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# 3.3.1

## Number of research papers published per teacher in the Journals notified on UGC Care list during last five years.

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**3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years**

| S. NO. | Title of paper | Name of the author/s | Department of the teacher | Name of Journal | Year of publication | ISSN number | Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Link to website of the Journal | Link to article / paper / abstract of the article | Is it listed in UGC Care list |
| 1 | Enhancement in properties of concrete by Silica fumes. | Arvind Kumar | CE | International Research Journal of Engineering and Technology (IRJET) | 2022 | 2395-0056 | | | Yes |
| 2 | Study of Bond Ash Properties of Concrete utilizing Fly Ash, Marble and Granite Powder | Shreeja Kacker | CE | International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET) | 2022 | e-ISSN: 2319-8753; p-ISSN: 2320-6710 | | - | Yes |
| 3 | Design of Road & Transportation System in Surjkund Area (Faridabad) | Shreeja Kacker | CE | International Journal of All Research Education & Scientific Methods | 2022 | ISSN: 2455-6211 | | - | Yes |
| 4 | Optimum Replacement of Coarse Aggregate by Steel Slag and Fie Aggregate by Waste Glass Powder | Shreeja Kacker | CE | International Research Journal of Engineering & Technology (IRJET) | 2022 | e-ISSN: 2395-0056; p-ISSN: 2395-0072 | | | Yes |
| 5 | Effect of Steel Fibre and Marble Dust on the Mechanical Properties of High Strength Concrete (HSC) | Anuj Sharma | CE | International Research Journal of Engineering and Technology (IRJET) | 2022 | ISSN: 2395-0056 | | | Yes |
| 6 | Design & Development of Maglev Girder Bridge & Vehicle | Anuj Sharma | CE | International Journal of Innovative Research in Engineering | 2022 | | | | Yes |
| 7 | Manufacturing of Bricks with Solid Waste | Tabish Quadri | CE | International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET) | 2022 | ISSN: 2319-8753 | | | Yes |
| 8 | A Study on Plastic Waste for Replacement of Coarse Aggregate with Soft and Hard Plastic in Concrete | Saurav Yadav | CE | International Journal of Innovative Science and Research Technology | 2022 | 2456-2165 | | | Yes |
| 9 | Load Frequency Control of a Multi-Microgrid System Incorporating Electric Vehicles | Bhuvnesh Khokhar | EE | Electric Power Components & Systems, Taylor & Francis | 2022 | 1532-5008 | | https://doi.org/10.1080/15325008.2022.2049648 | Yes |
| 10 | Detection of SSVEP Frequency component using Filter Bank Approach for EEG Based BCI System | Mukesh Kumar Ojha | ECE | Neuroquantology | 2022 | 1303-5150 | | https://10.14704/nq.2022.20.6.NQQ22359 | Yes |
| 11 | Detection of SSVEP Frequency component using Filter Bank Approach for EEG Based BCI System | Dhiraj Gupta | ECE | Neuroquantology | 2022 | 1303-5150 | | https://10.14704/nq.2022.20.6.NQQ22359 | Yes |
| 12 | Detection of SSVEP Frequency component using Filter Bank Approach for EEG Based BCI System | Priyesh Tiwari | ECE | Neuroquantology | 2022 | 1303-5150 | | https://10.14704/nq.2022.20.6.NQQ22359 | Yes |
| 13 | Cuckoo Search Constrained Gamma Masking for MRI Image Detail Enhancement (SCIE, SCOPUS) | Mukesh Kumar Ojha | ECE | Traitement du Signal, IIETA | 2022 | 0765-0019, 1958-5608 | | https://doi.org/10.18280/ts.390433 | Yes |
| 14 | Cuckoo Search Constrained Gamma Masking for MRI Image Detail Enhancement | Dhiraj Gupta | ECE | Traitement du Signal, IIETA | 2022 | 0765-0019, 1958-5608 | | https://doi.org/10.18280/ts.390433 | Yes |
| 15 | Cuckoo Search Constrained Gamma Masking for MRI Image Detail Enhancement | Priyesh Tiwari | ECE | Traitement du Signal, IIETA | 2022 | 0765-0019, 1958-5608 | | https://doi.org/10.18280/ts.390433 | Yes |
| 16 | Relative Result and Design Analysis of SPV Tracking System on Simulink Platform | Priyesh Tiwari | ECE | ADBU Journal of Engineering Technology (AJET) | 2022 | 2348-7305 | | | Yes |
| 17 | Predicting Carbon Residual in Biomass Wastes Using Soft Computing Techniques | Preety Verma | CSE | Adsorption Science & Technology | 2022 | 0263-6174, 2048-4038 | | https://doi.org/10.1155/2022/8107196 | Yes |
| 18 | Service Providers for Home Appliances | Indradeep Verma | CS-IoT | Journal of Positive School Psycology | 2022 | 2717-7564 | | Vol. 6, No. 3, 7215-7219 | Yes |
| 19 | Green Manufacturing: An Insight | Iqbal Ahmend Khan | ME | GIS Science Journal | 2022 | 1869-9391 | | | Yes |

