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Member in the NEWS



Prof Vithal Hanumantrao Jadhav, FIE

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Received **ICI Award** — “**Eminent Engineer North Karnataka for the year 2021**” on December 2021 from Indian Concrete Institute, Hubballi, Dharwad Centre.

Mr Jnan Ranjan Pal, FIE

Chief Engineer (Retd)
Central Design Directorate, Irrigation Department, Government of Uttar Pradesh,
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The Institution of Engineers (India), Jharkhand State Centre, felicitated him as an **Eminent Engineering Personality** in recognition to his valuable contribution in the field of **Civil Engineering in Thirty-sixth National Convention of Civil Engineers** held during 23-24 October 2021 through virtual platform.



Dr Sengottuvelu C, FIE

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Certificate awarded by the **Ministry of Education's Innovation Cell**, Government of India on December 2021 for exceptional contribution as a **Primary Evaluator in Toyathon, 2021**.

Dr Amar Kumar Das, FIE

Associate Professor
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Received **University Foundation Day Research Award-2021** in appreciation of his research publications for the year 2020 in the field of Mechanical Engineering by Biju Patnaik University of Technology (BPUT), Odisha, Rourkela on 21 November 2021.



Member in the NEWS



Mr Logesh Rajendran, MIE

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Received the **Platinum Award** in Research Scholar Category for presenting a Case Study at the **CII MILCA Awards 2022** on January 2022.

Prof (Dr) Solanki Ujjval J, AMIE

Assistant Professor
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Delivered **Technical Talk** as **Keynote Speaker** on “**Short Panel Concrete Pavement: Need of the Day: Design, Construction Practices and Economics**”, organised by Gujarat State Centre, IEI on 18 February 2022.



Dr Padam Jee Omar, AMIE

Assistant Professor
Motihari College of Engineering, Motihari, Bihar
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Dr Padam Jee Omar is the one of the Patentee for the Design on “**Electronic Glove for Women Safety**” by Government of India.

Design No : 352738-001
Serial No : 209568
Date of Filing : 08/11/2021
Date of Grant : 31/12/2021
Patentee : Nikita Shivhare Mitra, Divya Rai, Nishi Jain, Padam Jee Omar, Ravi Tripathi, Awadesh K G Kandu, Sagar Tiwari
Details of Patent : Electronic Glove for Women Safety
Issuing Authority : Government of India

Design accepted and published, Journal no 53/2021 and Journal date is 31/12/2021.

Publication by Members

Books

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Rural Management: Rural Supply Chain Management

Supply chain management is an integrated approach adopted by the firms to gain competitive advantage. Supply chain is process by which all business partners / entities are seamlessly integrated. SCM includes suppliers, manufacturers, distributors, retailers and end users. In a supply chain there are three important flows that are going to take place, namely, physical flow of goods and services, from upstream, money flows from downstream and information flows across. SCM has three important stages, i.e integration, collaboration and adoption. Total value can be optimized through adoption. In a supply chain, demand and supply are matched through managing inventories. Different techniques are used to manage the inventory optimally. Supply chain management has larger scope in rural business management. Rural businesses are still in the primitive stage of implementing SCM philosophies. Supply chain and value mapping are important.

This book consists of five chapters.

Chapter 1 outlines the introduction to supply chain management. It includes definition, evolution of operations and SCM. Impact of globalization, productivity and competitiveness has been covered.

Chapter 2 details the process of supply chain management. In this chapter, flow in supply chain, inventory management and control system, bullwhip effect, supply chain network design decisions, logistics management & its functions. This chapter is concluded with the integration of processes in supply chain.

Chapter 3 focuses on tools used in implementation of rural supply chain management. In this chapter, importance tools in SCM, shipping status tools & order processing tools, lean inventory and warehouse management tools are covered. Further, greater emphasis was given to supplier management and demand forecasting tools and supply chain analytics and reports. Of course, supply chain analytics is one of the emerging areas in SCM. Lot of space is available for job opportunities.

