

2022-23

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IDENTIFICATION OF IMPORTANT FACTORS OF FLOW FORMING OPERATION IN BRASS UTENSIL MANUFACTURING

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Abstract

In brass utensil manufacturing, most of work is performed manually and repetitive in nature by unskilled workers with help of different tools and semi-automatic machine. The method adopted for flow forming operation is not scientific approach. Entire operations are falling under the class of man machine systems.

This paper investigates most influenced input variables like work piece parameter, tooling parameter, process parameter, machine parameter and extraneous factor are directly involved with response variables like accuracy, surface finishing and cycle time has measured which decides quality, performance of flow forming operation in brass utensil manufacturing. These identified factors are used to design the mathematical model for this operation by applying theories of experimentation. The same models are simulated for collected data by statistical tool.

2020 Mathematics Subject Classification: 74-XX.

Keywords: flow forming, performance variable, influencing variables, brass utensil.

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OPTIMIZATION OF FIELD DATA BASED MODEL FOR FLOW FORMING OPERATION IN BRASS UTENSIL MANUFACTURING

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Abstract

Flow forming is an oldest method of chip less metal forming process for the production of hollow, axially symmetric sheet metal components. In brass utensil manufacturing, most of work is performed manually and repetitive in nature and entire operations are falling under the class of man machine systems. This research identified most influenced input variables like work piece parameter, tooling parameter, process parameter, machine parameter and extraneous factor on flow forming operation in brass utensil manufacturing. Also certain response variables viz. accuracy, surface finishing and cycle time has measured which decides quality, performance of flow forming operation. The mathematical model developed for the phenomenon represents the interaction of various independent variables by applying theories of experimentation. An attempt is made to optimize the process response variables by use of statistical tools are to be applied for field data based model.

2020 Mathematics Subject Classification: Primary 62J02; Secondary 14A21.

Keywords: Flow forming, Optimize, Response variables, Brass utensil.

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Security Verification of Social Network Model Using Improved Three-Party Authenticated Key Exchange Protocol

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Abstract and Figures

The proper verification of users plays a vital role during communication over a social network to protect the personal data of users. Multifarious protocols have been implemented to secure the confidential data of the users, but these protocols have various limitations and are incapable of providing secrecy of data against various attacks, such as replay and cryptanalysis attacks. In this article, the authors proposed a novel method for security verification of the social network model using an improved three-party authenticated key exchange (3PAKE) protocol based on symmetric encryption and (ECC) elliptic curve cryptography. The outcome of the paper demonstrates that our proposed algorithm provides the desired secrecy to the confidential data exchange over social networks in real-time and consumes less time in comparison to existing protocols. Our protocol consumes a search time of 0.09 s, overall communication steps took 2 during the verification, and depth plies was 3 along with 20 visited nodes. The 3PAKE protocol has been considered a suitable approach for social network secrecy during information exchange between user and server, thereby providing greater secrecy to the user in data exchange over social networks and more robustness against multifarious known attacks, such as cryptanalysis and replay attacks in real-time.

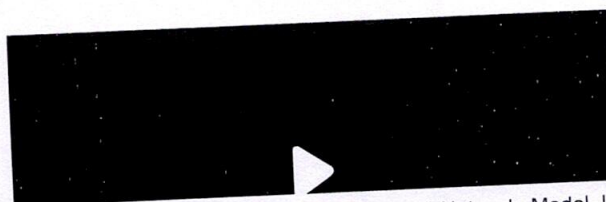
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Article

A Secure Three-Party Authenticated Key Exchange Protocol for Social Networks

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Abstract: The 3PAKE (Three-Party Authenticated Key Exchange) protocol is a valuable cryptographic method that offers safe communication and permits two diverse parties to consent to a new safe meeting code using the trusted server. There have been explored numerous 3PAKE protocols earlier to create a protected meeting code between users employing the trusted server. However, existing modified 3PAKE protocols have numerous drawbacks and are incapable to provide desired secrecy against diverse attacks such as man-in-the-middle, brute-force attacks, and many others in social networks. In this article, the authors proposed an improved as well as safe 3PAKE protocol based on the hash function and the symmetric encryption for the social networks. The authors utilized a well-acknowledged AVISPA tool to provide security verification of the proposed 3PAKE technique, and findings show that our proposed protocol is safer in opposition to active as well as passive attacks namely the brute-force, man-in-the-middle, parallel attack, and many more. Furthermore, compared to other similar schemes, the proposed protocol is built with a reduced computing cost as our proposed protocol consumes less time in execution and offers high secrecy in the social networks with improved accuracy. As a result, this verified scheme is more efficient as well as feasible for implementation in the social networks in comparison to previous security protocols. Although multifarious authors carried out extensive research on 3PAKE protocols to offer safe communication, still there are vital opportunities to explore and implement novel improved protocols for higher safety in the social networks and mobile commerce environment in the future in opposition to diverse active as well as passive attacks.

Keywords: AVISPA tool; 3PAKE protocol; hash function; symmetric encryption; social networks

1 Introduction

Due to fast advancement in information as well as diverse networking technologies, pragmatic client authentication plays a vital role to safeguard services and multifarious resources from being cracked via unauthorized clients [1–5]. The 3PAKE (Three-Party Password-Based Authenticated Key Exchange) protocol permits two diverse clients over unsecured channels to have a talk for safe session codes and set up a safe channel through an authenticated server to secure their consequential communication [6–9]. Each of the legal clients stockpiles their scrutinizer calculated from their real key in the database of the isolated trustworthy servers and every client just needs to recall only words of identification i.e., an authentication key with a trustworthy server [10–12]. There have already been identified multifarious benefits of the 3PAKE protocols earlier by numerous researchers in past from security perspectives, however, one of the key benefits of this protocol recognized by some researchers is that it offers an easy method for a huge

Malaria Detection from Blood Cell Images using Convolutional Neural Network Model

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Abstract

There are various ensemble models used in healthcare domain for malaria detection but detection on the basis of presence of blood cell by using conventional neural network based models are very effective and useful. In this paper, we propose a model that is named as neural network model to detect the presence of malaria parasites in human blood cell pictures. In this paper an artificial intelligence based convolutional neural network (CNN) model has been developed to categorize the red blood cell into malaria infected and uninfected types of classes. Performance of the model has been evaluated using Standard evaluation measures against the public data set of malaria blood cell images obtained quantitative scores confirms its performance which outperforms the available state-of-the-art techniques. In the presented paper a CNN based model has been proposed which has least design cost and capable to achieve high performance in terms of various standard evaluation metrics.

Keywords—Malaria parasite; Red Blood Cell; Computer-Added-Diagnosis; Medical Imaging; Deep Learning; Convolutional Neural Network

Date of Submission: 15-07-2022

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I. Introduction

Malaria is a life-threatening infection caused by the plasmodium parasite, which is spread via female anopheles mosquito bites. According to the WHO's World Malaria Report 2019, there were an estimated 405,000 malaria-related death in the previous year. The condition can be cured, but early discovery is crucial. Existing method known as Microscopic identification of infected cells is one method used to identify malaria in a Research Lab.

The model is both overpriced and monotonous. In 2018, the WHO African Region recorded 93 percent of all malaria cases worldwide. In addition, the region has one of the lowest per capita incomes in the world.

A quick, less expensive, and more reliable alternative to microscopic malaria testing has been proposed in this model. Malaria is a parasitic disease produced by the plasmodium parasite, which spreads throughout the human body via female anopheles bites, which can then be passed on to others by mosquitoes that bite malaria patients.

It cannot, however, pass from one person to another. Malaria can be transmitted from mother to foetus, but it can also be contracted through blood transfusions or sharing syringes. High fever, chills, septicemia, pneumonia, gastritis, enteritis, nausea, vomiting, and mortality are just some of the symptoms that an infected person may experience.

