR) has found huge application.

After indexing of images and the storage of images in databases, image retrieval techniques are applied for selecting and displaying the matching images. One of the oldest techniques used in image retrieval is text based. In this text based retrieval of images, the keywords may be image name, date of addition, deletion and modification. The fundamental problems faced in text based image retrieval include certain intangible components such as feelings, emotions and multiple expressions, with homonyms and misspellings. One of the recently and widely used techniques in image retrieval in today's applications include CBIR.

This paper is organized into many sections. Section 2 of this paper deals with the corresponding literatures in the field of image indexing and retrieval. Section 3 discusses about the approach taken by us in extracting various features using multi vectors. Section 4 presents the experimental results of our approach in the context of precision and accuracy using WEKA and provides a comparative analysis with three other approaches that are widely used in healthcare. The final section of the paper deals with the conclusion of the paper.

II. LITERATURE REVIEW

This section of the paper will deal with the analysis of various approaches that were followed in the literature.

Messaoudi et al [4], discussed about medical image indexing based on the reports obtained from various experts. Their work concentrated on the removal of unavailability of expert medical facilities in rural and semi urban areas. This paper had proposed a kind of comments' summary keywords-based method. The comments based keywords are very relevant to the comments or annotations provided by physicians.

These keywords that are extracted provide robust image indexation. His approach proposed by the authors is referred as Terminology Extraction of Annotation (TEA) mixed approach.

R.Chbeir et al [5], proposed another efficient method for image indexing in medical application. The authors have addressed the spatial and evolutionary issues of images using different types of relations. This method is considered to be highly explanatory and reliable mechanism for indexing images.

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Conference Title

Automated Car Parking with empty slot detection using IoT

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ABSTRACT

Nowadays the number of cars on road are increasing which leads to various problems of which one of them is parking. The public faces various problem such that parking has vacant slot or not. By using the proposed system one can preemptively know whether there is an empty slot or not by looking the LCD display outside the premises as well as android application which will show all the vacant parking slots. The system uses IR sensors alongside engines, LCD and microcontroller for controlling the system. The lcd shows void spaces to new car at gate of parking. On the off chance that no parking spot is accessible the system does not open the door and lcd says parking full.If space is vacant system enables car to enter the parking and shows void openings where client can stop. To identify vehicle opening inhabitance the system utilizes IR sensors. Additionally System utilizes IR sensors to distinguish vehicles touching base at stopping gates,to open the doors naturally on vehicle landing. The microcontroller is utilized to encourage the working of the whole system. Android application can also be used to find alternate parking premises in the area by displaying number of vacant parking slots in them too. It also allow user to book parking slot 15 minutes before user arrives else it will get cancelled if the user doesn't arrive in the specified time.

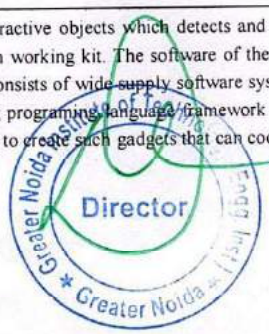
1. Introduction

As the population in the cities are increasing, thenumber of vehicles got increased dramatically. It causes issues for parking in the public places like cinema halls, hotels especially during festivals. Now a days driver invests around 10 min to park his vehicle because he isn't able to find free slot which leads to 30-40 minutes to congestion. Here we are going to see the solution of the above problem. This problem is a issue of significance not only on a local level and at the higher level of planning. This task aims to solve this problem of car parking.To solve this problem we have created this system which uses open source hardware, sensors,and computers to understand the output. In addition an android application is created to check priorly whether there is a free slot or not and the person has an option to book a free parking slot.

2. Technology Used

2.1. Arduino (ATmega380P)

Arduino is an open-source Computer equipment/programming stage for creating digital devices and interactive objects which detects and control the environment surrounding it. It consists of an open supply device that allow the clients to create their own working kit. The software of the Arduino is applicable to a huge range of activity frameworks like Ubuntu, Microsoft OS, and Macintosh. It likewise consists of wide supply software system feature that allows tough software framework developers to use the Arduino code to execute with the prevailing programming language framework and can be extended and altered. For Starters, it is extremely easy to use as well as economic. It very well may be used to create such gadgets that can cooperate with the surrounding to make use of the sensors and modern actuators. Like, ROBOTS, Motion Detectors ,etc.



An Evolution on Software Effort Estimation Techniques

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Abstract— **The effort estimation is most important aspect for software project development. In the past literatures, there are many methods to estimate effort. Accuracy is still the issue for the estimation, since the data available is incomplete in many cases. In this paper, a systematic review is given of major estimation models, their strength and weaknesses are discussed. The literature review shows the algorithmic models and non-algorithmic models such as COCOMO, Function Point Analysis, expert judgement, fuzzy logic etc. Cost is the major feature in estimation, so both overestimation and under estimation are dangerous for software development team. In this paper, various techniques are elaborated and hence it is concluded that by using combination of two or models effort can be estimated accurately.**

Key words: Effort Estimation, Accuracy, COCOMO, Function Point Analysis, Fuzzy logic, Neural Networks.

I. INTRODUCTION

Software effort estimation has always been a major part of software development, since it has the crucial effect on development process. Accuracy is the main concern in the effort estimation because inaccurate effort can cause drastic outcomes. It is not only necessary for project development, but also to keep record of progress, planning and resources.

Although, it is not an easy to calculate effort accurately. In case of over estimation, there are wastage of resources or in case of under estimation, project cannot be complete on time because of lack of resources. So, accurate cost prediction to develop a project is very risky and very important task for any organization.

Even with the perfect estimation process, it is still very difficult to estimate perfect cost estimation because of many probabilities at the time of estimation. The effort which is calculated for a software development relies on may different factors, some of them are probabilistic factors which cannot be report in advance, such as illness of staff, but some of them are non-probabilistic in nature which can be report in advance.

Due to the relationship between the factors is very complex, it is surely affecting the process of estimation. Sometimes, it is lower than estimation, sometimes it goes higher. So, it is difficult to estimate but because of this, the process of development becomes easy since programmer already knew the resources which are going to be used in the project.

II. EFFORT ESTIMATION MODELS

A. ALGORITHMIC MODELS:

Algorithmic models used mathematical equations to calculate effort. Mathematical equations are based on a research and use some input to process. There are multiple models such as COCOMO, COCOMO II and Function Point Analysis to predict cost. These models try to map the relationship between effort and one or more project characteristics.