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| 20 | A new CMOS compatible high performance first-order all-pass filter realisation | Shiv Narain Gupta | ECE | Australian Journal of Electrical and Electronics Engineering | 2022 | Online ISSN: 2205-362X | | https://doi.org/10.1080/1448837X.2022.2068487 | Yes |
| 21 | First Order Mixed Mode MOS-C All-Pass Frequency Selective Analog Network with Electronic Tuning | Shiv Narain Gupta | ECE | Walailak Journal of Science and Technology | 2022 | ISSN 2774-0226 (Online) | | https://doi.org/10.48048/tis.2022.4616 | Yes |
| 22 | CMOS Transistors based First-Order Voltage-Mode All-pass Filter with Tunable Transformation Possibility | Shiv Narain Gupta | ECE | Journal of Circuits, Systems, and Computers | 2022 | ISSN (online): 1793-6454 | | https://doi.org/10.1142/S0218126622502942 | Yes |
| 23 | Treatment of thyroid disease through machine learning predictive model | Ajay Kumar Sahu | IT | International Journal of Health Sciences | 2022 | ISSN 2550-6978 E-ISSN 2550-696X © 2022 | | https://doi.org/10.53730/ijhs.v6nS8.12813 | Yes |
| 24 | Treatment of thyroid disease through machine learning predictive model | Shivani Dubey | IT | International Journal of Health Sciences | 2022 | ISSN 2550-6978 E-ISSN 2550-696X © 2022 | | https://doi.org/10.53730/ijhs.v6nS8.12813 | Yes |
| 25 | Analysis of Stock Market Prediction by using PSO Algorithm Optimizing LS-SVM | Shivani Dubey | IT | International Journal of Computer Sciences and Engineering | 2022 | E-ISSN: 2347-2693 | | https://doi.org/10.26438/ijcse/v10i2.2630 | Yes |
| 26 | Analysis of Stock Market Prediction by using PSO Algorithm Optimizing LS-SVM | Amit kumar agrawal | CSE-AIML | International Journal of Computer Sciences and Engineering | 2022 | E-ISSN: 2347-2693 | | https://doi.org/10.26438/ijcse/v10i2.2630 | Yes |
| 27 | Implementation of IoT based Automatic Street light illumination by using IR sensor | Shivani Dubey | IT | GIS Science Journal | 2022 | ISSN NO : 1869-939 | | VOLUME 9, ISSUE 2, Feb 2022 | Yes |
| 28 | Case Study: An Efficient Survey on Security Analysis of Social Networking | Shipra Srivastava | IT | TCS transactions | 2022 | Volume 107, number 1 | | DOI:10.1149/10701.15533ecst | Yes |
| 29 | Production of Ethanol From Jaggery | Syed Qaisar Husain | ME | International Journal for Research in Applied Science & Engineering Technology IJRASET | 2022 | ISSN No.: 2321-9653 | | DOI:10.22214 | Yes |
| 30 | A survey on Crane wire rope Failure | Syed Qaisar Husain | ME | International Journal of recent Technology Science and Management | 2022 | ISSN: 2455-9679 | | Vol-7-issue-1-Jan-2022 | Yes |