Malaria is commonly found in areas with hot, humid temperatures near natural water sources, which serve as the breeding ground for anopheles mosquitoes, which transmit dangerous diseases. In order to fulfill purpose of malaria detection,

This paper gives an overview of the use of different techniques and models that can be used for malaria detection accurately and efficiently. Combination of various techniques and models has been used in various expert system. This paper also conveys information related to the efficiency of the model proposed by different researchers.

II. Literature Review

a. Using Image processing based approaches

Roy et al.[1] utilized traditional image processing based mechanism such as color based pixel discrimination method, segmentation process, watershed segmentation to detect malaria parasite from thin smear blood images [1]. In this work author used image segmentation smoothing processing technique to find out malaria parasite in image obtained from giemsa stained peripheral blood fragment. Additionally image processing in any other detection in blood sample had also been computed. Similarly padmapriya et al. had



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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Comparative study of deep learning models on face recognition

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¹Raipur Institute of technology, Raipur, India

Abstract: In the fields of image analysis and computer vision, face identification poses a difficult problem. This work, Face Recognition, analyses these problems and uses them to identify or verify a person using deep learning techniques. A face in an image is automatically found via facial recognition. 40 attributes and datasets with a maximum of 200,000 faces were used in this study on celebrity faces. This dataset features a variety of angles, backgrounds, and facial expressions. Using VGG16, AlexNet, and GoogleNet, the technique recorded test accuracy of 96.15 percent, 96.81 percent, and 97.73 percent.

Index Terms - Transfer Learning, Face Recognition, VGG16, Alexnet, GoogleNet, Classification Model, celebrity face dataset.

I. INTRODUCTION

Face detection technique is utilised extensively in the field of vision because it has a distinctive stability and flexibility compared to the identification of fingerprints and other technologies [1]. Humans perform face recognition on a daily basis, but developing the same computer system and increasing precision is an ongoing effort. The study of face recognition dates back to the 1950s [2]. Visual pattern recognition struggles with face identification. When viewing visual information, people frequently notice visual patterns. The brain interprets this information as logical thinking. A computer is a pixel in a single matrix, whether it be for video or images [3].

In the fields of image analysis and computer vision, face identification poses a difficult problem. This work, Face Recognition, analyses these problems and uses them to identify or verify a person using deep learning techniques. A face in an image is automatically found via facial recognition. 40 attributes and datasets with a maximum of 200,000 faces were used in this study on celebrity faces. This collection of facial expressions, perspectives and backgrounds.

The machine must identify what a particular bit of data in the data means. This is a challenging diagnostic issue for the identification of visual models. Knowing which information relates to which component and component with regard to facial recognition. How can we confirm or establish the identification of the person in the photo given the provided face photo and celebrity photo site? This is a significant issue with facial recognition [3].

Complex face traits can be detected using deep learning-based methods [4]-[5]. The in-depth learning-based strategy achieves notable success in resolving issues that have for years hampered the best efforts of the intelligence community is a factor that pertains to many commercial and government research fields and has shown to have a complicated architecture in high-quality data. Convolutional Neural Network (CNN), Stacked Auto encoder [6], and Deep Belief Network (DBN) [7] are a few in-depth learning algorithms that can be utilised to tackle this problem. CNN is the most used picture and visual algorithm [8].

II. RELATED WORK

For facial recognition categorization, a few have utilized a variety of Machine Learning, DeepLearning, and Hybrid algorithms. A couple of the papers are listed below :

Di Wang et al, have created a convolutional neural network-based algorithm for facial recognition. Every data set is gathered locally. We must personally review some of the inappropriate images when gathering data sets online, choose three Chinese characters as our research subjects, gather 200 images for each character, and then gather the recognition accuracy of our improved model, which ranges from 68.85 percent to 79.41 percent after sets checking [1].

Edy Winarno et al., has introduced an attendance system based on a face recognition system using the CNN PCA method and real-time camera. In order to detect and identify faces as a person's identity and to store them in a face database, the attendance system uses faces as objects. Up to 98 percent accuracy in facial recognition can be achieved using the suggested technique [3].

Yong Li et al, introduced a neural network testing-based facial recognition system. The suggested activity fireliably locates and

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Glaucoma-TrEI: A web-based interactive database to build evidence-based hypotheses on the role of trace elements in glaucoma

[Jyoti Kant Choudhari](#), [Martin Eberhardt](#), [Tanushree Chatterjee](#), [Bettina Hohberger](#) & [Julio Vera](#) 

BMC Research Notes **15**, Article number: 348 (2022)

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Abstract

Objective

Glaucoma is a chronic neurological disease that is associated with high intraocular pressure (IOP), causes gradual damage to retinal ganglion cells, and often culminates in vision loss. Recent research suggests that glaucoma is a complex multifactorial disease in which multiple interlinked genes and pathways play a role during onset and development.



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Riju Prava Sahariah & Tanushree Chatterjee

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Abstract

Mining activity for extraction of the underground minerals for industrial operation and economic growth of a country is inevitable. After successful extraction of the minerals, the fine dumping contents termed as mine tailings (MT) with scattered traces of residual minerals, dig up the soil, and a disturbed ecosystem is left unattended and often without any treatment. This leads to serious threats to the surrounding ecosystems due to the presence of various toxic, primary and secondary elements in the form of organic/inorganic pollutants. In the present study, we considered MTs from three mines, namely, Nandini Limestone Mine, Limestone Century Cement Mine and Dalli

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Glaucoma-TrEl: A web-based interactive database to build evidence-based hypotheses on the role of trace elements in glaucoma

[Jyoti Kant Choudhari](#), [Martin Eberhardt](#), [Tanushree Chatterjee](#), [Bettina Hohberger](#) & [Julio Vera](#) 

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Objective

Glaucoma is a chronic neurological disease that is associated with high intraocular pressure (IOP), causes gradual damage to retinal ganglion cells, and often culminates in vision loss. Recent research suggests that glaucoma is a complex multifactorial disease in which multiple interlinked genes and pathways play a role during onset and development.



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SIMULATION OF GRID CONNECTED SOLAR PV WITH MULTILEVEL INVERTER FOR INTERFACING PHOTO-VOLTAIC CELL

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Abstract: This paper is based on the modelling of solar PV module with MPPT techniques and then connected to the multilevel inverter for interfacing after that connected to grid like loads. In this simulation the major part is maximum power point control which can be accomplished by various methods and fuzzy control system found to be very attractive now a days because it sets the rule table for particular input what should be the output and the input value need not to be very accurate. According to the variations of solar radiation due to the weather, time and location the value needs to be set and get the desired values after that a multilevel inverter has been connected to convert the output and connected to load grid as per the load end requirements. Simulation is done on a Matlab software and the result is analyzed.

Index Terms - Maximum power point tracking system (MPPT), Pulse Width Modulation (PWM), Insulated gate bipolar transistor (IGBT), Total harmonic distortion (THD), static synchronous compensator (STATCOM), and fuzzy logic control (FLC)

I. INTRODUCTION

With more demand for electricity, continuously raising fuel costs and more concerns of global climate change have leads to more and more use of renewable energy sources. These energy resources have got more fame due to the depletion of non-renewable energy sources and their adverse impact on the environment. The energy extracted from Solar is one of the alternative renewable energy sources. In case of solar PV, the energy is collected as dc which, further can be converted into ac by the use of inverter and subsequently fed to utility grid or it may be used in isolated load. The inverter output can be fed to the grid as well as standalone system. The main objective of Grid connected SPV system is to supply the local loads and any surplus power generation have to be injected into the grid [1]

Energy not only plays an important role in our life but also in the overall economy of the country. The requirement for energy is increasing in our daily life due to the industrial revolution. In the most developing country like India, the large share of energy generation mainly depends upon non-renewable energy sources. The gradual depletion of these sources such as fossil fuels, oils, etc. leading the developing countries towards the un-sustainability of civilization. Along with that, the generation of energy through conventional sources is also a reason for greenhouse gases. It has become a global challenge to reduce the emission of greenhouse gasses like CO₂ and CO₃ to ensured secure, clean, and affordable energy. Whereas clean and sustainable energy is perfectly generated through renewable energy sources [1]. There are many renewable sources of energy such as solar energy, wind energy, Hydro energy, etc. The Photovoltaic (PV) system is the most efficient renewable source of energy which has taken the great attention of the researchers.