COCOMO Model: Known as Constructive Cost Model, introduces by Berry Boehm in 1981, it is the well-known model for effort estimation. The mathematical equation for basic COCOMO is simple:

$$\text{Man-Months} = a\,(\text{KLOC})^{b} \qquad \text{(i)}$$

Where, the value of a and b is depending upon the which development mode of COCOMO is used in the project. The three modes are: Organic, Semi-detached and Embedded. Organic mode is used when the size of the project is relatively small, requirements are well-known and environment is stable. Semi-detached mode is in between organic and embedded mode. Embedded mode is used for relatively large-scale projects. These are the complex projects where requirements are changing constantly.

The Intermediate COCOMO Model: Basic COCOMO model was good and quick but it lacks in accuracy. So, intermediate version is introduced to enhance the accuracy. It has 15 cost drivers which are divided into four categories and each cost driver has its rating associated with it. This rating goes from very low to very high (in total, six ratings). The adjusted effort is then estimated through these cost factors by multiplying the cost factors with value for cost estimates.

The 15 cost drivers are as follows:

1. Product Attributes:
   a. RELY: Required Software Reliability.
   b. DATA: Database Size
   c. CPLX: Product Complexity.
2. Computer Attributes:
   a. TIME: Execution Time Constraints.
   b. STOR: Main Storage Constraint
   c. VIRT: Virtual Machine Volatility

Article

SARLA - A 3-Tier Architectural Framework Based on the ACO for the Probablistic Analysis of the Regression Test Case Selection and Their Prioritization

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Prashant Vats · Neha Kashyap · Manju Mandot

Abstract

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Role of Fe_2O_3 and MoO_3 content on Optical Properties of Lead Borate Glasses

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Abstract. Glasses with compositions xM.(40-x)PbO.60B_2O_3 (M= Fe_2O_3 and MoO_3) have been synthesized by standard melt-quenching technique. The amorphous nature of the each sample was ascertained by XRD patterns. The absorption edge ($\lambda_{cut-off}$) shifts toward longer wavelengths with an increase in Fe_2O_3 as well as MoO_3 content in the glass matrix. The Urbach's energy is used to characterize the degree of disorder in amorphous solids. The values of optical band gap energy for indirect allowed and forbidden transitions have been determined and it was found that it decreases faster in Fe_2O_3 based samples than the samples containing MoO_3 Content. From these results, it was observed that Fe_2O_3 to be a better probe to generate non-bridging oxygens (NBOs) than MoO_3 content in the present study.

INTRODUCTION

It is well known that the borate glasses are generally insulating in nature and addition of transition metal oxides (TMO) such as Fe_2O_3 and MoO_3 make these glasses semiconducting [1]. The introduction of TMO in the glass system may enter either as a network former or as a modifier. The interest for the present glass systems is determined by the presence of network forming oxide, the classical network former B_2O_3 and PbO. It was observed in earlier studies that when PbO is added to other network forming oxide glasses, it acts mainly the network modifier (with PbO_6 structural units) and by network former in both covalent and ionic bondings with $PbO_{4/2}$ pyramidal units connected in puckered layers, depending upon its concentration in the glass [2-3]. In oxide glasses, B_2O_3 is a basic glass former because of its higher bond strength, lower cation size, smaller heat of fusion and trivalancy of boron. In these glasses, the boron (B^{3+}) ions are triangularly coordinated by oxygens to form glasses easily. The main structural units of vitreous B_2O_3 glasses are BO_3 triangles forming six membered boroxol ring connected by B-O-B linkage [4]. It has also been reported that addition of network modifier (e.g. PbO) in borate glasses could convert some of the triangular BO_3 structural units to BO_4 tetrahedra with a coordination number of 4, which are incorporated in more complex cyclic groups such as biborate, triborate, tetra or pentaborate along with the formation of non-bridging oxygens (NBOs) atoms [5-6]. Iron and Molybdenum oxide has been added as a transition metal oxide, inside the PbO- B_2O_3 to form Fe_2O_3-PbO-B_2O_3 and MoO_3-PbO-B_2O_3 glass systems respectively. Ternary borate glasses are very interesting for glass scientists and technologists due to their wide range of technological applications such as memory switching devices and gas sensors [7]. The glasses containing transition metal ions, such as Fe_2O_3 and MoO_3, have attracted interest because of their potential use in electrochemical, electronic and electro-optic devices [8-9]. In Fe_2O_3-PbO-B_2O_3 glasses, Fe_2O_3 [10-11] enters the structure in two forms: as a network former and/or a network modifier. But, the Molybdenum ions in the present glasses exist in only Mo^{6+} valence state is observed from EPR studies [12]. The molybdenum cations could act as a network former as

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Synergistic effects of some medicinal plants and transition metal ferrocyanides on some selected fungus

Dipti Bharti

Abstract
Transition ferrocyanides were synthesized and characterized by IR spectra, magnetic susceptibility and XRD studies. The medicinal plants which contain natural antimicrobial properties such as Phyllanthus emblica, Psidium guajava, Jatropha gossypifolia, Mangifera indica were showed synergistic effect with transition metal ferrocyanides. These plant extracts with metal ferrocyanides complexes were found to be having more antifungal property in comparison to metal ferrocyanides and plants extract individual. Antifungal activities of medicinal plants and metal hexacyanoferrate (II) compounds were tested against Rhizoctonia solani causing black scurf in potato. Cadmium ferrocyanide with Phyllanthus emblica extract and nickel ferrocyanide with Mangifera indica extract complexes were found to have maximum and minimum antifungal property, respectively.

Keywords: Medicinal plants, transition metal ferrocyanides, synergistic effects, *Rhizoctonia solani*.