Chapter 4 describes the rural supply chain mapping and its importance, supply chain mapping methodologies, supply chain mapping using value stream mapping. This chapter is culminated with case studies.

Chapter 5 elaborates the current opportunities in SCM, impact of GST on rural supply chain, impact of FDI on rural supply chain, and scope for rural managers in rural supply chain management. This chapter is also concluded with case studies.

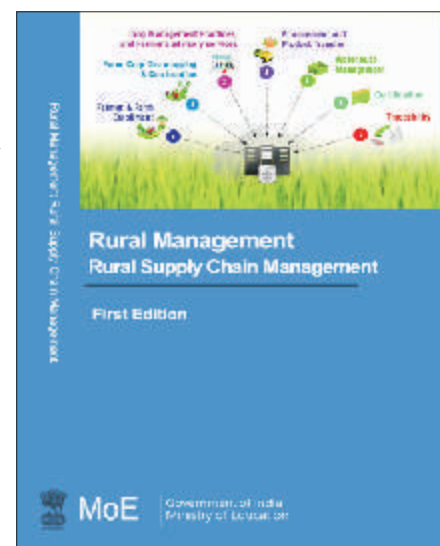
ISBN : 978-93-93357-24-3

Publisher : Mahatma Gandhi National Council of Rural Education, Hyderabad, Ministry of Education, Government of India

Published Date : 07 January 2022

Edition : First

Price : ₹ 750/-



Publication by Members

Book Chapters

Dr Chidhambara Rajan Balasubramanian, MIE

Principal

SRM Valliammai Engineering College

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Book Chapter: Enhanced Effective Generative Adversarial Networks based LRSD and SP Learned Dictionaries with Amplifying CS

Chapter 5, Machine Learning and IoT for Intelligent Systems and Smart Applications, Computer Science, Engineering & Technology, First Edition, 2021, CRC Press, 14 pages, ISBN (hbk): 978-1-032-04723-2, ISBN (pbk): 978-1-032-04725-6, ISBN (ebk): 978-1-003-19441-5

DOI: [10.1201/9781003194415](https://doi.org/10.1201/9781003194415)

URL: <https://www.taylorfrancis.com/chapters/edit/10.1201/9781003194415-5/enhanced-effective-generative-adversarial-networks-based-lrsd-sp-learned-dictionaries-amplifying-cs-elaiyaraja-senthil-kumar-chidhambararajan?context=ubx&refId=abf9f0c6-5e1c-41e8-9685-93805c9b8cc7>

Co-authors: K Elaiyaraja & M Senthil Kumar

Abstract: Medical based image fusion is an image processing technology which is used in medical diagnostics, decisions for treatment and tasks related to computer vision. Images from various modalities like ultrasonography or MRI are not a noise-free object because of imperfect spatial resolution. Recent approaches at image fusion are processing with noise-laden images due to image parameters and modalities. Thus, performance-wise the fusion methods are drastically being reduced when using these ruined medical images. It is imperative to propose an image fusion technique which retains significant information accurately even when the source images are ruined. Recently, ML (Machine Learning) and DL (Deep Learning) technologies have triggered a revolution in reconstructing resolutions. Removing noise and increasing textural information are not easy to accomplish simultaneously. In this research work, a novel technique is proposed for image fusion, suppressing noises and significant data improvement using Enhanced Effective Generative Adversarial Networks and is based on DL (Dictionary Learning) and LRSD (Low Rank Sparse Decomposition). To attain maximum significant image details, the source image Compression and Stimulation (CS Block) block is developed by amplifying significant features. Finally, the target image attained by the proposed method is demonstrated for effective image fusion, and the results validated by comparing with existing deep learning methods like SRGAN, D-DBPN etc.