The MPPT working principle is based on the maximum power transfer theory. The power delivered from the source to the load is maximized when the input resistance seen by the source matches the source resistance. Therefore, in order to transfer maximum power from the panel to the load the internal resistance of the panel has to match the resistance seen by the PV panel. For a fixed load, the equivalent resistance seen by the panel can be adjusted by changing the power converter duty cycle [4].

With the modern lifestyles and the fast growth in industries the energy supply and demand chain has been subjected to remarkable strain. In addition, the issues of climate change and the need to diminish carbon footprints have added to the strong thrust for companies and nations to invest in alternate energy sources, particularly the renewable energy (RE) resources. Among the available RE resources, SPV source has emerged as one of the finest green energy resource and seen as a better replacement for

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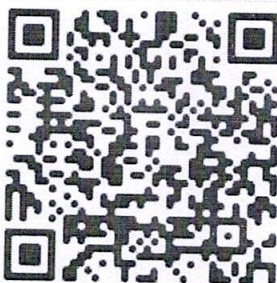
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Description**A Pitch Control Strategy of Wind Turbine by Using Fuzzy Logic Control System**Varsha Thakur¹, Tikeshwar Gajpal²¹M- Tech Scholar Electrical Department, Raipur Institute of Technology²Assistant Professor Electrical Department, Raipur Institute of Technology

Abstract – This paper deals with the pitch angle control of wind turbines. Due to the non-linearity and complex dynamics of these wind energy systems becomes a tough job. To solve this purpose we propose a fuzzy logic control system. Major aim is to maximise the energy produced from the wind turbine irrespective of non-linearity of wind. A strategy of maximum power point tracking has been used from so long and the fuzzy logic intervention will make this control system more intelligent. Simulation results are shown and discussed with the Matlab/Simulink simulation software to validate the proposed control strategy. This control strategy has a good performance in terms of dynamic response and output.

Key Words: Fuzzy logic controller (FLC), Pitch angle controller, THD (Total harmonic distortion), STATCOM (static synchronous compensator), Permanent magnet synchronous generator (PMSG), Insulated gate bipolar transistor (IGBT)



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**Abstract :**

This work represents analysis of a solar PV array and connection up to the grid with various components in details in different conditions. In this work PV array is connected with a boost converter and after that an inverter is required for the conversion to a well and smooth waveform of ac output voltage. Due to so many nonlinear characteristics of solar radiation the frequency and amplitude variation is the most common problem so a PWM based inverter is used in this model. A fault analysis also been done on this model. The output voltage & current as well as active and reactive power has been explored and analyzed. The simulation has been done on a Matlab software and simulation results obtained and analyzed.

Keywords :

Pulse Width Modulation (PWM), Insulated gate bipolar transistor (IGBT), THD (Total harmonic distortion), STATCOM (static synchronous compensator), PV (Photovoltaic), THD (Total harmonic distortion) SVC (Static VAR compensator)

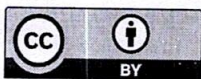
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DESIGN & ANALYSIS OF SOLAR PANEL ON WIND LOAD

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Abstract

Solar energy is the abundantly found renewable energy which is free of cost and the use of solar energy resources is increasing rapidly. Following this trend, the implementation of large area solar arrays is considered to be an essential. Many design approaches of the supporting structures have been presented in order to achieve the maximum efficiency. They are loaded mainly by aerodynamic pressures. Optimization plays very key role in product design and prevent un-necessary inventory satisfying the functional needs. But optimization with apt design helps to build efficient products in the everyday competing market. Stress analysis plays important role in optimizing the design. Due to the advance in computer based finite element software's design process is made simple by easier simulation methods fast replacing prototype built up and testing. In current work investigates the effect of real time wind flow on stress developed and torque generated. CAD model and drawings of solar panel support structure is developed using CREO 2.0 software with the help of existing model and CFD analysis is conducted using ANSYS CFX. In order to find the most optimum result several models in the form of different deflector design (flat, conical, circular, elliptical, and parabolic) were tested.

Keywords: *Wind Loads, FEA, Aerodynamic loads, ANSYS CFX, Renewable Energy.*

** Corresponding author*

1. INTRODUCTION

PV panels absorb sunlight as a source of energy to generate electricity. A photovoltaic (PV) module is a packaged, connected assembly of typically 6x10 photovoltaic solar cells. Photovoltaic modules constitute the photovoltaic array of a photovoltaic system that generates and supplies solar electricity in commercial and residential applications. Wind load plays a central role for two reasons: The wind subjects the solar PV modules, and the PV mounting system to excessive force and the wind load influences how close the solar PV panels must be mounted to the edges of the roof. The higher the wind load, the larger the distance to the roof edge should be chosen. The wind load is defined as the exerted loading which flows on the building (or even the solar PV modules). This effect is divided into the loading via the wind pressure and wind suction. The first, influences the wind-facing



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Title

Studies On Water Supply Distribution System of Mungeli Town (C.G)

Authors

Anil kumar choudhary

Abstract

Water is essential for the existence of life on earth. Also the quality of water used by living beings is equally important. Therefore, in order to ensure the availability of sufficient quantity of good quality water, it is necessary to plan and build suitable water supply schemes for the town, existing water supply system in Mungeli town is not sufficient to fulfill the water demand of the residents of the town for day to day use. Once the project is completed and in use, the town shall benefit in the following ways- Sufficient quantity and good quality water for drinking, cooking, washing, cleaning etc. shall be available to the residents of the town, Water shall be available for sanitation purposes, which shall decrease the diseases and so boost overall health conditions in the community, Water shall be available for plants and gardens which shall help reduce the environmental pollution and increase the beauty of the town, Easy availability of water shall attract small and medium scale businesses and hence increase the economic growth of the town.

Key Words

Water, Intake well, Raw Water Rising Main, Clear water Rising Main, Water Treatment Plant, Elevated Service Reservoir, Water supply Distribution network.

Cite This Article

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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SCHEMATIC PROCESS DESIGN OF SEWAGE TREATMENT PLANT AT DHAMTARI TOWN IN (C.G.)

Abhishek Sakalley¹, Dr. Vaishali Pendse²

Research Scholar¹, Associate Professor²
Department of Chemical Engineering

Raipur Institute of Technology (RITEE)

ABSTRACT

The main objective of this study is to carry out design of a sewage treatment plant for Dhamtari municipality, because it has been a developing place and due to rapidly increase in population, which in results huge quantity of sewage is produced. This project is focuses on quantity of sewage generation in Dhamtari area, to avoid the pollution of town through Sewage, to construct the sewage treatment plant. The main objective of the project is to treat the sewage of the town in such a way that treated sewage complies the parameters laid by MoEF (Ministry of Environment, Forest and Climate change). Objective is also of using treated sewage for non-potable purposes and thereby improving health and living standards of the people. Effort has been made to collect the sewage at a point due to which open flow of sewage is stopped. Which helps keeping environment less polluted. The scope of this project include identify Existing sewerage system, drains, disposal of sewage, calculation of present sewage generation and calculation of future sewage generation with the help of population forecasting, Compare different technologies for treatment of sewage and propose one of them. Design treatment unit and calculating its cost estimation. STP based on SBR Technology has been considered for treatment of sewage having Capacity of 19.60 MLD. The STP technology is being selected primarily taking into consideration less land requirement and to have effluent characteristics as per MOEF, so that treated water can be reuse or discharged into inland water ways which are being potential drinking water sources.

