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EPITOME

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Members in the NEWS



Mr Shekhar Apparao Jeurkar, MIE

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Patent has been granted to Mr Shekhar Apparao Jeurkar as one of the **Patentee** by the Office of the Controller General of Patents, Designs & Trade Marks, Department of Industrial Policy & Promotion, Ministry of Commerce and Industry, Government of India on the invention '**Low Cost Bio Waste Fuel Briquettes and Method of its Manufacturing thereof**'.

Patent Number : 378827
Date of Filing : 08/07/2016
Date of Grant : 07/10/2021
Post Grant Journal Date : 15/10/2021
Patentee : 1. Mr Pranav Shrikant Page 2. Mr Shekhar Apparao Jeurkar
Title of Invention : 'Low Cost Bio Waste Fuel Briquettes and Method of its Manufacturing thereof'
Issuing Authority : Office of the Controller General of Patents, Designs & Trade Marks, Department of Industrial Policy & Promotion, Ministry of Commerce and Industry, Government of India

Mr Uthappa M M, FIE

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Mr Uthappa M M has been conferred the Degree of **Doctor of Philosophy** in Faculty of Mechanical Engineering Sciences for the thesis entitled '**A Study of Motivational Factors and its Impact on Project Team Performance (A Study Conducted at Selected Private and Public Sector Companies in India)**' under the Guidance of Dr A N Santosh Kumar, Sri Jayachamarajendra College of Engineering, Mysuru, Karnataka, India during **21st Annual Convocation of Visvesaraya Technological University Belagavi**, Karnataka, India held on 10 March 2022.



Mr Ajaykumar Jaiprakash Pal, MIE

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Received the **Certificate of Appreciation** and **Trophy** from **Malpani Group**, Pune on 09 April 2022 for his priceless contribution as a **COVID-19 Warrior** at the COVID Care Centre at M-AGILE (Baner).

Mr Vipin Kumar Sharma, MIE

Additional Superintendent (Mill & Safety)
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Received **Best Paper Award** for his paper entitled '**Technical Modifications of Alkali Leaching Circuit to Improve Slurry throughput into the Autoclave**' presented during the **Platinum Jubilee Celebration of Indian Institute of Chemical Engineers, International Conference on Advances in Chemical & Material Sciences (ACMS-2022)** at Heritage Institute of Technology, Kolkata on 14 April 2022.

Members in the NEWS



Dr Vinay Kumar Gaddam, MIE

Professor & Head,

Department of Civil Engineering, Dhanekula Institute of Engineering and Technology, Vijayawada

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Received the **Commemorative Trophy - CIDC Vishwakarma Awards 2022** in the **Academician Category** by **The Board of Governors of Construction Industry Development Council** upon the recommendation of Jury on 08 April 2022 at New Delhi.

Dr Padam Jee Omar, AMIE

Assistant Professor

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Conferred with the **Degree of Doctor of Philosophy** by **The Indian Institute of Technology** (Banaras Hindu University) Varanasi on 10 April 2022 for his **Thesis** entitled '**River Aquifer Exchange Study of Stretch of the River Ganga**'.

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For any further query and assisted please send email to: pe@ieindia.org

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Book Chapter



Dr L Jebaraj, FIE

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Applications of Differential Evolution in Electric Power Systems

Differential Evolution: From Theory to Practice, Studies in Computational Intelligence, 1009, 2022, Springer, Singapore, pp 265 - 296, Online ISBN 978-981-16-8082-3, Print ISBN 978-981-16-8081-6

DOI: https://doi.org/10.1007/978-981-16-8082-3_10

Abstract: The state-of-the-art power systems have extremely intricate, outsized and broad range distribution. The most favorable process of power system has become essential, in the face of escalating cost of power generation, limited sources of power generation and growing demand for electricity. It is essential to trim down the cost of fuel, active transmission power loss, deviation in voltage stability index of voltage and cost of reactive power sources, to gain appreciable value of savings. In addition, generator scheduling and load curtailment have participated in a critical position to reduce the sternness of the electric networks against the violation of system constraints. Hence, competent optimization algorithms are needed to make sure the optimal operation. Evolutionary-based optimization techniques have proved to be superior to traditional and artificial intelligence-based approaches, which are rooted in deprived convergence and complexity of computation, to handle numerous constraints in multi-objective functions. Differential evolution (DE) is the most familiar member in the group of evolutionary algorithms, owing to its simple construction, fast operation, least number of parameters, easier to implement and significantly robust. Numerous engineering optimization problems have been studied and proved by DE, as a leading contender to solve in hypothetical and real situations. The applications of DE and its versions or variants related to power system problems like reactive power planning, congestion management, available transfer capability, load dispatch in economical way, commitment of generating units, optimization of power flow and optimal reactive dispatch of electric power were discussed in this chapter.