Book Chapter: An Automated Hybrid Transfer Learning System for Detection and Segmentation of Tumor in MRI Brain Images with UNet and VGG-19 Network

Chapter 9, Machine Learning and IoT for Intelligent Systems and Smart Applications, Computer Science, Engineering & Technology, First Edition, 2021, CRC Press, 12 pages, ISBN (hbk): 978-1-032-04723-2, ISBN (pbk): 978-1-032-04725-6, ISBN (ebk): 978-1-003-19441-5

DOI: [10.1201/9781003194415](https://doi.org/10.1201/9781003194415)

URL: <https://www.taylorfrancis.com/chapters/edit/10.1201/9781003194415-9/automated-hybrid-transfer-learning-system-detection-segmentation-tumor-mri-brain-images-unet-vgg-19-network-sandhya-senthil-kumar-chidhambararajan?context=ubx&refId=732c80d7-2689-4c1d-90e9-df034c87b5e1>

Co-authors: S Sandhya & M Senthil Kumar

Abstract: In the face of the heterogeneous properties exhibited in the facade, amount and the shape of tumors, brain tumor segmentation in the context of medical imaging is being recognized as a critical issue. Features from the input images are extracted by using CNN (convolutional neural networks) for the purpose of classification. Physical discovery and segmentation of brain tumor or Glioma is tedious due to the nature of asymmetry of shape, lenient nature of location and potholed margins. The proposed framework aims at developing a model to perform the tasks like detection and segmentation of brain tumor based on transfer learning along with deep convolutional neural network (DCNN). Transfer Learning (TL) along with fully convolutional network on VGG-19 model is deployed to perform the tasks like detection of tumor and the segmentation in an automatic fashion. With the proposed transfer learning based model, three categories of brain tumor can be identified, namely: normal, glioma at the levels of low grade and high grade which, in turn, are respectively mentioned as LGG and HGG. BRaTS 2015 database is used in the proposed hybrid model for the purpose of evaluation, and by its exhibiting accuracy while performing training of data, validation as well as testing, it seems the proposed transfer learning based network yields better results compared to the existing techniques.

Publication by Members

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Book Chapter: **Electrical Systems for Sustainable Production in Cement Plants: A Perspective View**

Chapter 4, *Intelligent and Sustainable Cement Production, Engineering & Technology Group*, CRC Press, Taylor & Francis Group, USA, 2021, pp 41-56, ISBN (eBook) 9781003106791, ISBN (print) 978-0-367-61840-7,

DOI: <https://doi.org/10.1201/9781003106791>

URL: <https://www.taylorfrancis.com/chapters/edit/10.1201/9781003106791-4/electrical-systems-sustainable-production-cement-plants-peddanna-shirumalla-anjan-kumar-chatterjee?context=ubx&refId=8e5c1af8-e505-4a01-b99e-efcd07997663>

Co-author: Anjan Kumar Chatterjee

Abstract: The Portland cement industry with annual production of over 4 billion ton globally is not only a resource-intensive manufacturing activity but also a high consumer of energy, both thermal and electrical. Because of these intrinsic features of the industry and its persistent demand growth, there are serious concerns of sustainability. The need for electrical energy is ubiquitous in a cement plant as motors and drives are used extensively in every part of the process. It is essential for transporting materials, for rotating kilns, and more importantly for grinding raw materials, solid fuels, and as-produced clinker to make the finished cement. Typically, in a single-kiln plant, about 700–900 electric motors are used, varying in rating from a few kW to MW range. Some sections in a plant will have only low-voltage supply, and others both low and medium voltage. There are multiple sources of power supply including captive generation and waste heat recovery systems. As a result, the entire system of supply and distribution of electricity has always been a focus area for design, layout execution, and operation. Safety, standardization, reliability, and energy conservation, both in the system design and equipment installation, are of paramount importance for the electrical systems in a plant. Further, from the environmental perspective, there is a strongly perceived need for moving towards the use of renewables. Finally, the electrical systems are perceived as the kernel for control and automation in the integrated process. In order to achieve the desired levels of efficiency, productivity, and quality from the sustainability angle, various tools and techniques of artificial intelligence are being progressively introduced into the electrical systems. This chapter deals with all the above aspects and tries to cull out the status and trends of development in this area.