Keywords: Sewage, Dhamtari, Climate, Environment, Schematic, SBR Technology

1. INTRODUCTION

1.1 Background of study

Dhamtari is a district in the Indian state of Chhattisgarh. It was officially formed on 6 July 1998 from an amalgamation of Dhamma and Tarai (hence the name). The district headquarters is Dhamtari. Dhamtari dividing the Raipur district currently the capital of Chhattisgarh along with Mahasamund. Raipur district was broken up into the districts of Raipur, Mahasamund and Dhamtari. Dhamtari, Kurud and Nagari are included in Dhamtari district as tehsils, and blocks. The total area of the district is 2029 km² and it is 305 meters above the sea level. In the east, Satpura range is located. It is popularly known as Sihawa Pahad.

Article

Bioremediation techniques for the treatment of mine tailings: A review

June 2022 · *Soil Ecology Letters*DOI: [10.1007/s42832-022-0149-z](https://doi.org/10.1007/s42832-022-0149-z)

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Chatterjee****Biju Prava Sahariah**
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Abstract

Mine tailings (MTs) are the materials dumped on a mining site after mineral extraction, containing scattered traces of residual minerals, dug-up soils, and a disturbed ecosystem. Abandoned and untreated MT can pose threats to the surrounding ecosystem due to the presence of various primary and secondary toxic components, such as organic substances [PAH (polycyclic aromatic hydrocarbons), phenolics] and inorganic materials (sulfur, cyanide), metals and metalloids. All these pollutants originate from nature, and there is a possibility to remedy the problems generated from them. Conventional physical-chemical and biological techniques are often considered for treating the polluted environment and are recognized as having great efficiency. Physicochemical processes, such as incineration, and soil washing with solvents, encounter limitations of cost-effectiveness associated with further environmental concerns. The advantages accompanying bioremediation, the alternative to physicochemical treatment, are its cost-effectiveness, its environmentally benign nature, and complete mineralization of pollutants, instead of the generation of secondary toxic intermediates as in the case of the physicochemical process, make it more attractive for dealing with MT. This manuscript emphasizes use of basic treatment techniques and bioremediation mechanisms for dealing with pollutants from MT that target the revival of nature by utilizing natural agents, plants (phytoremediation), bacteria, fungi, and algae.

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Gene expression analysis and pharmacologic simulation of HbF expression an approach for the treatment of beta thalassemia

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(Corresponding author: Soumya Khare*)

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(Published by Research Trend)

ABSTRACT: Beta thalassemia is a globin gene synthesis condition in which the beta globin chain is not produced in red blood cells. With the development of biotechnologies, more research will be conducted to examine and improve novel therapies and natural cures to restart fetal hemoglobin (HbF) production for β -thalassemia patients. It is anticipated that more HbF inducing substances will eventually be discovered in traditional medicines and natural therapies around the world. Further research is necessary in this regard to explore further natural herbal remedies and to examine the effectiveness and safety of transitioning from laboratory to clinical use for those with β -hemoglobinopathies. The development of a new class of therapeutic agent consisting of some bioactive compounds such as flavanone for the treatment of beta thalassemia and the search for complementary and alternative medicine (CAM) that could prevent the regulated switch from fetal to adult globin gene expression. Flavones, for example, are a plant-derived chemical that has been shown to inhibit the HDAC2 enzyme and increase acetylation, thereby restoring cell homeostasis via the p38 MAPK pathway. HDAC2 could be involved in a complicated gamma globin suppression mechanism. In beta thalassemia, inducing HbF expression in erythroid cells is an important and additional treatment method. Dietary flavones can regulate HDAC activity, which could be useful in developing epigenetic treatment to control cell gene expression. As a result, it can be utilized to reactivate gamma globin expression through pharmaceutical means.

Keywords: Fetal Hemoglobin, Beta thalassemia, Histone Deacetylase, Flavanone, MicroRNA.

INTRODUCTION

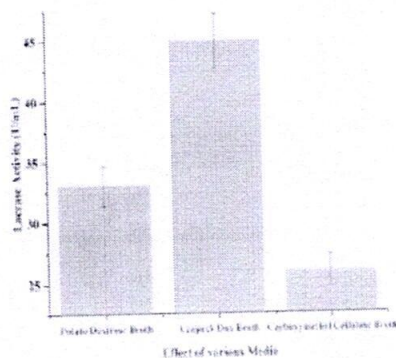
Two α globin and two β globin polypeptide chains make up hemoglobin. It's an iron-containing tetramer oxygen transport protein. The embryonic two distinct genes α_1 and α_2 globin, HBA1 (α_1), HBA2 (α_2) are encoded by the alpha globin chain locus on chromosomal number 16 in humans (Pace and Sima 2006). The β globin chain locus on chromosome 11 encodes the five distinct genes HBE1 (ϵ), HBG1 (γ_A), HBG2 (γ_G), HBD (δ), HBB (β). Beta Thalassemia is one of the most common types of this disease; Hemoglobinopathies are the most prevalent type of blood ailment caused by a mutation in the human beta globin gene HBB, which causes a change in hemoglobin structure (Ahmadvand *et al.*, 2014). The global yearly incidence of symptomatic cases and carriers of HBB at birth is estimated to be 1/100000, with a high prevalence in poor countries (Stamatoy 2005). Early embryonic globin ($\zeta_2 \epsilon_2$, HbF) converts to fetal hemoglobin ($\alpha_2 \gamma_2$, HbF) during fetal development, and subsequently fetal hemoglobin ($\alpha_2 \gamma_2$, HbF) begins to be replaced by adult hemoglobin ($\alpha_2 \beta_2$) after birth (Cavazzana 2018). According to the World Health Organization (WHO), 7% of the population is afflicted by these illnesses, and current studies estimate that between 300.000 and 400.000 infants are affected each year, with the prevalence expected to rise in the future (Forget 2013). Over 1000 haemoglobinopathies have

been found and classified to date (Goonasekera *et al.*, 2018). The high prevalence of hemoglobinopathies is assumed to be attributable to the carrier selective advantage against malaria. As a result of this positive selection, these disorders are quite common in the tropics and subtropics (Sub-Saharan Africa, the Mediterranean, and Southeast Asia), where malaria is still endemic. They have, however, become more common in non-endemic locations as a result of population migrations, making it a global health issue (Mabaera *et al.*, 2008). In normal conditions, HbF comprises less than 5% of the total hemoglobin at six month and features label by two years of age. HbF switching is regulated by epigenetically with include histone modification, DNA methylation alternation of higher order of chromatin structure and cytosine methylation increase with HBG association loss of surrounding on activation of histone modification and fetal erythroid cells influencing by the decrease in chromatin level. HbF is mostly produced in the liver and spleen, whereas HbA is produced in the bone marrow beginning during the 12th week of pregnancy and persisting throughout life. HbF consisting predominantly of γ chain, during the first 10 months after birth, the HbF level declines, it's limited to a fraction of erythrocytes called F-cells, and it's dispersed in a hepatocellular pattern (Stamatoy 2005). The synthesis of HbF and the expression of the fetal γ -globin gene have recently been increased by the