Keywords: Power Dispatch, Voltage Stability, Unit Commitment, Reactive Power, Power Loss, Optimization

Papers published in the Journals / Proceedings



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Safety of Water Resources Structures and Rehabilitation and Restoration of Distressed Dams and Barrages

Annual Technical Volume of Civil Engineering Division Board, VI, Rehabilitation and Retrofitting of Distressed Structures, 2021, pp 104 - 112, ISSN 978-81-952159-8-0

URL: <https://www.ieindia.org/webui/IEI-Publication.aspx#annual-technical-volume>

Abstract: Dams and Water resources distribution systems have to last almost an indefinite period of time and have to be kept functional without posing hazards to the downstream areas. Dam safety as a discipline involves a coordinated and systemic approach for maintaining the structural health of dam up to the latest standards. Many new materials and techniques are required to be employed to circumvent the constraints posed by continued operations of the dam reservoir system. World over the dam safety and rehabilitation have been receiving increased focus. Many countries including India have established dam safety programs.

As part of continuous strengthening of the dam safety management in India, Government of India has taken up the Dam Rehabilitation and improvement Project (DRIP) with World Bank assistance.

Keywords: Water Resources, Rehabilitation, Dam, Barrage, Geo-synthetics, Epoxy Mortar/Concrete, Spillway, Flood

PUBLICATION by Members



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Overcoming Challenges due to Enhanced Biomedical Waste Generation during COVID-19 Pandemic

Science of The Total Environment, 832, 2022, 155072

DOI: <https://doi.org/10.1016/j.scitotenv.2022.155072>

Co-authors: Priti Chhanda Ojha, Swati Sucharita Satpathy, Akash Kumar Ojha & Debabrata Pradhana

Abstract: Biomedical wastes (BMWs) are potentially infectious to the environment and health. They are co-dependent and accumulative during the ongoing coronavirus disease-2019(COVID-19) pandemic. In India the standard treatment processes of BMWs are incineration, autoclaving, shredding, and deep burial; however, incineration and autoclaving are the leading techniques applied by many treatment providers. These conventional treatment methods have several drawbacks in terms of energy, cost, and emission. But the actual problem for the treatment providers is the huge and non-uniform flow of the BMWs during the pandemic. The existing treatment methods are lacking flexibility for the non-uniform flow. The Government of India has provisionally approved some new techniques like plasma pyrolysis, sharp/needle blaster, and PIWS-3000 technologies on a trial basis. But they are all found to be inadequate in the pandemic. Therefore, there is an absolute requirement to micromanage the BMWs based on certain parameters for the possible COVID-19 like pandemic in the future. Segregation is a major step of the BMW management. Its guideline may be shuffled as segregation at the entry points followed by collection instead of the existing system of the collection followed by segregation. Other steps like transportation, location of treatment facilities, upgradation of the existing treatment facilities, and new technologies can solve the challenges up to a certain extent. Technologies like microwave treatment, alkaline hydrolysis, steam sterilization, biological treatment, catalytic solar disinfection, and nanotechnology have a lot of scopes for the treatment of BMWs. Hi-tech approaches in handling and transportation are found to be fruitful in the initial steps of BMW management. End products of the treated BMWs can be potentially fabricated for the application in the built environment. Some policies need to be re-evaluated by the health care facilities or government administrations for efficient BMW management.

Keywords: Biomedical Wastes, Covid-19 Pandemic, Treatment Facilities, Policies, Upgrading Conventional Techniques



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A New Swarm Intelligence Optimization Approach to Solve Power Flow Optimization Problem Incorporating Conflicting and Fuel Cost based Objective Functions

e-Prime Advances in Electrical Engineering, Electronics and Energy, Elsevier, 2, 2022, ISSN: 2772-6711

URL: <https://www.sciencedirect.com/science/article/pii/S2772671122000043>

Co-author: Sithankathan Sakthivel

Abstract: Optimization of Power Flow (OPF) is a notable key tool pertinent to power system process, in both setting up and working phases and it is structured for a specific objective to optimize over power system variables, based on definite constraints. A new method of optimization based on swarm intelligence named Sparrow Search Algorithm (SSA), is proposed in this article to resolve the OPF problem in a most efficient way. The different equipped constraints like power balance, generator capacity, bus voltage limit and line flow, were taken into account. Shunt reactive power compensating elements and tap changing transformer settings were also incorporated in the problem formulation as control variables. The proposed SSA based OPF was constructed by several constraints, formulations and objective functions, scrutinized with higher number of cases (33 cases), for the first time, on the three well-liked IEEE networks (IEEE 30-, 57- and 118-bus) via single and weighted amount multi-objectives. The simulation result was examined and the performance and preeminence of the obtainable method was evaluated against other well-constructed recent optimization studies, reported in the literature. The percentage reduction of fuel rate, active transmission loss and deviation in voltage, were examined and compared with some most important recent studies, specified in the literature. Percentage improvement of voltage stability was also evaluated with recent studies, accounted in the literature.