| 31 | A survey on Crane wire rope Failure | Avinash Ravi Raja | ME | International Journal of recent Technology Science and Management | 2022 | ISSN: 2455-9679 | | Vol-7-issue-1-Jan-2022 | Yes |
| 32 | Design and Analysis on Crane wire ropes by Using FEA methods | Syed Qaisar Husain | ME | International Journal of recent Technology Science and Management | 2022 | ISSN: 2455-9679 | | Vol-7-issue-2-Feb-2022 | Yes |
| 33 | Design and Analysis on Crane wire ropes by Using FEA methods | Avinash Ravi Raja | ME | International Journal of recent Technology Science and Management | 2022 | ISSN: 2455-9679 | | Vol-7-issue-2-Feb-2022 | Yes |
| 34 | MIMO Antennas: Design Approaches, Techniques and Applications | Preeti Sharma | ASHU | MDPI, SENSOR | 2022 | | | doi.org/10.3390/s22207813 | Yes |
| 35 | Dual-band trident shaped MIMO antenna with novel ground plane for 5G applications | Preeti Sharma | ASHU | AEU - International Journal of Electronics and Communications | 2022 | | | doi.org/10.1016/j.aeue.2022.154364 | Yes |
| 36 | Automated Health Monitoring System Using GSM and IOT | Akshika Jain | CSE-AIML | International Journal of Scientific Research in Computer Science, Engineering and Information Technology | 2022 | ISSN : 2456-3307 | | doi : https://doi.org/10.32628/CSEIT228126 | Yes |
| 37 | Emotions specified Automatic Report Generator for Psychiatrist | Pooja Sharma | CSE-AIML | International Journal of Scientific Development and Research | 2022 | ISSN: 2455-2631 | | www.ijsdr.org | Yes |
| 38 | Implementation of IoT based Automatic Street light illumination by using IR sensor | Shivani Dubey | CSE-AIML | GIS Science Journal, VOLUME 9, ISSUE 2, 2022 | 2022 | ISSN NO : 1869-9391 | | www.gisscience.net/VOLUME-9-ISSUE-2-2022 | Yes |
| 39 | Automated Irrigation System for monitoring the Soil Moisture Content via Automatic Watering by using Microcontroller Node MCA ESP8266 | Shivani Dubey | CSE-AIML | Automated Irrigation System for monitoring the Soil Moisture Content via Automatic Watering by using Microcontroller Node MCA ESP8266 | 2022 | (ISSN-2349-5162) | | www.jetir.org | Yes |
| 40 | Multi-Resolution based Singular Value decomposition approach for Breast Cancer Image Classification | Vijay Shukla | CSE | BioMd Research International Journal, Q2, Indexing in Web of Science, SCIE, Scopus (Publisher: Hindwai) | 2022 | Volume 2022, Article ID 6392206, | | https://www.hindawi.com/journals/bmri/2022/6392206/ | Yes |