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Publication by Members

Papers Published in the Journals

Prof Dr A K A Rathi, FIE

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Former Director (Environment), Government of Gujarat
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Title of Paper: **The Need for a Robust Review System to Improve the Quality of Environmental Impact Statements: An Indian Case Study Analysis**

Environmental Protection Research, 1(1), 2021, pp 38-49

URL: <https://ojs.wiserpub.com/index.php/EPR/article/view/948>

Abstract: Environmental impact assessment (EIA) report and the final output of the EIA process forms the basis for environmental impact statement (EIS) review and decision-making, implying the need for its good quality. This empirical study is based on the literature review, opinions of EIA consultants, and views of experts associated with the EIA system in India. It is inferred that the overall quality of EIS is below par and there are several inadequacies in the EIA appraisal system. Given the strong correlation between a robust EIS review system and a good quality EIS, a two-tier structured, transparent, and criteria-based review mechanism based on good practices is suggested. Further, it is crucial to adopt a professional approach for appraisal and capacity building of the professionals engaged in conducting the EIA and reviewing the EIS.

Keywords: EIA Appraisal, EIA Process, EIA Report, EIA Review, EIA System, EIS Evaluation Checklist

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Title of Paper: **Micro Level Flood Control Techniques: A Case Study on Benni Halla (Stream) in North Karnataka of India**

Proceedings of AHI EVRAN International Conference on Scientific Research, 2, Kirshehir Ahi Evran University, Turkey, 2021, pp 230-241, ISBN: 978-625-7464-55-0

URL: https://www.ahievranconference.org/_files/ugd/614b1f_694ff3fb16f34fa2af92830f03ebb083.pdf

Abstract: Man proposes but God disposes. These days the entire world is suffering from uncontrollable floods. The floods are taking valuable lives and properties. Though we have sophisticated tools and techniques like several flood modeling systems through advanced software and other flood mitigation mechanisms, we are not in a position to mitigate or predict the vulnerability of floods and losing our valuable lives and properties. The major cause for such floods is “Global Warming”. The advancement and rapid growth of industries all over the world are contributing major impacts on global warming. Can we stop developing science and technology? No, we can’t as it has become indispensable for a nation for its socio-economic growth and safety in these competitive days. For many years we are witnessing an increase in the temperature of the earth and ocean. According to NOAA’s 2020 Annual Climate Report, the combined land and ocean temperature has increased at an average rate of 0.13 degrees Fahrenheit (0.08 degrees Celsius) per decade since 1880; however, the average rate of increase since 1981 (0.18°C / 0.32°F) is doubled. So as of now, there is an average increase of temperature of earth and ocean is about 1.52 degrees Celsius. The other causes of floods are deforestation, encroachment of watercourse bodies, urbanization, silting of watercourse bodies, etc., In addition, natural disasters like forest fires, volcanos are some of the major contributions to the increase in global warming. The cumulative effect of all these is raise in the ocean level due to the melting of glaciers. Coastal erosion is also being witnessed. This phenomenon of rising ocean levels and coastal erosion is being seen for centuries. But in the past decade, this is tremendously increased. The average global sea level is increased by 2.5 inches (63 mm) compared with the world sea level of 1993 as per the satellite record. It is being observed that every year the sea level is increasing by 3.2 mm. Indeed, one cannot design 100% nature-proof structures as nature is in nobody’s hands. Even then do we need to address this problem? Yes, it is a must. Though we cannot mitigate flood occurrence, we can mitigate or minimize the effects of flood to save valuable lives and properties. A flood is an accumulation of flow from different sources of water. In this context, it is another thought to think of mitigating the flood accumulation at its sources i.e., to emphasize micro-level flood mitigation techniques.