Keywords: Sparrow Search Algorithm, Power Flow Optimization, Transmission Loss, Fuel Rate, Voltage Stability Index, Voltage Profile

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Hybrid Krill Herd Optimizer for Thermal Power Scheduling Problem

International Journal of Advanced Technology and Engineering Exploration, 8(85), 2021, ISSN (Print): 2394-5443, ISSN (Online): 2394-7454

DOI: <http://dx.doi.org/10.19101/IJATEE.2021.874617>

Co-authors: Amarjeet Kaur & Jaspreet Singh Dhillon

Abstract: A hybridized meta-heuristic technique is applied to solve Economic-Environmental Power Dispatch (EPPD) problem. Krill Herd Algorithm (KHA) is a meta-heuristic technique of swarm intelligence based on populations of krill individuals and its motion for searching food. To improve the convergence characteristics of KHA, it is combined with a confined selective operator, termed as the Hybrid Krill Herd Optimizer (HKHO). In this technique, the krill's position is upgraded with confined krill individuals instead of the arbitrarily chosen individuals as processed in basic KHA. This proposed HKHO technique prevents entrapping of best possible solution in confined optima which means, it avoids the premature convergence of optimal solutions. A non-interactive multi-objective optimization technique is applied whereby the price penalty factor is applied to get scalar objective optimization in case of EPPD problem. The HKHO is implemented in small and medium standard test systems to show the applicability to solve EPPD problem. The developed optimizer is applied to validate the results on two power systems consisted of 6- and 40- thermal units. It gives 2.27% savings in fuel cost and 13.3 % reduction in emission of pollutants for 6-thermal units' power systems with respects to the results undertaken for comparison. Whereas, 40-units' power system, depicts the conflicting nature of the objectives, when the fuel cost is decreased by 0.16% and emission of pollutants decreases by 0.04%. In both the cases, the achieved results are comparable to already published work in terms of fuel cost and emission of pollutants as shown in tables of comparative analysis of achieved results. The examination of the results shows the satisfactory improvement in best possible solution.

Keywords: Confined Selective Operator, Economic Dispatch, Emission Dispatch, Hybrid Krill Herd Optimizer, Price Penalty Factor



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Dealing with Zero Flows in the Simulation of Water Distribution Networks with Low-Resistance Pipes using the Global Gradient Algorithm

Water Resources Management, 36(5), pp 1679–1691, 2022, Electronic ISSN 1573-1650, Print ISSN 0920-4741

DOI: <https://doi.org/10.1007/s11269-022-03100-9>

Co-authors: Nikolai B Gorev, Vyacheslav N Gorev, Inna F Kodzheshpurova & Igor A Shedlovsky

Abstract: This paper shows that the zero flow treatment algorithm and the convergence criteria of EPANET 2.2, the latest version of the EPANET 2 open-source software package, may be responsible for convergence to distinctly inaccurate results in the case of networks with low-resistance pipes. As an alternative, the paper suggests a zero flow treatment method proposed earlier, which is based on the smallness of the flow rather than the flow derivative of the head loss as in EPANET 2.2. To avoid spurious convergence, the EPANET 2.2 convergence criteria may be complemented with a criterion based on the flow residuals of the energy balance equations. The monotony of the head loss vs. flow relationship allows these residuals to be checked for a specified tolerance without solving the energy balance equations for the flow.

Keywords: Convergence Criterion, Energy Balance Equation, Flow Residual, Global Gradient Algorithm, Head Residual, Zero Flow

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Deep Sentiment Learning for Measuring Similarity Recommendations in Twitter Data

Intelligent Automation & Soft Computing, 34(1), 2022, pp 183-192

DOI: [10.32604/iasc.2022.023469](https://doi.org/10.32604/iasc.2022.023469)

URL: <https://www.techscience.com/iasc/v34n1/47342>

Co-authors: P Dhanalakshmi, K C Rajeswari & A Delphin Carolina Rani

Abstract: The similarity recommendation of twitter data is evaluated by using sentiment analysis method. In this paper, the deep learning processes such as classification, clustering and prediction are used to measure the data. Convolutional neural network is applied for analyzing multimedia contents which is received from various sources. Recurrent neural network is used for handling the natural language data. The content based recommendation system is proposed for selecting similarity index in twitter data using deep sentiment learning method. In this paper, sentiment analysis technique is used for finding similar images, contents, texts, etc. The content is selected based on repetitive comments and trending information. Hash tag is also considered for data collection and prediction. The number tweets are accountable and each character is taken for evaluation. Deep belief network is generated using $512 \times 512 \times 3$ layers system and 1056 trained data, 512 test data that are taken for convolution process. The deep belief network is generated using TensorFlow. TensorFlow is used to simulate the deep learning environments. Semantic analysis is applied for handling Twitter Data. The deep learning processes are classified into clustering, regression and prediction that are evaluated by step by step approach. The experiments are carried out using similarity index calculation and measuring of accuracy. The results of similarity recommendation are compared with existing method and the results are recorded. Our proposed system gives better results comparing with existing experiments.