Introduction
Phytochemicals are bioactive compounds found in vegetables, fruits, cereal grains, and plantbased beverages such as tea and wine. Phytochemical consumption is associated with a decrease in risk of several types of chronic diseases due to in part to their antioxidant and free radical scavenging effects. Because it is hypothesized that the beneficial health effects observed from phytochemicals are related to the synergistic mixture of phytochemicals and other nutrients found in whole foods and its components, consumption of variety of plant-based foods is encouraged (Chopra, 1956) [4]. Researchers are exploring the use of phytochemicals to product economically important crops against various pest and pathogens. Potato is world's fourth economically important food crop after wheat, rice and maize because of its greater yield potential and high nutritive value. Its constituents nearly half of the worlds annul output of all root and tuber crops. A large percentage of potential production is reportedly destroyed by pests and pathogens. Annual yield loss of potato crop quality is due to *Rhizoctonia solani* infection can be 15-20 % (Rauf, 1999 and Beagle-Ristaino *et al.*, 1985) [1, 3]. *Rhizoctonia solani is* a fungus that attacks tubers, underground stems and stolons of potato plants. Although it probably occurs wherever potatoes are grown, it causes economically significant damage only in cool, wet soils (Frank, 1986) [2].

Rhizoctonia is a soil borne fungus with more or less continuous vegetative growth of brown threadlike branching mycelium in warm, moist soil conditions. These fungal strands grow between the soil particles and in dead non-living plant material to promote its decay and breakdown of organic matter in temperate production areas, losses from *R. solani* are sporadic and occur only when weather is cold and wet in the weeks following planting. In northern areas, where growers often must plant in cold soils, black scurf caused by *R. solani* is a more consistent problem. Poor stands, stunted plants, reduced tuber number and size, and misshapen tubers are characteristic of the black scurf disease (Frank, 1986) [2].

The use of medicinal plants as a source for relief from illness can be traced back over five millennia to written documents of the early civilization in China, India and the near east, but it is doubtless an art as old as mankind. Neanderthals living 60,000 years ago in present day Iraq used plants such as holly back, these plants are still widely used in ethno medicine around the world (Khare, 2007) [8].

Phyllanthus emblica L. (syn. *Emblica officinalis*) is commonly known as Indian gooseberry. All parts of this plant are used for medicinal purposes, especially the fruit which has been used in Ayurveda as a potent Rasayana (rejuvenator) (Neeraj *et al.*, 2017) [5]. *P. emblica* contains phytochemicals including fixed oils, phosphatides, essential oils, tannins, minerals, vitamins, amino acids, fatty acids, glycosides, etc. Various pharmaceutical potential of *P. emblica* has been reported previously including antimicrobial, antioxidant, anti-inflammatory, analgesic and antipyretic, adaptogenic, hepatoprotective, antitumor and antiulcerogenic

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Adsorption of hazardous dye crystal violet from industrial waste using low-cost adsorbent *Chenopodium album*

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ABSTRACT

The present article describes the use of *Chenopodium album* ash (wildly growing weed) as effective adsorbent for the removal of a hazardous dye, crystal violet, from its aqueous solutions. This paper presents an experimental study and discussion of the adsorption characteristics of this dye on the plant ash. Two techniques, that is, batch and column operations have been used to explain the removal process. Column capacity is found to be lesser than the batch adsorption capacity. Batch adsorption studies were conducted as a function of adsorbent dose, equilibrium pH, contact time, initial dye concentration, kinetics and Freundlich isotherms. Extent of adsorption has been found to be greater at neutral pH. Kinetic studies indicate that the overall adsorption process is best described by pseudo-first-order kinetics. The adsorption data were fitted to linearly transformed Freundlich isotherm with R^2 (correlation coefficient) 0.999. Values of Freundlich parameters n and K_f have been found to be 1.642 and 14.253, respectively. These results indicate that ash of *Chenopodium album* can be used as an effective and low-cost adsorbent for the treatment of wastewaters contaminated with organic dye crystal violet.

Keywords: Crystal Violet; *Chenopodium album*; Adsorption; Dye removal; SEM; Isotherm

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Hindawi

Research Article

Lead Time for Cities of Northern India by Using Multiparameter EEW Algorithm

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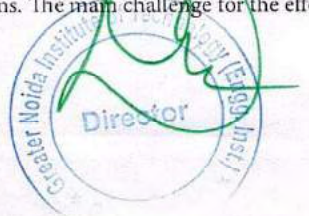
Earthquake early warning (EEW) is considered one of the important real-time earthquake damage mitigation measures. The presence of seismogenic sources generating high seismicity in Himalayas and the cities of concern lying at appropriate distances makes Northern India a perfect case to be monitored using EEW systems. In the present study, an attempt has been made to estimate the lead times for Northern Indian cities for issuing early warning by using the EEW system deployed by IIT Roorkee in Central Himalayas. The instrumentation deployed at 100 locations between Uttarkashi and Chamoli has been used to estimate the lead time at six cities. The estimated lead time includes the time to reach S-wave after subtraction of the sum of P-wave arrival time at the station, time taken by EEW algorithm, transmission and processing delay. The study reveals that for Dehradun, Hardwar, Roorkee, Muzaffarnagar, Meerut, and Delhi the minimum calculated lead time is 5, 11, 20, 35, and 68 sec while the maximum lead time is 37, 36, 47, 59, and 90 sec, respectively. Such larger estimated lead times to these densely populated cities show that EEW can successfully work as one of the important real-time earthquake disaster reduction measures in Northern India.

1. Introduction

The rapid growth of the world's population over the past few decades has led to a concentration of people, buildings, and infrastructure in urban areas. These vulnerable areas when falling in vicinity of seismically active sources become the center of disasters in terms of economic losses and death tolls. Such a case exists in Northern India where a lot of development has taken place in the vicinity of Himalayas which is one of the world's seismically very active zone. Himalaya has been repeatedly hit by damaging earthquakes including some of the great earthquakes, namely, 1897 Shilong (M 8.7), 1905 Kangra (M 8.6), 1934 Bihar (M 8.4), and 1950 Assam (M 8.7), along with other moderate earthquakes which occurred recently, for example, 1991 Uttarkashi (M 6.8), 1999 Chamoli (M 6.4), 2005 Muzaffarabad (M 7.6), and 2011 Sikkim earthquake (M 6.9) in which huge loss of life and property took place [1–3]. The recent 2015 Nepal earthquake may be considered as a whistle blower for revisiting our preparedness towards heavy losses which the local populace has to face in future due to such natural calamity. The problem becomes manifold when the pace of urbanization rapidly increases into the Himalayan region and its periphery and, in turn, increase in the vulnerability is considered. It is therefore essential to take measures to reduce earthquake losses through scientific research. In addition, to create an earthquake resilience society by providing earthquake resistant built environment, it will be of paramount importance to consider the information about such event if it can be given *a priori*. Since earthquake prediction seems to be a little distant future, the earthquake early warning (EEW) systems are making swift in-roads in becoming a practical tool to reduce the losses by giving warning before the arrival of a damaging ground motion at a site [4, 5]. One of the prerequisites for disaster mitigation and management is the *a priori* knowledge of impinging strong ground motion. EEW systems have also played an integral role in engineering applications. The main challenge for the effective use of EEW