Keywords: Global Warming, Floods, Mitigation, Earth and Ocean Temperature and Micro Flood Control Techniques

Publication by Members

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Title of Paper: **Offshore Electric Ship Charging Station: a Techno-Economic Analysis**

International Journal of Marine Engineering Innovation & Research, 6(4), 2021,
ISSN (print): 2541-5972, ISSN (eBook): 2548-1449

DOI: <http://dx.doi.org/10.12962/j25481479.v6i4.10763>

Abstract: Diesel emissions from ships are some of the largest contributors to greenhouse gas emissions (GHG). This paper proposes the feasibility of implementing grid-like batteries- onboard ocean-going vessels along with an offshore electric charging station (OECS) to offer fully electric sailing across longer distances. The (OECS) is proposed to be built in deep waters along commercial shipping routes. Such an installation has a floating solar plant, in conjunction with a battery energy storage system to meet the charging demands of an all-electric ship (AES). The technology was evaluated based on a case study of an AES cargo vessel traveling between Mumbai and Dubai with a one-stop midway (at an OECS) for recharging batteries. When compared to a diesel ship, the AES showed savings of 5,627,293 liters of diesel/yr and a reduction of 19,823 tonnes of CO₂. The study shows that the integration of an OECS along with the AES concept is feasible, and represents a major milestone in bringing emission-free technology to the marine sector.

Keywords: Offshore Charging Station, Photovoltaic Generation, Tension Leg Platform, Electric Sailing, Battery Storage, Emissions

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Title of Paper: **An Integration of Archerfish Hunter Spotted Hyena Optimization and Improved ELM Classifier for Multicollinear Big Data Classification Tasks**

Neural Processing Letters, Springer Publication, 2022, ISSN: 1370-4621

DOI: <https://doi.org/10.1007/s11063-021-10718-0>

Co-author: S Chidambaram

Abstract: Big data mining has emerged as an active field of interest, and traditional data mining approaches frequently fail to handle the complexities associated with massive datasets. One of the most extensively used strategies for big data classification is MapReduce, which combines the map and reduce processes. For filtering and sorting, the mapping approach is employed, and the reduction technique is used to combine the final classification results. A novel Archerfish Hunter Spotted Hyena Optimization-based Improved Extreme Learning Machine (AHSO-IELM) classifier-based MapReduce framework is proposed in this paper for big data classification. The IELM algorithm is formed by integrating the ELM technique with Principal Component Analysis to overcome the multicollinear problem and enhance the training and testing time. The AHSO method combines the archerfish hunter optimization and Spotted Hyena Optimization algorithms to improve the optimal parameter selection of the IELM classifier, which increases classification accuracy and reduces the error rate. The performance of the proposed AHSO-IELM classifier-based MapReduce framework is evaluated using different performance metrics such as Accuracy, Sensitivity, Specificity, Computational time, F1-Score, Mathews correlation coefficient, and scale-up factor. For the rotten tomatoes movie review dataset and the Dermatology dataset, the proposed approach yields accuracy, specificity, and sensitivity values of 99%, 99%, 98.3%, and 99.3%, 99%, 98%, respectively for a mapper value (X) of 5. The proposed big data classifier is effective for both single-class and multi-class classification, according to the results of the analysis.

Keywords: Big Data Classification, Improved Extreme Learning Machine, Principal Component Analysis, Archerfish Hunter Optimization, Map Reduce Technique, Spotted Hyena Optimization

Publication by Members

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Title of Paper: **Design and Development of Robotic Vehicle for Isolation Ward**

Dogo Rangsang Research Journal, UGC Care Group I Journal, 12(1)(3), 2022, pp 62-69, ISSN 2347-7180

URL: https://www.researchgate.net/publication/358261953_DESIGN_AND_DEVELOPMENT_OF_ROBOTIC_VEHICLE_FOR_ISOLATION_WARD