Keywords: Deep Sentiment Learning, Similarity Recommendations, Sentiment Analysis, Tensorflow, Prediction



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Bi-based Photocatalysts for Bacterial Inactivation in Water: Inactivation Mechanisms, Challenges, and Strategies to improve the Photocatalytic Activity

Environmental Research, 209, 2022, 112834, ISSN: 0013-9351

DOI: <https://doi.org/10.1016/j.envres.2022.112834>

Co-authors: Michael Suarez-Chamba, Saravanan Rajendran, Miguel Herrera-Robledo & Carlos Navas-Cárdenas

Abstract: Bi-based photocatalysts have been considered suitable materials for water disinfection under natural solar light due to their outstanding optical and electronic properties. However, until now, there are not extensive reviews about the development of Bi-based materials and their application in bacterial inactivation in aqueous solutions. For this reason, this work has focused on summarizing the state of the art related to the inactivation of Gram- and Gram + pathogenic bacteria under visible light irradiation using different Bi-based micro and nano structures. In this sense, the photocatalytic bacterial inactivation mechanisms are analyzed, considering several modifications. The factors that can affect the photocatalytic performance of these materials in real conditions and at a large scale (e.g., water characteristics, pH, light intensity, photocatalyst dosage, and bacteria level) have been studied. Furthermore, current alternatives for improving the photocatalytic antibacterial activity and reuse of Bi-based materials (e.g., surface engineering, crystal facet engineering, doping, noble metal coupling, heterojunctions, Z-scheme junctions, coupling with graphene derivatives, magnetic composites, immobilization) have been explored. According to several reports, inactivation rate values higher than 90% can be achieved by using the modified Bi-based micro/nano structures, which become them excellent candidates for photocatalytic water disinfection. However, these innovative photocatalytic materials bring a variety of future difficulties and opportunities in water disinfection.

Keywords: Photocatalysis, Bacterial inactivation, Bismuth, Visible Light

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Hydroxyapatite Dispersed Sulphonated PEEK Composite Membrane: Synthesis, Structural and Mechanical Characterization

Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, Institution of Mechanical Engineers, 2022, pp 1–8, ISSN: 0954-4089, Online ISSN: 2041-3009

DOI: <https://doi.org/10.1177/09544089221076799>

Co-authors: Apurba Das, Bhabatosh Biswas, Sunit Sarkar, Nillohit Mukherjee, Arijit Sinha & Shubhabrata Datta

Abstract: A synthetic composite material membrane was synthesized using Polyether ether ketone (PEEK) as a polymer matrix, reinforced with nano-Hydroxyapatite (nHAp) as the ceramic for intended use as a hip bone implant material. Notwithstanding its close resemblance with hip bone material, PEEK is chemically and biologically inert and comes with limited biocompatibility. HAp has chemical and crystallographic similarity with carbonated apatite like human bones. In the present work it was used as reinforcement with PEEK in varying weight percentages, of 2, 5, 8 and 10 to determine the optimum mix for application as a bio hip implant material. HAp reinforcement beyond 10 wt. % was not considered as it resulted in agglomeration and reduction in mechanical properties. The polymer was sulphonated to facilitate chemical interactions with the hydroxyl (-OH) group of HAp to overcome poor interfacial bonding between PEEK and nHAp. The sulphonation also reduced the chances of wear debris from implant site getting resorbed into the body. These synthetic composite samples were then characterized using techniques such as x-ray diffraction, Fourier transform infrared spectroscopy, scanning electron microscope and energy dispersive x-ray spectroscopy, to ascertain its conformity in structure and morphology. Mechanical tensile tests were also carried out to determine tensile strength, yield strength and elastic modulus of the composite membranes. The synthesized sample, with 8 wt. % of HAp reinforcement, demonstrated the most suitable properties. The work propounds a fresh approach towards synthesizing a composite membrane using Polyether ether ketone, subjected to sulphonation (SPEEK), for intended application as a hip implant. The superior surface wetting, obtained on account of sulphonation of PEEK matrix, facilitated more intimate contact with nano-hydroxyapatite (nHAp) reinforcements and assisted in establishing superior, homogeneous and improved mechanical properties throughout the membrane.

Keywords: Polyether Ether Ketone, Polymer Matrix Composite, Sulphonation, Hydroxyapatite, Mechanical Properties

Swelling, Degradation and Thermal Behaviours of Cellulosic Fibre Reinforced Fly Ash Dispersed Hybrid Polymer Composites

Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, Institution of Mechanical Engineers, 2022, pp 1–11, ISSN: 0954-4089, Online ISSN: 2041-3009

DOI: <https://doi.org/10.1177/09544089221080280>

Co-authors: Bhabatosh Biswas, Gurudas Mandal, Apurba Das & Arijit Sinha

Abstract: The present investigation is carried out to study the swelling and thermal behaviours of alkali treated cellulosic fibre (sisal and jute) with fly ash dispersed unsaturated polyester composites. These composites are fabricated by compression moulding with a filler loading of 5, 15, 25, 35, and 45 wt. %. The electronic thermal insulation tester, differential scanning calorimeter, and thermo-gravimetric analyzer are used for thermal analyses of the synthesized composites. It was observed that the thermal stability and degradation temperature of the composites improved significantly with addition of the filler within the unsaturated polyester resin. The swelling behaviours are determined by immersing the synthesized samples in the different pH content of water. In case of swelling behaviours, the changes in water absorption are quite acceptable as compared to the treatment time and the atmospheric condition. The fabricated composites displayed optimum results for filler content with 35 wt. % followed by saturation in properties with the dispersion above the same.