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TECHNICAL PAPER

Experimental Investigation and optimization of Process Parameters for Shear Strength of Compound Cast Bimetallic Joints

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Abstract Joining of A356 alloy and magnesium was carried out by vacuum assisted sand mold compound casting process. Microstructure at the joint interface was studied by using optical microscope, scanning electron microscope, energy dispersive X-ray spectroscopy and X-ray diffractometer. Characterization indicated that a relatively uniform joint interface was obtained. The joint interface was composed of three distinct layers containing Mg_2Al_3 on aluminum side, $Mg_{17}Al_{12} + \delta$ eutectic structure on magnesium side and $Mg_{17}Al_{12}$ as middle layer. As a result of interaction between silicon, present in A356 with magnesium, Mg_2Si compound was formed. Push out test was conducted on electronics universal testing machine to measure the shear strength across the joint interface. The important process parameters (grit size of sand paper, insert temperature, pouring temperature and vacuum pressure) were optimized to maximize the shear strength. Optimization was carried out by using response surface methodology, desirability analysis and genetic algorithm (GA) techniques. It was observed that the shear strength increased by 14.21, 8.60 and 4.80% with genetic algorithm, desirability analysis and regression model respectively. GA reported the optimal value of shear strength.

Keywords Compound casting · Micro-structure · Characterization · Shear strength · Optimization · Genetic algorithm · Response surface methodology · Desirability analysis

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1 Introduction

Aluminum and magnesium, the lightest engineering metals, are preferred in aerospace, automobile, computers and electronics industry, navigation and military affairs owing to their unique properties. These metals possess low weight to strength ratio, excellent castability and corrosion resistance [1, 2]. Weight of magnesium is nearly one third of aluminum while having similar melting points. Aluminum alloys as an alternative to steel and cast iron exhibit the improved energy efficiency and performance of vehicles. Aluminum is able to maintain strength at elevated temperature and possesses high ductility. On the other hand, the use of magnesium alloys has increased significantly in automobile sector in order to reduce the weight of vehicle and hence CO_2 emissions. Magnesium exhibits low ductility and creep resistance [3, 4]. The joint of aluminum and magnesium leads to the advantage of combined properties of both the materials. The combined configuration proves to be quite effective to meet the requirement for lightweight and high performance parts. Therefore, the Al–Mg compound structures seem to be a promising solution for present industrial applications.

Aluminum and magnesium can be joined together by different fusion and diffusion processes such as tungsten inert gas welding, spot welding [5], laser welding [6, 7], vacuum diffusion bonding [8, 9] and friction-stir welding [10–12]. In these processes, hard and brittle intermetallic compounds are produced at the Al/Mg interface, which are undesirable as far as the mechanical properties are concerned. Compound casting process is preferred as it results

EXPERIMENTAL INVESTIGATION AND OPTIMIZATION OF PROCESS PARAMETERS FOR IMPACT STRENGTH OF COMPOUND CAST BIMETALLIC JOINTS

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Abstract

Aluminum alloy A356 and pure magnesium bimetallic castings were produced by vacuum-assisted sand mold compound casting process. The effect of process parameters, i.e., pouring temperature, vacuum pressure, insert temperature and grit size of sandpaper, on impact strength of joint interface was investigated. The experiments were executed by using central composite design approach. Experimental data were utilized to formulate a second-order regression model. Scanning electron microscopy of joint interface revealed that a uniform joint interface consisting of three different layers is obtained due to the diffusion between A356 insert and Mg melt. X-ray diffraction and energy-dispersive X-ray spectroscopy patterns confirmed the formation of intermetallic compounds Mg_2Al_3, $Mg_{17}Al_{12}$ and Mg_2Si at A356/Mg interface. The parameters were optimized by using desirability analysis (DA), response surface methodology and genetic algorithm (GA) techniques in order to maximize the impact strength. The maximum value of impact strength is obtained as 10.5, 10.68, 11.71 and 12.29 in experimental, regression, DA and GA, respectively. The best value of impact strength (12.29 MPa) is obtained by GA optimization at 661.13 °C pouring temperature, 200.02 mm of Hg vacuum pressure, 328 °C insert temperature and 1187.15 as grit size of sandpaper.

Keywords: *VASMCC process, microstructure, impact strength, optimization, GA, RSM, desirability analysis*

Introduction

Die casting is an effective casting method for the bulk production of light metal components. The parts with complicated shape and high degree of precision can be fabricated with this method that finds a large number of applications in automotive and aerospace industries.[1,2] However, the requirement of lightweight construction cannot be fulfilled with one material alone. A feasible solution arises with the use of multi-materials.[3] Multi-material joining techniques play a vital role in manufacturing of such lightweight structures. Compound casting process allows the joining of dissimilar (or similar) materials through direct casting in which one material is kept in solid state, while the other is kept in liquid. The solid insert is placed in mold cavity, and the liquid material is allowed to pour around it. Diffusion reaction zone initiated at the interface of sold insert and melt leads to the formation of joint.[4,5] A number of attempts have been made by the researchers to employ this process to join dissimilar or similar metals such as Al/Al,[6] Al/Mg,[7,8] steel/Cu,[9] Al/Cu[10,11] and steel/Al.[12] It has been reported that Al/Mg joint renders the desirable mechanical and metallurgical properties. This leads to the significant increase in the applications of these metals in automotive industry. Solid state joining and fusion welding processes have also been employed to join aluminum and magnesium.[13–16] The problem associated with these processes is the presence of oxide film on the surface of Al/Mg. It results in the formation of weak joints and undesirable highly brittle Al–Mg intermetallic compounds.