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| 41 | Design and Optimization of 4-Bit Array Multiplier with Adiabatic Logic Using 65 nm CMOS Technologies | Mukesh Ojha | ECE | IETE Technical Review | 2022 | | | https://doi.org/10.1080/03772063.2023.2204857 | Yes |
| 42 | X-Ray Image Authentication Scheme Using SLT and Contourlet Transform for Modern Healthcare System | V. K. PALLAW | MCA | Journal of Universal Computer Science (SCI IF- 1.05). | 2022 | ISSN:0948-6968, vol. 28, | | 103897/jucs.94132 | Yes |
| 43 | A Novel adaptive intelligent MPC scheme for frequency stabilization of a microgrid considering SoC control of EVs | Bhuvnesh Khokhar | EE | Applied Energy | 2022 | vol. 309, ISSN: 0306-2619 | | doi.org/10.1016/j.apenergy.2021.118423 | Yes |
| 44 | Smart Chatbot | Sonam Sirohi | ECE | Journal of Emerging Technologies and Innovative Research (JETIR) | 2022 | ISSN-2349-5162 | | | Yes |
| 45 | Removal of Error by finding deffect in RGB image | Anil Kumar Debey | ECE | Journal of Emerging Technologies and Innovative Research (JETIR) | 2022 | ISSN-2349-5162 | | | Yes |
| 46 | Face Mask Detection | Shiv Narain Gupta | ECE | Journal of Emerging Technologies and Innovative Research (JETIR) | 2022 | ISSN-2349-5162 | | | Yes |
| 47 | Plant Disease Detection Using Machine Learning | Shiv Narain Gupta | ECE | Journal of Emerging Technologies and Innovative Research (JETIR) | 2022 | 2349-5162 | | | Yes |
| 48 | AI Based Chess Engine | Anil Kumar Debey | ECE | Journal of Emerging Technologies and Innovative Research (JETIR) | 2022 | 2349-5162 | | | Yes |
| 49 | Real-Time Face Recognition using openCV | Anil Kumar Debey | ECE | Journal of Emerging Technologies and Innovative Research (JETIR) | 2022 | 2349-5162 | | | Yes |
| 50 | ROAD SAFETY PLAN FOR HAIRPIN CURVES | Sushant Kumar | CE | International Research Journal of Engineering and Technology (IRJET) | 2022 | 2395-0056 | | | Yes |
| 51 | Seismic Response study of multi-storied reinforced concrete building with fluid viscous dampers | Shreeja Kacker | CE | International Research Journal of Engineering and Technology (IRJET) | 2022 | 2395-0056 | | | Yes |
| 52 | MHD FLOW OF DUSTY VISCOUS FLUID THROUGH A POROUS MEDIUM BOUNDED BY AN OSCILLATING POROUS PLATE IN SLIP FLOW REGIME | Dr. Kirti | AS | International Research Journal of Engineering and Technology (IRJET) | 2022 | 2395-0056 | https://www.irjet.net | | Yes |
| 53 | Energy Meter | Dr. Dhiraj Gupta, Nikhil Gupta | EE | International Journal of Innovation Science and Research Technology | 2022 | 2456-2165 | https://www.ijisrt.com | | Yes |
| 54 | GSM Based Smart Home Appliances | Aneep Kumar | EE | International Journal for Scientific Rouch & Development | 2022 | 2821-4613 | https://www.ijsrd.com | | Yes |
| 55 | Bill Board Wifi Based Bill Board Led Display | Dr. Dhiraj Gupta, Nikhil Gupta, Aastha Dixit | EE | International Journal of Inovative Science and Research Technology | 2022 | 2456-2165 | www.ijisrt.com | | Yes |
| 56 | Comparative Performance Analysis of MPPT Techniques For Solar Power Extraction Using Zeta Converter | Dr. Dhiraj Gupta, Nikhil Gupta | EE | International Journal of Research in Engineering and Science (IIRES) | 2022 | 2320-9156 | www.nes.org | | Yes |
| 57 | Scrolling Display GSM based Messages Crolling Led Display | Dr. Dhiraj Gupta, Nikhil Gupta | EE | International Journal of Innovative Science and Research Technology | 2022 | 2456-2165 | https://www.ijisrt.com | | Yes |
| 58 | LED DISPLAY SCROLLING BOARD BASED ON GLOBAL SYSTEM FOR MOBILE COMMUNICATION | Dr. Dhiraj Gupta | EE | International Research Journal of Modernization in Engineering Technology and Science | 2022 | 2582-5208 | www.irimets.com | | Yes |
| 59 | GSM BASED MESSAGE SCROLLING LED DISPLAY | Nikhil Gupta | EE | International Research Journal of Engineering and Technology (IRJET) | 2022 | 2395-0056 | www.irjet.net | | Yes |