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Original Article

Laccase Production Under Optimized Parameters by *Aspergillus oryzae*, an Endophytic Fungus and their Application to Waste Water Treatment

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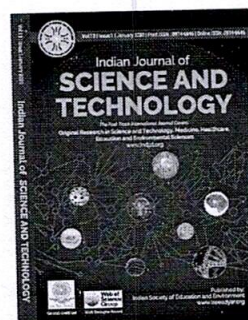
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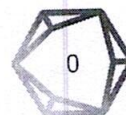
ABSTRACT

Objective: To isolate an endophytic fungal laccase producer from the *Ziziphus mauritiana* plant leaves in the surroundings of paper mill effluents and to study its role in the decolorization of synthetic dyes, removal of COD and phenol from industrial effluents. **Methods:** Laccase-producing endophytic fungi were isolated and screened by using an agar plate method. The positive isolates were identified, and laccase activity was determined by using spectrophotometric methods to monitor the oxidation of guaiacol and optimizing various parameters affecting laccase production. The molecular mass of the purified laccase enzyme was determined by using 12% SDS gel electrophoresis. Industrial effluents were treated with laccase to remove phenol, decolorize dyes, and reduce chemical oxygen demand. For the analysis, a spectrophotometric method was employed. **Findings:** One of the most effective endophytic fungal isolates, *Aspergillus oryzae*, was screened as a maximum laccase producer. The optimal pH of 6, temperature of 35 °C, inoculation period of 8 days, and the inoculum number of 3 discs/100 ml of Czapek Dox Broth in submerged culture were determined for the maximum laccase production. Sucrose and sodium nitrate, as carbon and nitrogen sources, considerably assisted laccase production. The molecular weight of the isolated laccase from A.



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Experimental Studies on Hybrid Fiber Reinforced Concrete Utilizing Polypropylene Fiber and Natural Fiber

Ms. Urwashi Chandrakar¹, Ms. Nayanika Dasgupta², Dr. Vaishali Pendse³, Dr. D. Mukhopadhyay⁴
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Abstract: The construction industry is responsible for the depletion of large amounts of non-renewable resources. This activity generates not only millions of tons of mineral wastes but also carbon dioxide gas emissions. More building materials based on renewable resources such as natural fibers are needed. This chapter discusses the utilization of natural fibers for concrete reinforcement. It covers the compatibility between the fibers and the cement matrix and also how the fibers influence cement properties. It also includes the properties and durability performance of concrete reinforced with natural fibers. This paper presents an overview of the effect of polypropylene (PP) fibers on various properties of concrete in fresh and hardened state such as compressive strength, tensile strength, flexural strength, workability, bond strength, fracture properties, creep strain, impact and chloride penetration. The role of fibers in crack prevention has also been discussed.

I. INTRODUCTION

One of the popular materials utilized in the construction is concrete. Concrete is generally considered to be the material which resists the compressive stress and it becomes weak under tensile stress. The concrete tends to crack even at minimal loads when the concrete member gets loaded due to the low tensile strength. The occurrence of failure gets triggered due to the widening of cracks under further dynamic loading. The property of ductility gets affected due to the widening of cracks in the concrete structural member. By the incorporation of single type of fiber in the concrete, the characteristic of being ductile and weak due to the tensile stress and impact loads can be avoided. Thus, the concrete made of fiber is called Fiber Reinforced Concrete. By providing fiber as the secondary reinforcement adds less value to the concrete and does not fulfil the purpose completely. The fibers in the concrete not only enhances the desired engineering properties but also enables the concrete to be used as the most suitable material for wide varieties of application.

II. MATERIALS AND METHODOLOGY

A. Materials

The materials used in the preparation of HFRC are cement, sand, aggregate, water, polypropylene fiber, sisal fiber, banana fiber and superplasticizer (naphthalene sulphonate). The superplasticizer dosage used was 0.5% weight of cement throughout the experimental study.

B. Mix Proportions And Casting Procedure

Mix proportion for CC of M30 grade was 1:0.75:1.5 (cement: sand: aggregate). For making HFRC different fiber contents were added in 0.5, 1, 1.5 and 2% by weight of concrete. A constant water cement ratio of 0.43 is used. For preparing specimen ingredients are mixed in various proportions and Specimen are designated as follows:

CC - Conventional Concrete

HFRC 1 - Concrete with 1% Polypropylene fiber and 1% Sisal fiber

HFRC 2 - Concrete with 0.5% Polypropylene fiber and 1.5% Sisal fiber

HFRC 3 - Concrete with 1.5% Polypropylene fiber and 0.5% Sisal fiber

HFRC 4 - Concrete with 2% Sisal fiber only

HFRC 5 - Concrete with 2% Polypropylene fiber only

HFRC 6 - Concrete with 0.5% Polypropylene fiber and 1.5% Banana fiber

HFRC 7 - Concrete with 1.5% Polypropylene fiber and 0.5% Banana fiber

Study on Utilization of Demolished Concrete Waste as Coarse Aggregate in New Construction

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Abstract: In present day scenario Demolished Concrete waste handling and management is challenging job for all civil engineers all over the world. Construction and demolition wastes constitute one of the major components of wastes generated worldwide. Very large quantities of aggregates are used in concrete production and in construction. When the useful life of the structure is over it will be demolished and all the demolished wastes just find their way to landfills. Finding large areas for landfills is becoming very difficult. On the other hand, continuous extraction and quarrying of natural aggregates for construction is causing depletion of natural resources. The recycling of demolished construction waste in to aggregates to be used in new engineering application provides a promising solution to both the problems. Recycling the Demolished Concrete will reduce the environmental pollution and protects the natural resources. In this work the usability of demolished waste as coarse aggregates in new concrete is attempted. This research is focused on utilizing the Demolished Concrete waste and reducing the generation of construction waste, and collecting Demolished Concrete from the demolition of building at site, Crushing Demolished Concrete waste and separating different sizes using sieve analysis, by collecting various sizes of Aggregate. This experimental investigation involves evaluating the properties of the constituents of concrete including the demolished concrete wastes which shall be used as coarse aggregates in new concrete with the aim of producing high strength concrete. The results of this experimental study are aimed at examining the properties and strength of recycled aggregate concrete made from different replacement ratios of recycled aggregates from natural aggregates and to evaluate the strength of recycled aggregate concrete to check its usability as structural concrete. In recent years demolished concrete waste handling and management is the new primary challenging issue faced by all the countries. It is very challenging and hectic problem that has to be tackled in an indigenous manner, it is desirable to completely recycle demolished concrete waste in order to protect natural resources and reduce environmental pollution. In my research paper an experimental study is carried out to investigate the feasibility and recycling.

Keywords: Demolished Concrete, Construction Waste, Natural Aggregate, Recycled Coarse Aggregate, Compressive Strength, Flexural Strength



Experimental Analysis on Environmentally Friendly Fuel Obtained from Waste

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ABSTRACT

The amount of waste produced by human activities is constantly increasing as a result of social development and industrial evolution. The amount of municipal solid waste, (MSW), is expected to rise by 5% annually as the population grows. The MSW has a number of negative effects on the environment, including its contribution to the worsening climate crisis, its effect on wildlife, the natural environment, and humans. Therefore, proper management one that is effective, eco-friendly, and cost-effective is required to address this issue. The Indian government has established numerous regulations for the proper management of MSW. In this regard, the current paper discusses about solution of one of the major components of MSW i.e. waste tyre. In this paper the conversion of waste tyre into fuel, its utilization, management policies, challenges encountered, and prospects for the future are discussed.