Hajjari et al.[17] studied the interface formation of Al/Mg joint prepared by compound casting process. The authors

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Microstructure evaluation, thermal and mechanical characterization of hybrid metal matrix composite

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Abstract: In this paper, an inert gas assisted electromagnetic stir casting process is adapted for manufacturing a cast hybrid metal matrix composite (MMC) using Al_2O_3 and SiC particulates as a hard phase reinforcement in Al 7075 alloy metal matrix. Four different samples containing 5, 10, 15 and 20 wt% of Al_2O_3 and SiC with Al 7075 alloy composites were fabricated. The characterizations for all the samples were carried out through optical microstructure, scanning electron microscopy (SEM) fractograph, X-ray diffraction (XRD) analysis, differential thermal analysis (DTA) analysis and mechanical properties. The results revealed that the particles are uniformly distributed in the matrix. No peaks of Al_4C_3 were found. There is negligible loss of material in the composite. The tensile strength and microhardness of the hybrid composite are higher by 65.7% and 13.5%, respectively, when compared to its cast metal matrix Al 7075 alloy.

Keywords: Al7075; DTA; electromagnetic stir casting; hybrid composite; XRD.

1 Introduction

Composite materials are engineered materials having a combination of two or more chemically distinct and insoluble phases. The ceramic reinforcement has high strength and high modulus whereas the metal matrix is ductile. The resulting composite material has mechanical properties intermediate to the matrix alloy and the ceramic reinforcement. In metal matrix composites (MMCs), the primary function of the reinforcement is to support most of the applied load, while that of the matrix is to bind the reinforcement together [1]. Aluminum is widely used as a metal matrix because of its light weight, good mechanical properties and formability, economy and high resistance to environmental degradation. Also aluminum has the capability to incorporate a wide variety of reinforcing agents such as Al_2O_3, SiC, graphite fibers, whiskers and other particles. Hybrid MMC is obtained by incorporating two or more different kinds of reinforcements in a single matrix. Hybrids have a better all-round combination of mechanical properties than composites containing only a single reinforcement. Composite materials find wide applications in aircraft, space vehicles, offshore structures, piping, electronics, automobiles, boats and sporting goods [2, 3]. Cambronero et al. [4] produced MMC through the powder metallurgy route using 7015 Al-alloy powder with 5 wt% Si_3N_4, TiB_2 and B_4C ceramic powder (8–10 μm size). Ceramic powders are uniformly distributed in AA7015 matrix and no porosity was found. The authors further observed that ceramic addition decreases electrical conductivity, lowers tensile strength, decreases plastic deformation, but has a better wear behavior when compared with heat treated T_6 AA7015 Al-alloy [4]. Kumar and Balasubramanian [5] fabricated AA7075/SiC_p composite by the powder metallurgy route and developed a mathematical model to evaluate the wear rate. The authors concluded that particle size has an inversely proportional relationship with wear rate, while the volume fraction of reinforcement and sliding speed are directly proportional with the wear rate. Kalkanli and Yılmaz [6] prepared Al7075 composite with 10 wt%, 15 wt%, 20 wt% and 30 wt% SiC through vertical pressure die/squeeze casting.

Characterizations of samples were carried out through scanning electron microscopy (SEM) analysis, X-ray diffraction (XRD) analysis and mechanical properties. The results revealed that no Al_4C_3 was present in the sample and hardness increased with an increased in SiC content [6]. Karthikeyan et al. [7] made a calorimetric study of 7075 Al/SiC_p composite fabricated by the stir casting technique having 10%, 15% and 20% volume fractions of SiC_p of 20 μm average size. The cast billets were hot extruded in a ratio of 20:1. After keeping the cast billets in a soaking temperature of 420°C for 30 min duration, the authors observed that heat capacity of all the composites is less than the

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CHARACTERIZATION AND MICROHARDNESS EVALUATION OF A356/Mg JOINT PRODUCED BY VACUUM-ASSISTED SAND MOLD COMPOUND CASTING PROCESS

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Abstract

Joining of A356 alloy and magnesium was carried out by vacuum-assisted sand mold compound casting process. Experiments were performed as per central composite design method. The second-order regression model validated the accuracy and reliability of experimental results. The interfacial microstructure was assessed by using scanning electron microscope and energy-dispersive X-ray spectroscopy. Phase constitutions were identified by X-ray diffractometer. It was observed that a uniform joint interface of A356/Mg formed with three distinct layers composed of Mg_2Al_3, $Mg_{17}Al_{12}$ and $Mg_{17}Al_{12} + \delta$ eutectic structure. Mg_2Al_3 revealed highest microhardness followed by $Mg_{17}Al_{12}$ and $Mg_{17}Al_{12} + \delta$ eutectic structure. Brittle and partial ductile fracture morphology was observed on A356 and Mg side, respectively, whereas the middle layer indicated mixed brittle and partial ductile fracture morphology. The process parameters (pouring temperature, vacuum pressure, insert temperature and surface roughness of insert) of compound casting were optimized with respect to the microhardness of joint interface. Optimization was carried out by using response surface methodology (RSM), desirability analysis (DA) and genetic algorithm (GA). A variation of 0.30, 0.84 and 1.35% in microhardness was obtained by RSM, DA and GA, respectively.

Keywords: *compound casting process, microhardness, interfacial microstructure, characterization, optimization*

Introduction

Aerospace and automobile industry increase the demand of parts with minimum weight while achieving similar or even superior parts properties. At the same time, the parts must be produced at lower cost. Sometimes, single material is not able to complete the demand of market; then, compound configuration is required because it provides desired properties.[1–3] The compound casting process covers a wide range of requirements within one component by combining different materials. In this process, one material in liquid state and the other in solid form diffused properly. Consequently, a consistent metallic transition formed between these two materials.[4–6] The process is employed to join semifinished components having the complicated shape merely by pouring a liquid metal around a solid shaped insert.[7]

In transport industry, lightweight fabrication helps to reduce weight and thus saves fuel. Magnesium and aluminum are light metals. These metals are employed to an ever-increasing extent in lightweight fabrication. A number of processes such as diffusion bonding,[8,9] friction stir welding,[10–12] laser welding[13,14] and metal arc welding[15,16] are also feasible to achieve the joining of dissimilar metals like aluminum and magnesium. The joining of Al/Mg by these processes leads to the formation of intermetallic compounds at the interface, which are highly brittle. The preference of using the compound casting process over other dissimilar joining processes renders the formation of a uniform interface zone. At this zone, the liquid metal diffuses into the solid metal by the formation of reaction phases and solid solutions.