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# Enhancement in properties of concrete by Silica fumes.

**Raghvendra Singh[1], Raj Goswami[2], Sachin Yadav[3], Sahaj Shandilya[4], Arvind Kumar[5]**

*[1-4]B-Tech Student, Greater Noida Institute of Technology, Greater Noida, India*
*[5]Professor, Greater Noida Institute of Technology, Greater Noida, India*

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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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| DOI:10.15680/IJIRSET.2022.1102090 |

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

**Rahul Thakur[1], Shreeja Kacker[2]**

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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.

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

## 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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Volume 10, Issue 5, May-2022, Impact Factor: 7.429, Available online at: www.ijaresm.com

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

**Himesh Pareek[1], Harshraj Singh[1], Kaushik Jha[1], Navneet Vinod Tiwari[1], Gaurav Kumar Upadhyay[1], Shreeja Kacker[2], Anuj Kumar Sharma[2]**

[1]Department of Civil Engineering, Greater Noida Institute of Technology, Greater Noida, Uttar Pradesh
[2]Assistant Professor, Department of Civil Engineering, Greater Noida Institute of Technology, Greater Noida, Uttar Pradesh

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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 SadakYojana (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

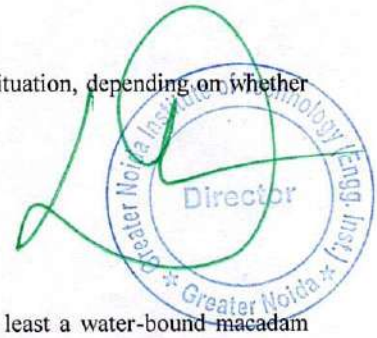
Roads are classified on various basis

### 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

**Md Rehan[1], and Shreeja Kacker[2]**

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

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**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%.

Director

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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

Director

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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.

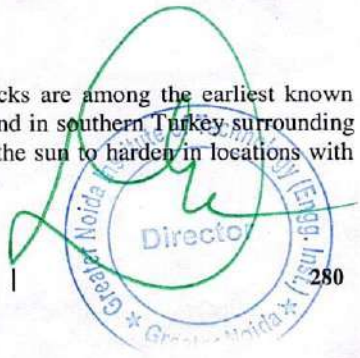
## I. INTRODUCTION

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.



ISSN No:-2456-2165

# 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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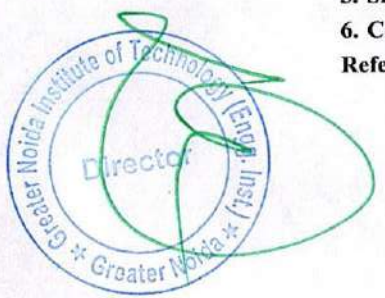


**Abstract**—Owing to high cost of conventional energy storage systems, battery of electric vehicles (EVs) is now being considered as their partial replacement to facilitate the demand side response. EVs can act as controllable bidirectional sources to restrain the frequency deviations in power system 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).

**DOI Number: 10.14704/nq.2022.20.6.NQ22359** **NeuroQuantology 2022; 20(6):3533-3541**

## 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].

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

IIETA International Information and Engineering Technology Association

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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

Director

# 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.**

**(Article history: Received: March 2022 and accepted May 2022)**

## 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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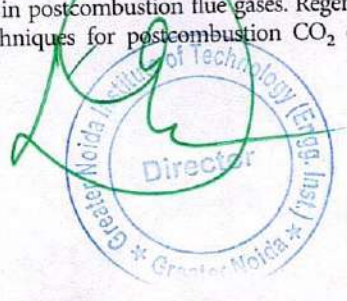
In recent decades, the development of complex materials developed a class of biomass waste-derived porous carbons (BWDPCs), which are used for carbon capture and sustainable waste management. It is difficult in understanding the adsorption mechanism of $CO_2$ in the air as it has a wide range of properties 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.

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# 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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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 μm 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

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## 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 $\mu$m 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].

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# 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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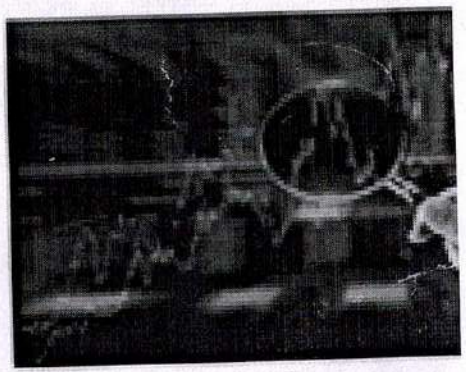

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# Production of Ethanol from Jaggery

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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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# "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

Director

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

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## ABSTRACT

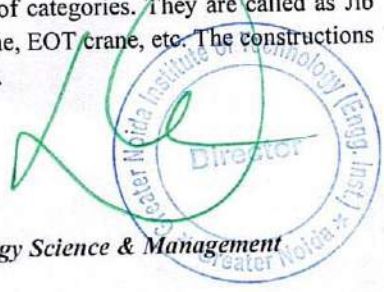
***Wire rope applications and Advantages are studied, and failures in WR are also discussed. The objectives of the project were met as the analysis for failure of three WR with similar parameters has been done; comparative study between different properties has been done. By applying normal load FEA 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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Director

## 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
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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