Keywords: Economy; Pollution; Population; Waste Management; Waste to Energy

Introduction

The amount of waste produced by human activities is constantly increasing as a result of social development and industrial evolution. Our ecology has been harmed as a result of the non-sustainable disposal of these wastes. Wastes that are not biodegradable, like plastic, tires, fibers, glass, and so on are not being as expected reused and possessing the oceans and landfills. A recent study found that only 9% of the 6.3 billion metric tons of plastic waste in the world was recycled, 12% was burned, and 79% was dumped in landfills. Environmental Protection Agency-provided data that in comparison to 2015, the amount of municipal solid waste (MSW) produced in the United States in 2017 was 267.8 million tonnes, or 5.7 million more. As the world's population grows, so does the amount of waste produced by other nations. India, a nation with a high population density, produces approximately 42 million tons of municipal solid waste annually, or 1.15 lakh metric tons per day (TPD). Overall, the amount of waste produced has a number of negative effects on the environment, including its contribution to the growing climate catastrophe, its effect on wildlife, the natural environment, and people.

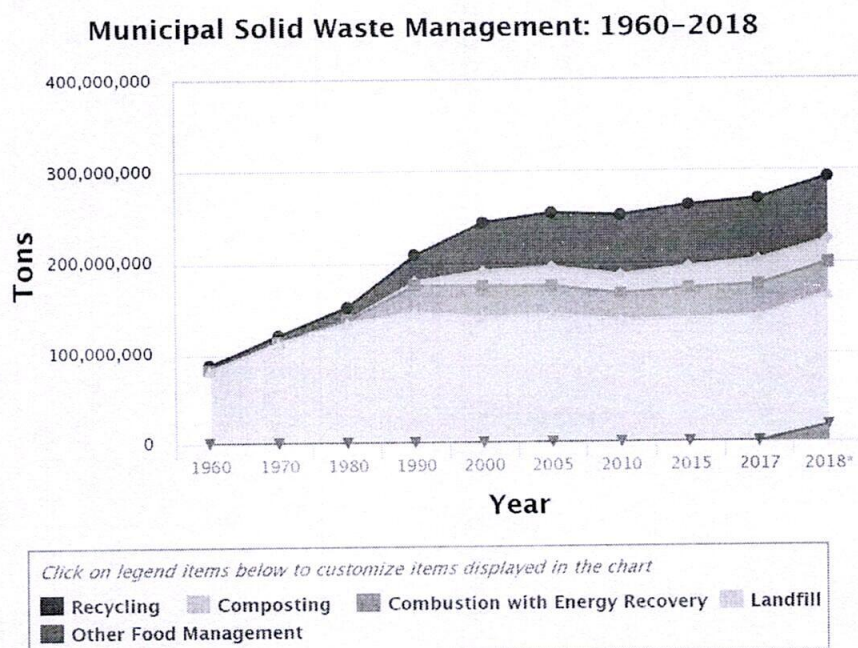


Fig.1 Municipal solid waste management [1]



Portable and Natural water purifier A review

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ABSTRACT

Rural population of India is suffering from water pollution. Less than 50 percent of population in India has access to safely managed drinking water whereas in India excess of fluoride and arsenic has affected 19 states and also depletion of ground water quality is of major concern. There are various methods available for water purification but they are not as much as useful for wide range people. In the earlier time there are various purification processes developed to get pure drinking water but there are so many drawbacks such as economy, unsuitability, use of chemicals, unavailability of energy, environmentally unfriendly so in this research paper we will review some of the old research papers to identify the problems and solution.

INTRODUCTION

Water is a basic renewable energy source available on this planet not only for human beings, water is necessary for the functioning of all life forms that exist on the earth. However, despite its vast abundance, water is very much limited. The biological and chemical change in the quality of water due to the presence of contaminants in water, there is an urgent need to look into the measures to control the water from being polluted.

Water is a basic necessity for the survival of human beings. As India grows and urbanizes, its water bodies are getting toxic. It is estimated that around 70% of surface water in India is unfit for consumption. Every day, almost 40 million litres of wastewater enters rivers and other water bodies with only a tiny fraction adequately treated. The quality of water is decreasing and the demand for pure water is increasing day by day. To buy a water purifier is a bit costly. To get a pure drinkable water without contaminants which will be good for health.

Water purification is the process of removing undesired chemical, biological, contaminants, suspended solids and gases from contaminated water. It is very important to purify the water before it is used for domestic purposes. To find the best quality water purifier, to improve the water quality of wastewater, to remove all the contaminants from water and to make the water usable for other purposes and to prevent harmful diseases, to attain or to improve the quality of water was done by using only natural material without using any of the chemical material.

Microbiological contaminants are generally the most important to human health as this leads to infectious diseases which affect all population groups. Many of which may cause epidemics and can be fatal. Chemical contamination which has the exception of a few substances such as cyanide and nitrate tends to represent a more long-term health risk. The charcoal is used as a good adsorbent for removing the heavy metal pollutants in water. Substances in water which affect the clarity, color or taste of water may make water objectionable to consumers and hence the ability to recover costs removing undesired chemicals, materials and biological contaminants.

The objective is to determine the low cost and eco-friendly water purifier by using biodegradable material for treatment. This water is preferred for domestic purpose as drinking water by removing undesired chemicals, materials and biological contaminants. Various research works proposing the work are

Ashwini Yevate, Prof Sachin Mane [1] Low Cost Water Purifier By Using Natural herbs.

Proposed Low-cost water filter mainly focus on filtration of water containing fluoride. However further work can be extended to improve the efficiency of filter bed for other parameters.

V.S.Gayathri, K.Yamuna [2] Experimental study to evaluate the efficacy of herbal treatment for waste water.



STUDIES ON THE EFFECT OF ETHANOL- GASOLINE BLENDS AND CATALYTIC CONVERTOR ON EXHAUST EMISSION IN INTERNAL COMBUSTION PETROL ENGINE

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ABSTRACT

With increasing population and development in urban as well as rural regions, the utilization of all kinds of automobile Vehicles/Motor Cycles have been increased in multi folds. It is estimated that in India, about 50 million Vehicles manufactured per annum and globally it reached to more than 700 millions auto-vehicles yearly. All vehicles, except the modern electric version, contribute and accelerates the Air Pollution by emission of Carbon Monoxide (CO), Carbon Dioxide (CO₂), Hydrocarbon (HC), Sulphur Oxides (SO_x), Lead (Pb) and Particulate Matters (PM), in hazard₀₁ quantity and admixed with the Atmospheric Air, Since these Vehicles utilizes fossil fuels, Petroleum/Gasoline/ Diesel. Also, the Internal Combustion (IC) engine generates Gaseous Pollutant materials, disseminated to the Atmosphere and degrade the Air Quality. The polluted Air severally affect all livings health of the society. The aim of the study is to determine and evaluate experimentally, the emission of exhaust combustion by Vehicles Motor Cycles on Standard Conditions and performance trends by utilization of Copper metals Catalyst on exhaust point and Ethanol blending with Petrol Fuel in Various Combination of admixtures. Under Methodology the experi-mentization carried out by utilizing catalyst materials Silica Ball, Alumina Ball, Copper Wire and Charcoal and recorded by Emission Analyzer (PUC Machine) and analyze CO, HC, CO₂, O₂ by Analyzer, measures Gases emitted from tail pipe, Similarly the admixture of Ethanol blends with Petrol/Gasoline in various proportion leads Fuel performance of CI/SI Petrol Engines.