Keywords: Cellulosic Fibre, Fly Ash, Polymer Composites, Thermal Properties, Swelling, Degradation

PUBLICATION by Members



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Assessment of Runoff in Chandra River Basin of Western Himalaya using Remote Sensing and GIS Techniques

Environmental Monitoring and Assessment, 194, 145, 2022

DOI: <https://doi.org/10.1007/s10661-022-09795-y>

Co-authors: Tanooj Kumar Myneni, Anil V Kulkarni & Yongqiang Zhang

Abstract: The runoff of Chandra river basin in the Himalayan India was assessed using a hydrological model combined with satellite remote sensing observations. During a test period between 2000 and 2015, in situ measurements of runoff and meteorological parameters were conducted in the glacial catchment areas of Sutridhaka and Chhotashigri. A good agreement was found between the observed and predicted runoff (correlation $R^2 > 0.8$). The hydrological model was then used to simulate the runoff of Chandra River for a period of 2000 to 2015. Almost 68% of the predicted runoff occurred during the ablation period (May to September). A sensitivity study of the Chandra basin hydrology to a predicted warming climate of 1 to 4 K, toward the end of the century suggests that increased production of glacial melt water would have more impact on runoff than potential increase in precipitation. During the monsoon months (of June to August), increased runoff is predicted due to enhanced glacial melting but the runoff in other months to be lower than present mean runoff, except for the summer months (March to July).

Keywords: Snow-ice Melt Runoff, Runoff Simulation, Chandra Basin, Western Himalaya

Application of "OTSU" — An Image Segmentation Method for Differentiation of Snow and Ice Regions of Glaciers and Assessment of Mass Budget in Chandra Basin, Western Himalaya using Remote Sensing and GIS Techniques

Environmental Monitoring and Assessment, 194, 337, 2022

DOI: <https://doi.org/10.1007/s10661-022-09945-2>

Co-authors: Ramya Boddapati, Tanooj Kumar, Anil V Kulkarni & Helgi Bjornsson

Abstract: In this study, an image segmentation algorithm ("OTSU") is applied for differentiation of snow/ice regions followed by interpretation of snowlines and estimation of mass budget of glaciers in Chandra basin, Western Himalaya, India between 2014 and 2020. The observations strongly suggest that the OTSU method can be used to differentiate the snow and ice regions on a glacier accurately from any satellite image, irrespective of the sensor characteristics. Also, this method suits well to delineate the snowlines for large sample of glaciers, other than the manual interpretation and semi-automated methods. The estimates of mass budget of the glaciers are observed varying from -1.20 ± 0.51 m w.e to almost 0.64 ± 0.51 m w.e, with a total loss of -61.91 ± 6.70 m w.e of ice mass at basin scale during the observation period. Based on this study, it is highly recommended the application of OTSU method for the differentiation of snow/ice zones of glaciers and snowline demarcation at a large spatial scale in the harsh weather rugged terrain of the Western Himalaya.

Keywords: Otsu Method, Snow Line Demarcation, Specific Mass Balance, Chandra Basin



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PUBLICATION by Members



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Analytical Hierarchy Process Tool in Google Earth Engine Platform: a Case Study of a Tropical Landfill Site Suitability

Environmental Monitoring and Assessment, 194, 276, 2022

DOI: <https://dx.doi.org/10.1007/s10661-022-09878-w>

Co-authors: Soham Bhattacharya & Soumya Bhattacharyya

Abstract: Kolkata being a metropolitan city in India has its main municipal solid waste dumpsite situated at Dhapa just adjacent to the East Kolkata Wetlands (Ramsar site). The current prevalent situation at Dhapa is open dumping leading to various contaminations and hazards putting forth the need to look for alternative sites where the landfilling operation can be shifted to using scientific methods. A user interface (UI)-based analytical hierarchy process (AHP) tool has been developed within the Google Earth Engine (GEE) cloud platform to find out the alternative dumping sites using geospatial layers. AHP function is not available as a native algorithm or developed by any researcher in GEE. The tool has three major functionalities, of which the first one handles the UI elements. The AHP procedure is within another function, and the last function integrates the AHP coefficients to the layers generating the final suitability layer. Users can also upload comparison matrix as GEE asset in the form of CSV file which gets automatically integrated into the AHP to calculate the coefficients and consistency ratio to generate the spatial suitability layers. This approach showcases a generalized AHP function within the GEE environment, which has been done for the first time. The tool is designed in the cloud platform which is dynamic, robust and suitable for use in various AHP-based suitability analysis in environmental monitoring and assessment.