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Director
Greater Noida

# 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].

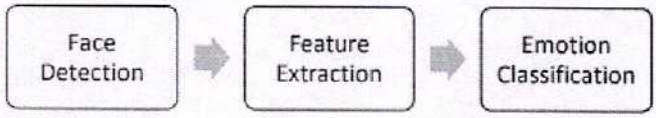


**Fig.1: Facial Emotion Classification Stages**

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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

**Shreshtha Gupta[1], Vivek Sengar[2], Vikas Singhal[3], Shivani Dubey[4]**

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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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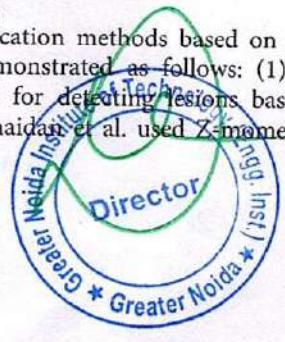
Breast cancer is the most prevalent form of cancer that can strike at any age; the higher the age, the greater the risk. The presence of malignant tissue has become more frequent in women. Although medical therapy has improved breast cancer diagnostic and treatment methods, still the death rate remains 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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*submitted: 7/12/2021, accepted: 30/4/2022, appeared: 28/9/2022 CC BY-ND 4.0*

# 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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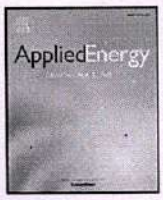

# A novel adaptive intelligent MPC scheme for frequency stabilization of a microgrid considering SoC control of EVs

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ARTICLE INFO

*Keywords:*
Adaptive intelligent MPC (AIMPC)
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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 ($\tau_w$) present in its cost function, an intelligent optimization algorithm is implemented to dynamically optimize the parameter $\tau_w$ 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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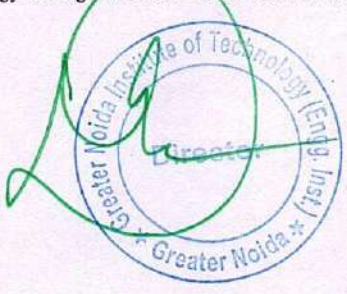

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# Smart Chatbot

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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.

Director Greater Noida

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.

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

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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].

## III. 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**

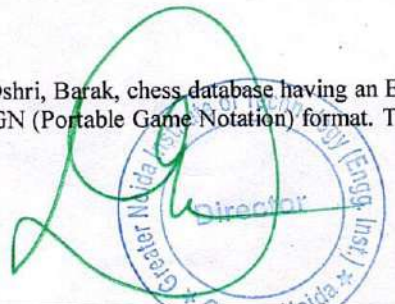
## I. INTRODUCTION

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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JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

# 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.



Director

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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

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(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.

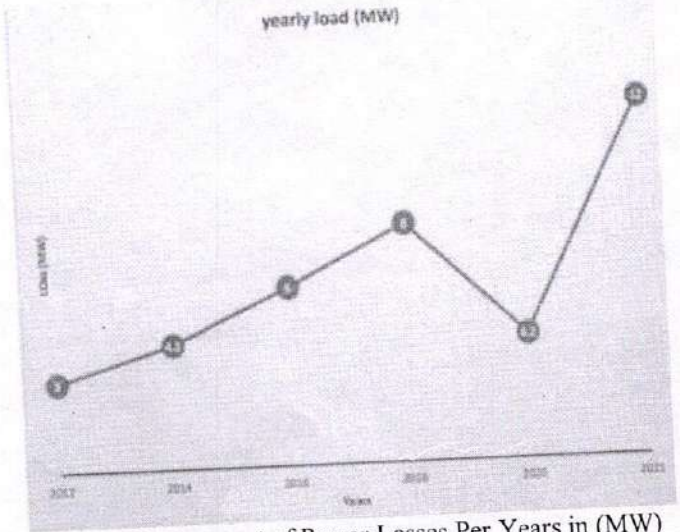



Fig 1:- Measurement of Power Losses Per Years in (MW)