The study reveals that the Copper Catalyst is found most effective in reduction of Exhaust Emission in comparison to other catalysts eg. Silica Ball, Alumina Pallets and Charcoal blankets. It reduced Exhaust Emission of Hydrocarbon (HC), 188 ppm, Carbon mono-oxide (CO) – 2.62 (% Vol.), Carbon Dioxide (CO₂) 4.4 (% Vol.), Likewise, the utilization of Ethenol as Blended Fuel with Petrol/Gasoline in various proportions 00% to 50% at interval of 10% exhibits the significant reduction of Hydrocarbon Emissions, Carbon monoxide

GIS BASED ANALYSIS OF UNDERGROUND WATER PARAMETERS OF AARANG AREA

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ABSTRACT

Groundwater is getting contamination rapidly due to various anthropogenic activities. In this direction, the assessment of water quality analysis is the basic requirement for nurturing human being and its evolution. Water Quality Index (WQI) parameter has been widely used in determining water quality globally. Conventional method used for computing WQI is tedious and takes longer time because it involved processing for larger datasets. The present investigation aims to provide the suitability of groundwater in the specified region using GIS method for drinking and irrigation purposes. To validate the obtained results from the present approach, ground water quality data collected and analyzed from the tank area in Aarang district, Chhattisgarh, India have been used. The present approach output can be beneficial to the administrators in making decisions on groundwater quality but also gaining insight into the tradeoff between system benefit and environmental requirement.

Keywords: WQI, Area, Drinking Water Quality, Irrigation Water Quality, Groundwater Quality Assessment

I. INTRODUCTION

Groundwater is a primary source of drinking water in our country but day by day increment of groundwater contamination due to various anthropogenic activities and anthropogenic activities makes the life difficult especially for the rural people. Yates (1992) used LTT to solve one-dimensional generalized Advection Dispersion Equation (ADE) in a semi-infinite domain. Logan (1996) extended the work of Yates (1992) using scale-dependent dispersion and periodic boundary conditions. Aral and Liao (1996) and Batu (1996) solved two-dimensional and three-dimensional generalized ADE respectively. Fractional ADE has been incorporated to study the impact of groundwater contamination (Benson et al. (2000); Schumer (2001); Marnica (2009); Pandey et al. (2012); Singh and Chatterjee (2017)). In the above-mentioned papers the contaminant concentration has been taken care of but the specific contaminant concentration for one element and the overall quality of the groundwater is not predicted. Often it will become difficult to predict the contaminant concentration for certain zone using ADE. The sufficient quantity and appropriate quality of freshwater is one of the very basic requirements for sustaining human life and civilization. The miraculous achievement of science and technology has increased the rate of utilization of groundwater for domestic, industrial and irrigation purposes multiple folds throughout the world over the last few decades. Excessive use of chemicals and pesticides for agricultural purpose often results in leaching and mixing into the groundwater. The rapid growth of urbanization in India, has influenced the accessibility and quality of groundwater because of the over exploitation and inappropriate and unscientific waste disposal. As indicated by World Health Organization (WHO), use of inappropriate or polluted water causes around 80% of total diseases in human beings. Furthermore, the quality of contaminated groundwater cannot be improved or reestablished by preventing contaminations from source. Therefore, understanding and determining the water quality is imperative in the study of water resources and environmental engineering. According to World Health Organization (WHO), the use of contaminated water causes around 80% of total diseases in human. Additionally, experts from all disciplines have approved that factor such as urbanization, industrialization, poor land organization, and environmental pollution-imposed bonus stress on irrigation production. These factors have a significant effect in terms of both quantity and quality of water for irrigation. Water Quality Index (WQI) is regarded as one of the most efficient ways for the rating and classification of water quality for drinking and irrigation purposes. The study area Arang, also known as "The town of temples" of Chhattisgarh, is a block and a Nagar Palika in Raipur District in the state of Chhattisgarh India. It is part of Mahanadi Basin. The minimum and maximum

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Co-Processing With Alternative Fuel Resources in Cement Industry

Author Name : Deeksha Singh, Dr. Vaishali Pendse, Dr. Dehabrata Mukopadhyay



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ABSTRACT

Apart from direct effects of replacing carbon-intensive fossil fuels with lower-carbon-intensity of alternative fuels, there can also be indirect benefits. Waste materials disposed of via landfill or by incineration give rise to their own greenhouse gas emissions, such as methane in landfill gas. By using these materials as alternative fuels in cement plants, harmful decomposition-related emissions are avoided. Use of waste as an alternative fuel in cement kilns contributes to lowering overall CO₂ emissions by replacing fossil fuels and their related CO₂ emissions with waste materials, which would otherwise have to be incinerated or land filled with corresponding emissions of greenhouse gases. Typical alternative fuels classed as waste products include waste tyres, waste oil and solvents, pre-treated industrial and domestic waste, and plastic, textile and paper waste. There may also be transport-related benefits if local alternative fuels replace imported fossil fuels.

This study gives a review of various wastes being co-processed with coal in the kiln to provide thermal energy for the process of making clinker in the cement industry worldwide. Wastes such as solid waste, used tyres, agricultural waste, bone & meat meal, wood waste, solvent etc are being used along with coal. The use of waste helps in reducing the carbon emissions and the problem of waste disposal is also solved. For this purpose, treated waste is collected and transported from waste treatment plants to the cement industry.

Key Words: - Alternative fuel resources, co-processing, sustainable.



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Title

Rural Areas Faecal Sludge Management Baseline Study

Authors

Jitendra Katre
Vaishali Pendse
Debabrata Mukhopadhyay

Abstract

In especially in peri-urban and rural areas, faecal sludge treatment or septage management is widely acknowledged as an efficient and appropriate approach to scale rural sanitation systems to provide safe sanitation. As implementation moves forward, data-based evidence is surfacing that highlights the local issues and the necessary strategy to solve them. This study was carried out to give information for Faecal Sludge Management (FSM) planning for a peri urban area in the state of Chhattisgarh. Its findings, problems, and potential future directions are presented in this report. With the objective of understanding the nature of containment structures and on-ground desludging practices, 2,803 households and 57% establishments were studied in Patora Cluster, a non-sewered rural Panchayat in Durg District, Chhattisgarh, to provide evidence for effective decision-making. The study showed wide variations in the sizing and design of the containment systems, which, when combined with the irregular frequency of desludging, has implications for FSM planning by panchayat bodies. This study also emphasizes the methodological challenges associated with researching containment systems, and the paper includes baseline data on sanitation in five villages in the Durg area of Chhattisgarh. At the conclusion of this paper, the decision-making inputs are compiled in terms of treatment, desludging, and suggested regulations.

Key Words

Data gathering, Research, analysis, planning, and decision-making

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Chapter 2

Systems Biology Approach to Analyze Microarray Datasets for Identification of Disease-Causing Genes: Case Study of Oral Squamous Cell Carcinoma

Jyotsna Choubey, Olaf Wolkenhauer, and Tanushree Chatterjee

Abstract

The discovery of potential disease-causing genes can aid medical progress. The post-genomic era has made this a more difficult task. Modern high-throughput methods have not solved the problem of identifying disease genes. Conventional methods cannot be used to investigate many rare or lethal diseases. Monitoring gene expression values in different samples using microarray technology is one of the best and most accurate ways to identify disease-causing genes. One of the most recent advances in experimental molecular biology is microarrays, which allow researchers to simultaneously monitor the expression levels of thousands of genes. Statistical analysis of microarray data might aid gene discovery by revealing pathways related to the target gene and facilitating identification of candidate genes. Systems biology, an interdisciplinary approach, has emerged as a crucial analytic tool with the potential to reveal previously unidentified causes and consequences of human illness. Genetic, environmental, immunological, or neurological factors have been implicated in the developing complex disorders like cancer. Because of this, it is important to approach the study of such disease from a novel perspective. The system biology approach allows us to rapidly identify disease-causing genes and assess their viability as therapeutic targets. This chapter demonstrates systems biology approaches to identify candidate genes using public database. Oral squamous cell carcinoma (OSCC) is used as a model disease to show how systems biology can be used successfully to identify and prioritize disease genes.