EXPERIMENTAL INVESTIGATION AND EVALUATION OF JOINT STRENGTH OF A356/Mg BIMETALLIC FABRICATED USING COMPOUND CASTING PROCESS

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Abstract

In the present work, two lighter materials (pure magnesium and aluminum alloy A356) were joined together by vacuum-assisted sand mold compound casting process. The dominating process parameters such as pouring temperature, insert temperature, surface roughness of insert and vacuum pressure were chosen to execute the casting process. Microstructure of joint interface was analyzed by SEM, EDS and XRD techniques. Mechanical properties, namely, microhardness, impact and shear strength of joint, were measured experimentally. The accuracy of experimental data was checked by using response surface methodology. The joint strength of A356/Mg interface was evaluated by applying graph theoretic approach (GTA). A numerical value, joint strength index, was proposed to show the effect of factors and subfactors. Index values of subsystems revealed that shear strength has maximum influence on joint strength followed by microhardness and impact strength. GTA proves an effective tool in estimating the optimum process parameters for compound casting process.

Keywords: *compound casting process, joint interface, microstructure, mechanical properties, graph theoretic approach*

Introduction

Magnesium and aluminum are the lightest engineering metals. Magnesium is 35% lighter than aluminum.[1] Owing to the desirable properties such as light weight, good castability, high strength and corrosion resistance, aluminum alloys are extensively used in automobile, aerospace and defense sectors.[2] Magnesium possesses excellent castability and better noise and vibration dampening properties than aluminum.[3]

Sometimes, the requirement of a lightweight part is notable to meet with a single material alone. This problem can be sorted out by employing the part fabricated with multi-materials. A joint of magnesium and aluminum offers the benefit of distinctive properties of both the materials into a single part. These metals can be joined together by a variety of processes such as spot welding,[4] tungsten inert gas welding,[5] gas metal arc welding,[6] friction stir welding,[7–9] laser welding[10,11] and vacuum diffusion bonding.[12,13] The formation of brittle intermetallic compounds at Al/Mg interface is accompanied in these processes due to which the interface turns out to be weaker.

The compound casting process provides a better solution to this problem. It is a unique metal casting process preferably employed to join dissimilar materials. It involves pouring of liquid metal over a solid metallic insert.[14] A diffusion process is initiated at the solid–liquid interface which results in the development of a uniform transition zone sandwiched between two materials. The transition zone consists of intermetallic compounds, which possesses the

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A REVIEW ON PHYTOCONSTITUENTS AND MEDICINAL PROPERTIES OF EMBLICA OFFICINALIS

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ABSTRACT

Emblica officinalis has great importance in herbal, Ayurvedic, Chinese and traditional medicinal systems in various countries. *Emblica officinalis* has been believed to increase defense against various diseases. In this article, phytoconstituents separated from *Emblica officinalis* and application of *Emblica officinalis* in various diseases like, cancer, diabetes, heart disease, diarrhea, ulcer, pyria, snake bite, analgesic, antioxidant, antitussive, antimicrobial, hypoprotective, and cytoprotective etc., have been reviewed. *E. officinalis* is also used as ingredient of various preparations used to enhance memory, treat ophthalmic disorders and lowering cholesterol level.

Key words : *Emblica officinalis*, antioxidant activity, anticancer, antivenom activity.

Medicinal plant have played key role in world health. Herbal drugs have been used since ancient time as medicines for the treatment of rang of diseases. Herbal medicinal preparations are still popular in developing countries inspite of great advanced observed in modern medicines in recent decades. Plants are very efficient sources of renewable organic materials such as unusual and nutritionally rich proteins, lipids and enormous spectrum of chemical constituents. Many of them have known value as drugs, biomaterials, flavorings, fragrances, coloring agents and potent agrochemicals (1).

Medicinal plants are known to be much safer. These are used for the treatment of various bacterial fungal and viral diseases in crops as well as in Ayurvedic and other medicinal systems (2) (3). In the world 5-10% of all plants are systematically investigated for their medicinal property. Two thousand medicinal plants are recognized. *Emblica officinalis* is a deciduous tree of euphorbiaceae family. Plant has been also known as Dhatriphaa, Amla Amaliki, Amalakan, Sriphalam, Vayastha in Sanskrit, Amla in Hindi and German, Emblica myroblan in English, Mirabolano emblica in Italian, Amba in Nepalese, An mole in Chinese, Papak Melaka in Malaysian, Mirabolano emblica in Portugues and Tibetan (4).

Emblica officinalis contains innumerable constituents in varying amounts falling in broad of alkaloids, benzenoids derivatives, diterpenes and furanolactones, flavonoids and sterols (2). Amla or Indian gooseberry has been playing a significant role from ancient times in traditional medicine, Ayurveda and in tribal medicine. These phytochemicals extracted from other plants has been investigated for different bioscreening showing significant results but have not been researched from *Emblica officinalis* solvent extraction yet (5).

The chemical constituents of this plant have been used in formulation of many herbal and patent drugs (6). Many of medicinal properties like analgesic, antipyretic, anticancer, antioxidant, antivenom, antitussive, antimicrobial, antibacterial, antifungal, antitumour, antiulcerogenic, hypoprotective, cytoprotective, antidiarrheal etc. reported in this plant. It is usefull in memory enhancing, ophthalmic disorders and lowering cholesterol level. It is often used in the form of Triphla which is an herbal formulation containing fruit of *Emblica officinalis*,

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A Study & Review of Various Optical Linearization Techniques for Next Generation RoF Networks

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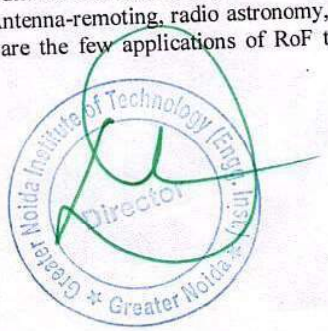
***Abstract*—Radio-over-Fiber (RoF) links has become a promising technique to deliver effective communication as it offers broad bandwidth and low losses. To enhance the link performance, numerous techniques have been reported. This article reviews techniques used to linearize RoF links i.e. optical and electrical linearization. A comparison table has been drawn considering bandwidth, non-linearity, losses, link complexity & cost. It is found that optical linearization is the most suitable technique for the linearization of link. Hence, this technique is further discussed and its different types have been explored.**

***Index Terms*—Radio-over-Fiber, inter modulation distortion, harmonic distortion, microwave photonic links, spurious free dynamic range, dual wavelength linearization, Mach-Zehnder modulator.**