Keywords: Google Earth Engine (GEE), GEE App, Analytical Hierarchy Process (AHP), Municipal Solidwaste (MSW), Suitability Analysis



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Computational Bit Error Rate Analysis of an All-Optical Packet Switch Employed on Recirculation Fiber Loop Buffer

Xi'an ShiyouDaxueXuebao (ZiranKexue Ban) / Journal of Xi'an Shiyou University, Natural Sciences Edition, 65(3), 2022, ISSN:1673-064X

DOI: [10.17605/OSF.IO/TAS7W](https://doi.org/10.17605/OSF.IO/TAS7W)

URL: <https://xianshiyoudaxuexuebao.com/detail.php?id=DOI:10.17605/OSF.IO/TAS7W>

Co-authors: Vivekanand M, Demissie J & Vipin P

Abstract: Optical data storage with fiber loop and ultra-fast optical switching with nonlinear optical loop mirror (NOLM) have been regarded as an ideal all-optical processing device respectively. In this paper, optical loop buffer combined (OLB) with the NOLM switch devices have been integrated to provide an efficient buffering-switching device to curb the signal contention. Various limitations using the proposed device have been analyzed in order to obtain an error-free process for the maximum rounds of buffering circulations.

Keywords: Recirculation Fiber Loop Buffer, Bit Error Rate, Non-Linear Optical Loop Mirror, Optical Loop Buffer, Fiber Delay Line

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Volume 103, Issue 2, June 2022

- Title:** **A Sustainable Method to Grind Plastic Scraps for more Efficient End Use as Additives**
- Authors:** **Andres Marquez**
San Antonio, TX, USA
C Persad
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Mechanical and Manufacturing Engineering Department, University of the West Indies, St. Augustine, Trinidad and Tobago
- DOI:** <https://doi.org/10.1007/s40030-022-00627-3>
- Publication date:** 09 March 2022
- Pages:** 341 - 348
- Title:** **An Investigation of Mechanical and Durability Properties of Carbonated Recycled Aggregate Concrete**
- Author:** **Shakeel Ahmad Waseem**
National Institute of Technology Srinagar, Hazratbal, Srinagar, 190006, India
- DOI:** <https://doi.org/10.1007/s40030-021-00608-y>
- Publication date:** 11 February 2022
- Pages:** 349–358
- Title:** **Carbon Sequestration Potential of Urban Trees: A Case of Kolar Area in Bhopal City, India**
- Authors:** **Shreya Chaurasia**
Save Earth Energy Private Limited, Bhopal, India
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- DOI:** <https://doi.org/10.1007/s40030-022-00621-9>
- Publication date:** 15 March 2022
- Pages:** 359–374
- Title:** **Competition in Infrastructure Procurement: Analysis of Waste Management Sector of India**
- Authors:** **Tharun Dolla**
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- DOI:** <https://doi.org/10.1007/s40030-022-00619-3>
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- Title:** **Comparative Study of different Seat Cushion Materials to improve the Comfort of Tractor Seat**
- Authors:** **Akash Bhatia, Sachin Kalsi & Anuj Kumar Sehgal**
Department of Mechanical Engineering, Chandigarh University, Mohali, India
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Department of Mechanical Engineering, Gulzar Group of Institutes, Ludhiana, India
- DOI:** <https://doi.org/10.1007/s40030-022-00622-8>
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- Authors:** **Tanmay Sarkar**
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Alok Mukherjee & Kingshuk Chatterjee
Government College of Engineering and Ceramic Technology, Kolkata, West Bengal, India
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- Publication date:** 06 March 2022
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- Title:** **Development of Dynamic Traffic Assignment Framework for Heterogeneous Traffic Lacking Lane Discipline**
- Author:** **Ranju Mohan**
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School of AI and Data Science, Indian Institute of Technology Jodhpur, Karwar, Rajasthan, 342037, India
- DOI:** <https://doi.org/10.1007/s40030-021-00599-w>
- Publication date:** 26 January 2022
- Pages:** 409–421
- Title:** **Effects of Compressive Strength of Concrete on RC Columns Subjected to Elevated Temperatures**
- Authors:** **D Anupama Krishna & R S Priyadarsini**
Department of Civil Engineering, College of Engineering Trivandrum, Thiruvananthapuram, Kerala, India
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- Publication date:** 22 January 2022
- Pages:** 423–431
- Title:** **Engineering Properties of Chilli Fruit Relevant to the Design and Evaluation of Chilli Seed Extractor for Hilly Region of Kashmir Valley**
- Authors:** **Masrat Mohi ud din, Mohd. Muzamil & Jagvir Dixit**
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- Publication date:** 16 February 2022
- Pages:** 433–443
- Title:** **Experimental Investigation on Feasibility of utilizing Phosphogypsum in E-Glass Fiber-incorporated Non-fired Ceramic Wall Tile**
- Authors:** **G K Arunvivek**
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Department of Civil Engineering, Mangalam College of Engineering, Ettumanoor, Kerala, India
- DOI:** <https://doi.org/10.1007/s40030-021-00604-2>
- Publication date:** 26 January 2022
- Pages:** 445–451
- Title:** **Evaluation of Emission Characteristics and Performance of Pomegranate Ethanol Blended S. I. Engine using Artificial Neural Network and Rule Learner Classifier**
- Authors:** **D Y Dhande, D P Gaikwad & C S Choudhari**
Department of Mechanical Engineering, AISSMS College of Engineering, Pune, Maharashtra, 411001, India
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- Pages:** 467–480
- Title:** **Ground Granulated Blast Furnace Slag as a Cement Replacement in Concrete: An Analysis of Dissolution**
- Authors:** **Reshma Malipeddi & S Adishesu**
Department of Civil Engineering, Andhra University College of Engineering, Andhra University, Visakhapatnam, 530003, India
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- Publication date:** 23 February 2022
- Pages:** 481–492
- Title:** **“Heritage Village” Designation Impact on the Village: A Case Study on the Perception of the Residents of Kalpathy Village (Kerala)**
- Authors:** **Preeti Nair & Devendra Pratap Singh**
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- DOI:** <https://doi.org/10.1007/s40030-022-00632-6>
- Publication date:** 21 April 2022
- Pages:** 493–500
- Title:** **Leaf Disease Detection in Banana Plant using Gabor Extraction and Region-Based Convolution Neural Network (RCNN)**
- Authors:** **K Seetharaman**
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- Publication date:** 19 March 2022
- Pages:** 501–507
- Title:** **Measurements and Comparison of Saturated Hydraulic Conductivity under different Landuses**
- Authors:** **Abhay Kumar, Shashank Shekhar, Aaneta Paul & Damodhara Rao Mailapalli**
Department of Agricultural and Food Engineering, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, 721302, India
- DOI:** <https://doi.org/10.1007/s40030-022-00629-1>
- Publication date:** 23 April 2022
- Pages:** 509–518
- Title:** **Mechanical and Post-Cracking Performance of Recycled High Density Polyethylene Fiber Reinforced Concrete**
- Authors:** **Maheswara Marabathina Rao**
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- Title:** **Numerical Analysis of Eccentric Compression Performance of CFRP-Confined Concrete-Filled Steel Tube (CFST) Columns**
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 School of Civil Engineering and Architecture, Northeast Petroleum University, Daqing, 163318, Heilongjiang, China
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 Department of Civil Engineering, Vidyavardhaka College of Engineering, Mysuru, India
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Pages: 557–565
- Title:** **Performance of High-Strength Concrete using Alccofine and GGBFS**
Authors: **S Lakshmikanth & M C Nataraja**
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 Department of Civil Engineering, Sri Jayachamarajendra College of Engineering, Mysuru, 570006, Karnataka, India
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- Title:** **Prediction of Wind-Induced Pressure on Pentagon Plan Shape Building using Artificial Neural Network**
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 Department of Civil Engineering, Mepco Schlenk Engineering College, Sivakasi, Tamil Nadu, 626 005, India
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 School of Engineering, University of Aberdeen, Aberdeen, UK
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- Title:** **Stress Concentration in Composite Cantilever Plates — Effect of Stiffeners and Remedy**
Authors: **Kaushal Kumar & Gyani Jail Singh**
 Department of Civil Engineering, National Institute of Technology Patna, Patna, India
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Pages: 663–675