Co-authors: Pratham J Raval & Deep U Shah

Abstract: The COVID-19 pandemic has affected the health systems severely. It is very difficult task for the all countries of the entire world to make isolated wards and treat the patients in this pandemic situation. Although majority of people of the world have taken vaccine, third wave is started in the majority part of the world. Vaccines are thought to be the best available solution for controlling the ongoing SARS-CoV-2 pandemic. However, the emergence of vaccine-resistant strains may come too rapidly for current vaccine developments to alleviate the health, economic and social consequences of the pandemic. Indian Health Ministry designated Delta Plus a Variant of Concern (VOC) on 22nd June, 2021 citing its perceived increased transmissibility, ability to bind more strongly to receptors on lung cells, and potential to evade an antibody response. Corona virus strain 'Omicron' was declared a variant of concern in November 2021 by WHO. So it is clear that several more waves will come in coming years. For health workers and medical staff it is very difficult to sanitize themselves frequently and do the work in an isolated ward while wearing a PPE kit. The work presented here deals with a smart robotic vehicle that can supply a medicine, food, etc. in COVID-19 isolation ward by moving in the entire space. For hospital staff, robotic vehicle can significantly reduce the risk of infectious diseases and make possible to monitor and treat patients from a safe distance.

Keywords: COVID-19, SARS-CoV-2, Omicron, Isolation Ward, Robotic Vehicle

Dr A K Priya, MIE

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Title of Paper: **Investigation of Mechanism of Heavy Metals (Cr⁶⁺, Pb²⁺ & Zn²⁺) Adsorption from Aqueous Medium using Rice Husk Ash: Kinetic and Thermodynamic Approach**

Chemosphere, 286(3), 2022, 131796

DOI: <https://doi.org/10.1016/j.chemosphere.2021.131796>

Co-authors: V Yogeshwaran, Saravanan Rajendran, Tuan K A Hoang, Matias Soto-Moscoco, Ayman A Ghfar & Chinna Bathula

Abstract: In this work, we examined the possibility on the application of rice husk as biosorbent for the elimination of heavy metal ions (chromium, lead, and zinc) existing in the aqueous solutions. The biosorbent was prepared from rice husk powder and modified with 0.1 N of HCl for creating the functional groups and increase specific surface area. The FT-IR spectra, SEM&EDX studies of rice hulls powder were examined for the pristine adsorbent and after the adsorption of heavy metal ions. The batch adsorption technique was adopted for this work and adsorption parameters were optimized. The maximum efficiency of adsorption is obtained at 6.0 pH, 1 h of contact duration, the rice husk dosage is 2.5 g/L, and temperature of 30°C for 25 mg/L of Cr, Pb & Zn metal ion solutions. The Cr, Pb & Zn metal ions are removed up to 87.12%, 88.63% & 99.28%, respectively, using the rice husk powder. The adsorption process follows the Temkin & D-R isotherm model. Elovich model was fitted against the kinetic data of metal ion adsorption. Based on the experimental observations, the rice husk powder can be considered as a low cost adsorbent for heavy metal ion removal from the industrial effluent.

Keywords: Adsorption, Heavy Metals, Rice Husk Powder, Thermodynamic Studies

Publication by Members

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Title of Paper: **Contactless Entry System for Covid-19 Prevention using Hybrid Architecture**

International Journal of Aquatic Science, 12(2), Winter and Spring 2021, pp 2827-2837, ISSN: 2008-8019

URL: http://www.journal-aquaticscience.com/article_134346_451fedfcd6eedbac4f88a494e7d1156.pdf

Co-authors: Pramod Chavan, R Ramadevi, Sanket Wagh & Sunil Mane

Abstract: The outbreak of the COVID-19 pandemic has brought the entire world to a standstill. The pandemic caused by the SARS-CoV-2 virus affects the respiratory tracks and spreads rapidly when it comes in contact. Though the Vaccines are now available, the cure took significant time and the pandemic has severely impacted our lives. As prevention is always a better step than to find a cure, the objective of this project is to showcase some preventive measures which will allow residential societies, institutes and organization to prevent contact between the security personnel and the person entering or exiting the premises. The controller uses Raspberry Pi, temperature sensor, mask detection and QR code to get the details of the individual. The main feature is that it will allow the use of mobile phones rather than pen and paper to provide entry details thus further preventing the spread of the virus. Usage of this standalone system did prove to be effective as it was able to monitor the temperature, detect the mask and register the names of individuals entering the premises without any human intervention and the data stored was logged digitally, which can be further analyzed if needed.