I. INTRODUCTION

In late 80's, when communication was not that much efficient as it is today, researchers made attempts to make situation anyhow better. There was extremely erroneous communication taking place due to so many reasons and deformities. The reason behind this poor communication was merely low bandwidth, high insertion losses and high electromagnetic interference while deformities include optical fiber's inherent losses. Despite of them, signal non-linearities deteriorated system performance brutally. Many approaches were investigated to mitigate non-linearities and to enhance the system performance. Initially, a dual polarization technique in interferometric optical modulators was experimentally demonstrated which alleged substantial reduction in intermodulation distortion (IMD) by adjusting relative amounts of optical power in TE and TM modes. Reduction in distortion of 21 dB had been recorded [1]. But problem with this arrangement was to attain correct ratio of powers at the two polarizations in absence of polarization beam splitter. At the end of this decade, a method using unique characteristic of two integrated optical modulators connected in parallel to achieve improved linearity and system performance was reported [2]. By correcting dominant quadratic distortion, this technique landed up in small increase in required optical power and moderate increase in the required drive voltage. A link linearization method was purposed in early 90's that incorporated lithium-niobate ($LiNbO_3$) Mach-Zehnder modulator (MZM) to solve for power related complications. With only one RF and one dc bias electrode this modulator modulated two optical carriers and distortion cancellation was achieved by adjusting ratio of those two optical power carriers [3]. An another approach presented a linearised modulator which makes use of two fiber-coupled inferometers modulators with polarization control between them integrated in series on a single chip. By critically adjusting single bias point, this arrangement had provided significant third order IMD free dynamic range improvement [4]. However, link had dominant noise figure penalty.

So far, every new approach had some shortcomings associated with them. Then a new technology came as a potential solution to all problems stated above, i.e. Radio-over- Fiber (RoF). RoF offered large capacity, improved flexibility and large coverage area as well as decreased costs and complexity of system [5]. RoF technology is basically a hybrid of microwave and optical networks which combine the technical advantages of the optical and wireless communication systems [6]. In RoF, RF signal is used to directly modulate light and the modulated signal is transmitted through optical fiber. Though, this modulation can be at an intermediate frequency also. RoF technique has the potentiality; thereby it gained popularity and became backbone of the wireless access network. Such architecture had certain advantages such as high bandwidth, mobility, low losses, immunity to electro-magnetic interference, and reduction in complexity at the antenna site, radio carriers can be allocated dynamically to the different antenna sites, and transparency and scalability [7, 8]. Antenna-remoting, radio astronomy, radar and electronic warfare are the few applications of RoF technology [9].



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Odd – even staggering in rigid triaxial rotor model

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In geometrical approach, the triaxial nuclear properties are usually interpreted in terms of two basic models, the rigid triaxial rotor model (RTRM) [1] and the γ – unstable rotor model [2]. In γ – soft rotor model of Wilets and Jean, it is assumed that the potential energy is independent of γ – degree of freedom to describe the deviations from axial symmetry while the rigid triaxial rotor model considers the rigid shape of nucleus having harmonic oscillator potential with a minimum of finite value of asymmetric parameter γ. Therefore, it has always been a subject of keen interest for experimentalists and theoreticians to see whether the asymmetric nucleus under consideration is axial, γ - soft or γ – rigid.

In RTRM, the ground state band is normal rotational band while the other two bands that are γ and $\gamma\gamma$ – bands are anomalous rotational bands. We shall evaluate the values of energy levels of observed spectrum within the framework of rigid triaxial rotor model at different asymmetry parameter γ and compared the odd – even staggering (OES) in γ and $\gamma\gamma$ – band. The staggering indices S (I) in γ – band is expressed as [3]

$$S(I) = \frac{(E_I - E_{I-1}) - (E_{I-1} - E_{I-2})}{E2_1^+} \quad (1)$$

McCutchen et al [4] using above equation shown that for both vibrator and γ – soft limits the S (I) is negative for even spins and positive for odd spins. For rigid triaxial nucleus, the values of S (I) again oscillating but opposite in phase namely, positive for even spins and negative for odd spins. For axially symmetric deformed rotor that is for harmonic oscillator potential with minimum at $\gamma = 0^0$, the S (I) values are small, positive and constant with increasing spin. The OES in γ – band using RTRM have been studied earlier for some even – even nuclei [5 - 7].

We have plotted the staggering indices S (I) calculated in RTRM with spin up to I = 12 for both γ and $\gamma\gamma$ – band [Fig. 1(a) – (b)]. It is clear that there is a significant difference in the behavior of staggering indices of γ and $\gamma\gamma$ – band in RTRM. The zigzag behavior that is the alternate positive values at even spin (positive phase) and the negative values at odd spins (negative phase) of staggering indices S (I) in RTRM initiates from spin I = 8 at $\gamma = 25^0$ and continues up to $\gamma = 30^0$ in $\gamma\gamma$ – band. However, in γ – band this zigzag behavior is seen from spin I = 10 at $\gamma = 10^0$, S (8) at $\gamma = 15^0$ and S (6) at $\gamma = 20^0$ and before these spins the values of all S (I) are small, positive, and constant. Although, the sign of S (I) at all spins are same in both the bands showing alternate positive and negative phase. The magnitude of S (I) in $\gamma\gamma$ - band differs from γ - band, it is small in $\gamma\gamma$ – band and is large in γ – band. The magnitude of S (I) in $\gamma\gamma$ – band is constant and is nearly equal to 0.33for $\gamma = 10^0$ and $\gamma = 15^0$ at all spins. This constant value continues upto spin I = 8 at $\gamma = 20^0$ and at higher spins the magnitude initiates to deviate from this constant value. The value of S (I) increases for even spins and decreases for odd spins from the constant value 0.33. The deviation increases with the increase of spins and asymmetric parameter γ upto spin I = 8, at $\gamma = 25^0$ and then the zigzag behavior appears. However, for γ – band the S (I) values are constant and nearly equal to 0.33 only upto spin I = 8 at $\gamma = 10^0$. The deviation in the value of S (I) increases and zigzag nature of S (I) appears beyond I = 10 at $\gamma = 10^0$. Therefore, it is not justified to take zigzag behavior similar to γ – band as criteria to distinguish γ – rigid and γ – soft nucleus in $\gamma\gamma$ – band. Hence, the criteria to distinguish γ – rigid and γ – soft nucleus in $\gamma\gamma$ – band should be the similarity of experimental S (I) with RTRM, not the zigzag behavior.