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*

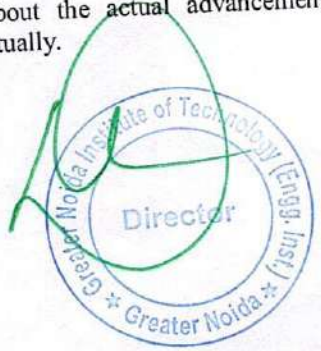
The major challenges is that if we are going to introduce the energy metre which has a rotating part then it must consume some energy devices which mean not be full field the actual losses and increase the content of losses so the losses content is minimised by keeping an ideal rotating mechanism practically 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:

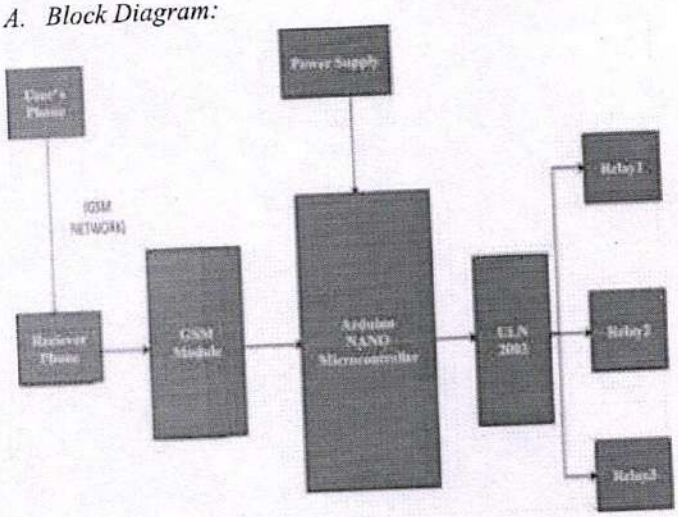


Fig. 1. Block Diagram

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.

Noida Institute of Technology Engg. Inst. Director Greater Noida

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# 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.

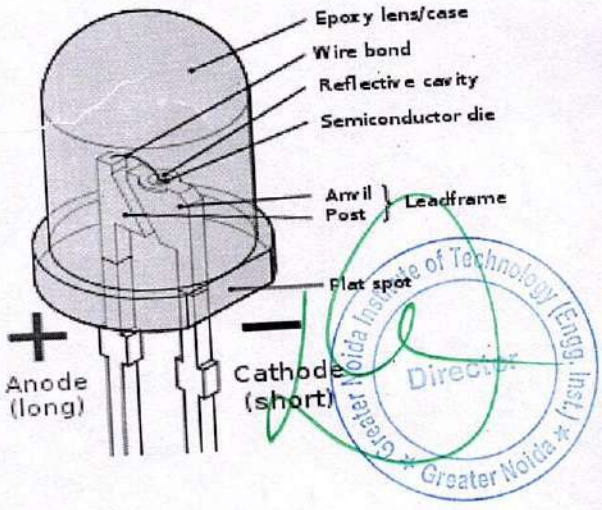
## III. COMPONENTS

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.

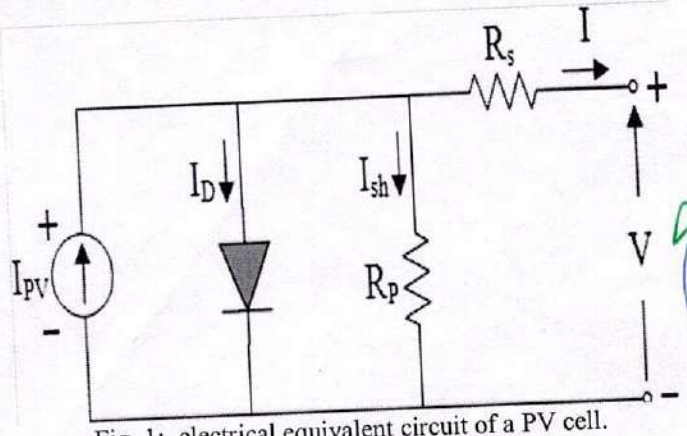


Fig. 1: electrical equivalent circuit of a PV cell.

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

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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 DÇ 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.

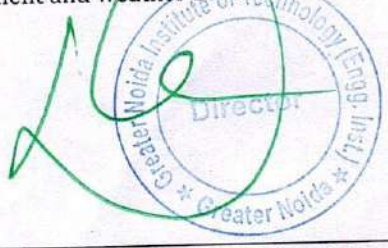
## I. INTRODUCTION

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



Director

# 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