Keywords: Covid-19, Prevention, Mask, Temperature, Sensor, Security, Raspberry, QR Code

Title of Paper: **Preprocessing of ECG Signals for Cardiovascular Diseases**

International Journal of Aquatic Science, 12(2), Winter and Spring 2021, pp 2809-2817, ISSN: 2008-8019

URL: http://www.journal-aquaticscience.com/article_134344_e6968e34ca791c4b66d05e45cef0964d.pdf

Co-authors: Pratibha Chavan, B Sheela Rani & Pallavi Kolapkar

Abstract: CVD (Cardiovascular) Diseases is leading cause of human deaths globally. The increasing threats of CVD can be early detected with various medical tests, including electrocardiogram (ECG), and also 2D Echo, Stress Test. As ECG is non-invasive, clinical therapeutic agent, so with the help of an ECG signal, early detection of CVD is possible and proper medication can be provided for human life. All these signals from different equipment can, however, be non-stationary and repetitive, which takes more time to process and exhausting for physical examination. Moreover, Heart Signal from ECG machine is not a stationary indicator, the discrepancies might not be repeated and may demonstrate up at various periods, hence there is a need to adopt a computer aided model for fast and accurate prognosis of CVD's. Similarly, the pre-processing of ECG signals is crucial as ECG signals are generally consists of various types of drift called as noise as well as various types of artifacts. During the preprocessing step, our main objective is to reduce or overcome on this noise so that we can able to get the proper de-noised signal which will help to decide the fiduciary points (P, Q, R, S, T), its event, non-event phenomenon such as P-wave, QRS-complex, T-wave, PQ-segment, ST-segment. Typical types of noise may have categories such as a power line intrusion, baseline wander, and noisy contact data of electrode, electrode motion artifacts, muscle contraction, and instrumentation noise. In this paper, we are focusing the preprocessing of the ECG signals through various filters accessible, so we can eliminate the undesirable noise through the original ECG data signal that will help us evaluate the clean signal which will contribute to predict the accurate result in classification.

Keywords: CVD, ECG, Pre-Processing, Notch Filter, Butterworth Filter, Bandpass Filter, HRV, PQRS Complex

Published Articles of IEI Journals



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[SCOPUS Indexed & UGC-CARE (India) listed]

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Volume 103, issue 1, March 2022

- Title : **Evaluation of the Behaviour Coefficient of an Elevated RC Tank**
 Authors : **Ourdia Ider, Hocine Hammoum, Karima Bouzelha & Amar Aliche**
 Department of Civil Engineering, Mouloud Mammeri University, 15000, Tizi Ouzou, Algeria
 DOI : <https://doi.org/10.1007/s40030-021-00615-z>
 Publication date : 11 January 2022
 Pages : 1–15
- Title : **A Framework for Analysing Energy Consumption Factors in Commercially Built Environments**
 Authors : **Junaid Tippu, Subramaniam Saravanasankar, Bathrinath Sankaranarayanan & Syed Shuibul Qarnain**
 Department of Mechanical Engineering, Kalasalingam Academy of Research and Education, Krishnankoil, Tamil Nadu, 626126, India
 DOI : <https://doi.org/10.1007/s40030-021-00614-0>
 Publication date : 11 January 2022
 Page : 17-30
- Title : **Generalized Design Aids for Reinforced Concrete Columns**
 Authors : **R. K. Desai**
 Hindustan Aeronautics Limited, Barrackpore Division, Kolkata, 700120, India
 DOI : <https://doi.org/10.1007/s40030-021-00603-3>
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Authors : **Lokesh Kumawat & H. Raheman**
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