Thus, in the present work we have compared the experimental energy staggering indices of $\gamma\gamma$ – band with RTRM for ^{154}Gd and ^{178}Hf. The values of S (I) in experiment are very small and positive at all spin that is from S (6) to S (13) in $\gamma\gamma$ – band for ^{154}Gd. These values are similar in phase with RTRM [Fig.2 (a)]. Thus, it may be rigid triaxial nucleus.

On nuclear shapes of ^{170}Er

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Introduction

In recent past extremely rich experimental data has come in light in low – lying nuclear spectroscopy. The basic property of nucleus is its geometric shape and it is quantified in terms of geometric deformation parameters β and γ. The possibility of static triaxial shape is a long-standing problem in nuclear structure physics. The γ – unstable and γ – rigid models predict the similar values of energy levels in ground state band but a significant difference is found in the γ – band. The γ – unstable model group the γ – band energy levels as $2+, (3+, 4+), (5+, 6+), \ldots$ while γ – rigid model group these energy levels as $(2_2^+, 3_1^+), (4_2^+, 5_1^+), 5_1^+ \ldots$ respectively. The relative displacement of odd spin levels with respect to even spin levels that is odd – even staggering (OES) be taken as a signature of nucleus being γ – soft, γ – rigid or axial.

The staggering indices S (I) for experimental as well as theoretical energy levels of γ – band is expressed as –

$$S(I) = \frac{(E_I + E_{I-2}) - (2E_{I-1})}{E2_1^+}$$

For axially symmetric rotor, S(I) does not show any variation in phase and remain small in magnitude. The pattern of S(I) versus spin (I) in experiment if found similar in phase with that of γ – rigid model [1] then nucleus is said to be rigid in nature while if the experimental energy staggering pattern is similar to that of γ – soft model [2]in phase, the nucleus is said to be γ – soft.

We undertake the study of ^{170}Er nucleus in the present work. The γ – band energies for this nucleus have appeared in literature showing many high spin states.

Table – 1

Experimental staggering indices S (I) alongwith ARM for $\gamma = 11.5^0$ and $\gamma = 13^0$ calculated from $E2_2^+/E2_1^+$ [1] and $B(E2; 2_1^+ \rightarrow 0_1^+)$ [3] values for ^{170}Er nucleus

S (I)	Exp. Value	ARM [1] γ=11.5^0	ARM [3] γ=13^0
S (4)	0.510	0.041	0.036
S (5)	-0.090	0.017	0.026
S (6)	0.700	0.039	0.0001
S (7)	-0.130	0.008	-0.006
S (8)	0.780	0.009	0.150
S (9)	-0.320	-0.030	-0.850
S (10)	0.860	0.120	0.225
S (11)	-0.470	-0.100	-0.230
S (12)	1.860	0.217	0.550
S (13)	-1.360	-0.224	-0.334
S (14)	1.280	0.360	0.670
S (15)	-1.080	-0.400	-0.75
S (16)	1.800	0.570	1.005
S (17)	-1.700	-0.630	-1.130
S (18)	2.270	0.820	1.400
S(19)	-1.84	-0.910	-1.570

Analyzing Real and Fake users in Facebook Network based on Emotions

Publisher: IEEE

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Abstract:

Fake profile detection is one of the critical problems in Online Social Networks (OSNs). So far, studies have mainly focused on profile-based, behavioral-based, network-based and content-based attributes. However, user sentiments have not been explored along this domain. In the present study, we proposed the fake profile detection model that incorporates sentiment-based attributes to differentiate real and fake OSN profiles. The study is grounded in the fact that the posts of real users reveal varied categories of emotions such asjoy, sad, angry, fear, etc. based on their life experiences. On the contrary, fake users share posts to accomplish a specific purpose, and therefore, it is highly likely that their post content will contain similar types of emotions. The experiments are conducted on the posts of Facebook users. The detection model is trained on 12 emotion-based attributes including Plutchik's eight basic emotions, positivity and negativity. Furthermore, a noise removal technique is presented to remove the outliers from the dataset. Finally, several machine learning techniques including Support Vector Machine (SVM), Naive Bayes, JRip and Random Forest have been used to train the detection model.

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Content Spoofing via Compounded SQL Injection

Syed Zeeshan Hussain & Nancy Agarwal

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Abstract

With the advent of high dependency on the usage of web applications in a day to day life, the issue of web attacks has become a serious concern in information security. Attackers are continuously discovering innovative strategies to exploit the vulnerabilities existing in an application. Compounded SQLi is one of the attacking techniques which consists of combining the SQL injection with other forms of attacks to perform more advanced attacks. In the paper, we present a new form of compounded SQL injection attack technique which uses the SQLi attack vectors to perform content spoofing attacks on a web application. Content spoofing and SQL injection (SQLi) are the two different kinds of injection vulnerabilities of a website. Former is the client-side attack while the latter is the part of server-side attacks. Content spoofing attacks target the website with the aim to deceive its users by presenting the malicious content on the webpage which they believed to be the legitimate content. On the other hand, SQLi-based attacks target the application to exfiltrate the database records and perform unauthorized operations at the server. The paper demonstrates the step by step procedure to conduct content spoofing via SQLi attack vectors. Furthermore, the paper explains how the attacker can use the proposed compounded SQLi attack to harm the websites which were earlier resistant to traditional content spoofing attacks.

Keywords

Web security | Web vulnerabilities | Cyber attacks | Content spoofing | SQL injection

Multiplexer based Voltage Controlled Delay Buffer Element

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Abstract: This paper presents a voltage controlled delay buffer using a 2:1 multiplexer, designed in 0.35 µm CMOS process. The multiplexer is realized with transmission gate, which... **View more**

Metadata

Abstract:
This paper presents a voltage controlled delay buffer using a 2:1 multiplexer, designed in 0.35 µm CMOS process. The multiplexer is realized with transmission gate, which results in achievement of high speed, low power and full swing output characteristics of delay buffer. The least attained post layout rising edge delay is 120 ps that is comparable with standard cell inverter. The delay regulation range achieved over control voltage of 0 V to 3.3 V is from 120ps to 560ps. The performance of delay buffer for single edge delay control across PVT variations is successfully verified by design of modified delay lock loop.

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