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Authors: **I Siva Parvathi, M Mahesh & D V V Raj Kamal**

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Author: **Ravi Lakshmanan**

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Title: **An Experimental Exploration on Pressure-Compensated Swash Plate-Type Variable Displacement Axial Piston Pump**

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Authors: **Md Shohel Parvez, Subrata Talapatra & Ahmed Ruhani**

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Publication date: 03 January 2022

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Title: **Automotive Fire Control by Designing and Launching a New Intelligent System: Experimental Results, Automotive Notification Design, New Design Comparison Chart**

Authors: **Esmail Mirmahdi & Davood Afshari**

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Publication date: 25 January 2022

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Title: **Cell-Laden Alginate Hydrogel Modelling using Three-Dimensional (3D) Microscale Finite Element Technique**

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Title: **Correlation of Galling Resistance and Hardness of Plain Carbon Steel**

Authors: **Hemanta Doley & Sandeep Singh**
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Publication date: 25 January 2022
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Title: **Design of Cooling System for an Automotive using Exhaust Gasses of Turbocharged Diesel Engine**

Authors: **Qusay Rasheed Al-Amir**
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DOI: <https://doi.org/10.1007/s40032-021-00787-4>
Publication date: 08 November 2021
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Title: **Development of Economical Plant Transplanter**

Authors: **S Chethan, K Srinivasa, Md Nadeem Mahaboob & N Yathisha**
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DOI: <https://doi.org/10.1007/s40032-021-00802-8>
Publication date: 05 January 2022
Pages: 339–345

Title: **Experimental Investigation of Spark Ignition Engine Performance Fuelled with various Pomegranate Ethanol-Gasoline Mixtures**

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DOI: <https://doi.org/10.1007/s40032-021-00790-9>
Publication date: 05 November 2021
Pages: 347–357

Title: **Finite Element Analysis of the Influence of Microstructure on the Mechanical Properties of SiCp/Al Composites**

Authors: **Mingyuan Zhang, Li Zhou & Chengyu Song**
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- Authors:** **Sabyasachi Ghosh & Salil Haldar**
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- DOI:** <https://doi.org/10.1007/s40032-021-00799-0>
- Publication date:** 06 January 2022
- Pages:** 369–380
- Title:** **Gain Scheduled Finite Horizon LQR for Approach and Landing Phase of a Reusable Launch Vehicle**
- Authors:** **Aysha S Hameed & G R Bindu**
Department of Electrical Engineering, College of Engineering Trivandrum, APJ Abdul Kalam Technological University, Thiruvananthapuram, India
- DOI:** <https://doi.org/10.1007/s40032-021-00789-2>
- Publication date:** 06 January 2022
- Pages:** 381–388
- Title:** **Genetic Algorithm-Based Fundamental Frequency Optimization of Laminated Composite Shells Carrying Distributed Mass**
- Authors:** **Subham Pal & Salil Haldar**
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- DOI:** <https://doi.org/10.1007/s40032-021-00801-9>
- Publication date:** 07 January 2022
- Pages:** 389–401
- Title:** **Influence of Die Threading and Finishing Length in the Thread-Rolling Process Using Flat Dies: A Numerical Analysis**
- Authors:** **L Giorleo & M Cartapani**
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- DOI:** <https://doi.org/10.1007/s40032-021-00784-7>
- Publication date:** 29 October 2021
- Pages:** 403–411
- Title:** **Infrared Suppression Technologies for Marine Platforms**
- Authors:** **Khagesh Kumar Choudhary & A V S N Murty**
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- DOI:** <https://doi.org/10.1007/s40032-021-00788-3>
- Publication date:** 11 January 2022
- Pages:** 413–419
- Title:** **Investigating the Effects of Adding Butene, Homopolymer to Gasoline on Engine Performance Parameters and Pollutant Emissions: Empirical Study and Process Optimization**
- Authors:** **Sajad Davari & Fathollah Ommi**
Department of Mechanical Engineering, Tarbiat Modares University, Tehran, Iran
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- Authors:** **Vishal V Patil**
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- Publication date:** 27 October 2021
- Pages:** 435–444
- Title:** **Optimization and Analysis of Design Parameters, Excess Air Ratio, and Coal Consumption in the Supercritical 660 MW Power Plant Performance using Artificial Neural Network**
- Authors:** **G Naveen Kumar & Edison Gundabattini**
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- DOI:** <https://doi.org/10.1007/s40032-021-00791-8>
- Publication date:** 15 November 2021
- Pages:** 445–457
- Title:** **Optimization of Biomass fuel Cold Briquetting Parameters based on Response Surface Analysis**
- Authors:** **Zhigang Li & Hui Zou**
Hunan University of Arts and Science, Changde, 415000, China
- DOI:** <https://doi.org/10.1007/s40032-021-00782-9>
- Publication date:** 29 October 2021
- Pages:** 459–472
- Title:** **Research on Matching and Selection of New Type of Marine Gas-Electric Hybrid Power System**
- Authors:** **Xiaojun Sun, Chong Yao, Enzhe Song, Huiquan Bai & Kangning Li**
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- DOI:** <https://doi.org/10.1007/s40032-021-00757-w>
- Publication date:** 20 January 2022
- Pages:** 473–483
- Title:** **RSM-Based Parameter Optimization of Compression Ignition Engine Fueled with Diesel Blended with Two Biofuels: Rice Bran and Karanja**
- Authors:** **Navneet Kaushal & Pardeep Kumar**
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- DOI:** <https://doi.org/10.1007/s40032-020-00634-y>
- Publication date:** 20 November 2020
- Pages:** 485–491
- Title:** **Spatio-Temporal Variability of Tidal Velocities in the Rivers of the Indian Sundarban Delta: A Hydrodynamic Modelling Approach**
- Authors:** **Koushik Bhui & Sugata Hazra**
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- DOI:** <https://doi.org/10.1007/s40032-021-00798-1>
- Publication date:** 12 January 2022
- Pages:** 493–507
- Title:** **Capturing Steam Energy Leaks in the Steam Distribution Network Using an Integrated Method: A Case Study of a Petroleum Refinery**
- Authors:** **Raghvendra Pratap Singh**
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Title: **A Review on Techniques for Solar Still Efficiency Enhancement**

Authors: **Srinath R & S Saravanan**

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Publication date: 29 October 2021

Pages: 519–533

Title: **Application of Structure with Negative Poisson's Ratio for Vibration Isolation of Pipeline Supports**

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Title: **Correction to: The Small Punch Test a Viable Alternate for In-service Components Preserved Strength Estimation**

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Page: 543

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