Key words Microarray, System biology, Gene expression, Therapeutic targets, Oral squamous cell carcinoma

1 Introduction

In biomedical research, one of the most important and fundamental challenges is isolating disease genes from the human genome. The identification of these factors has the potential to enhance both the process of diagnosing diseases and treating them. It is common knowledge that the progression of certain diseases, such as cancer, is accompanied by change in the expression values of particular genes. For example, mutations can turn normal cells into cancerous



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NUMERICAL ANALYSIS OF PLATEFIN HEAT EXCHANGER AT CRYOGENIC TEMPERATURE

DOLLY BHASKER

(M.Tech. Research Scholar)

SUDHIR SINGH RAJPUT

(Assistant professor, RITEE)

Abstract: The objective of this study is to provide experimental data that could be used to predict the effectiveness and performance of a plate fin heat exchange for low temperature conditions. In this study, plate fin heat exchangers are tested with a variation of the mass flow rate. Plate fin heat exchangers are widely used in cryogenic liquefaction. Such heat exchangers have high fin density and offer narrow passages for the fluid flow which often leads to significant pressure drop. The stringent requirement of high effectiveness and excessive pressure drop occurring in plate fin heat exchanger makes it necessary to test the heat exchanger before using in any system. An Numerical setup is made in the laboratory to test the plate fin heat exchanger at cryogenic temperature. In this setup compressed Nitrogen gas will be passed through the plate fin heat exchanger as hot stream. The hot stream gas will be passed through a liquid Nitrogen coil heat exchanger to cool the high pressure gas. The cold gas is then passed as a reverse stream of the plate fin heat exchanger. The effectiveness and pressure drop data is simulated with ANSYS software and also compared with other correlations to confirm the accuracy of the experiment.

Key words: Plate fin heat exchangers, Numerical setup, ANSYS software.

I. Introduction:

Heat transfer in heat exchanger is based on laws of thermodynamics mostly the second law of thermodynamics i.e. heat flows from one object of high temperature to another object at a lower temperature. The application of the heat exchangers is very vast and is widely used for the transfer of heat in industrial and in house hold equipment's such as in refrigeration and air conditioning, process and distribution plant, manufacturing industry, cryogenic and air separation plant etc.

However, especially in cryogenics, a wider range of heat exchangers is used. It is one of the most important equipment of any liquefaction process in the industry. The heat exchangers are relevant for liquefaction to storage, loading and transportation. The thermal energy is transferred by the fluid from one surface to another surface predominantly by the phenomena of conduction and convection.



Formulation of Mathematical Model for Transient Belt Stretch for Full Load Starting of Belt Conveyor System

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Abstract. Belt is main component of belt conveyor. Main reason of belt failure is excessive stretch occurs during starting of the system. In this paper, dynamic belt model is simulated with Lagrange's approach and stretch variation analysed for transient period. A mathematical model is formulated for transient picks of stretch in the belt while full load starting process of belt conveyor. Five different belt conveyors data is used for modelling. A relation established between belt stretch value and thirty-eight independent input variables which includes, geometrical, material and process parameters of belt conveyor system. Mathematical model is established by multivariable regression modelling technique. Model found 93.3% reliable for the simulated results. Validation of proposed model carried out by artificial neural network technique, and correlation of 0.9793 found with ANN predictions.

INTRODUCTION

In the belt conveyor system, belt accounted 30-50 % of the total cost of system. Remarkable stretch occurs in the belt [1] during starting of the system, which is main reason for failure of this component. Stretch may be severe when belt started at fully loaded condition. Such undue condition occurs after any power failure or break down while operation. Design of belt system is based on static analysis [2] and engineer uses 8-10 safety factor for belt conveying system. A statically derived formula is use to estimate elongation of the belt during operation, and accordingly stroke length for take-up adjusted [3]. Belt conveyor system is more complex electro-mechanical system so, static analysis is not sufficient to explain complete behaviour of system. Dynamic analysis of belt conveyor gives more close to real mechanical characteristics of the system. Various dynamic models are proposed for the continuous system. Literature survey of the belt conveyor dynamics found little work on the belt stretch. Analysis of dynamic stretch during starting would facilitate estimation of transient stress variation in the belt and more real stroke length space calculation of take-up unit.

In this paper EP (Nylon -Polyester) belt is considered for the analysis [4] which is mostly preferred fabric belt. Belt is modelled as continuous series of viscoelastic element [5][6]. For each belt segment, Equivalent mass, conveying resistance, spring and damping constant calculated based on literature study [7][8]. Dynamic equation of motion for complete belt system is then simulated in Matlab/Simulink software. Simulation results shows, dynamic



IDENTIFICATION OF IMPORTANT FACTORS OF FLOW FORMING OPERATION IN BRASS UTENSIL MANUFACTURING

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Abstract

In brass utensil manufacturing, most of work is performed manually and repetitive in nature by unskilled workers with help of different tools and semi-automatic machine. The method adopted for flow forming operation is not scientific approach. Entire operations are falling under the class of man machine systems.

This paper investigates most influenced input variables like work piece parameter, tooling parameter, process parameter, machine parameter and extraneous factor are directly involved with response variables like accuracy, surface finishing and cycle time has measured which decides quality, performance of flow forming operation in brass utensil manufacturing. These identified factors are used to design the mathematical model for this operation by applying theories of experimentation. The same models are simulated for collected data by statistical tool.

2020 Mathematics Subject Classification: 74-XX.

Keywords: flow forming, performance variable, influencing variables, brass utensil.

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OPTIMIZATION OF FIELD DATA BASED MODEL FOR FLOW FORMING OPERATION IN BRASS UTENSIL MANUFACTURING

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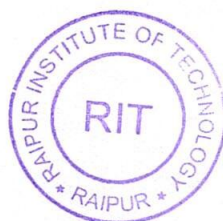
Abstract

Flow forming is an oldest method of chip less metal forming process for the production of hollow, axially symmetric sheet metal components. In brass utensil manufacturing, most of work is performed manually and repetitive in nature and entire operations are falling under the class of man machine systems. This research identified most influenced input variables like work piece parameter, tooling parameter, process parameter, machine parameter and extraneous factor on flow forming operation in brass utensil manufacturing. Also certain response variables viz. accuracy, surface finishing and cycle time has measured which decides quality, performance of flow forming operation. The mathematical model developed for the phenomenon represents the interaction of various independent variables by applying theories of experimentation. An attempt is made to optimize the process response variables by use of statistical tools are to be applied for field data based model.

2020 Mathematics Subject Classification: Primary 62J02; Secondary 14A21.

Keywords: Flow forming, Optimize, Response variables, Brass utensil.

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Article

Security Verification of Social Network Model Using Improved Three-Party Authenticated Key Exchange Protocol

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Abstract: The proper verification of users plays a vital role during communication over a social network to protect the personal data of users. Multifarious protocols have been implemented to secure the confidential data of the users, but these protocols have various limitations and are incapable of providing secrecy of data against various attacks, such as replay and cryptanalysis attacks. In this article, the authors proposed a novel method for security verification of the social network model using an improved three-party authenticated key exchange (3PAKE) protocol based on symmetric encryption and (ECC) elliptic curve cryptography. The outcome of the paper demonstrates that our proposed algorithm provides the desired secrecy to the confidential data exchange over social networks in real-time and consumes less time in comparison to existing protocols. Our protocol consumes a search time of 0.09 s, overall communication steps took 2 during the verification, and depth plies was 3 along with 20 visited nodes. The 3PAKE protocol has been considered a suitable approach for social network secrecy during information exchange between user and server, thereby providing greater secrecy to the user in data exchange over social networks and more robustness against multifarious known attacks, such as cryptanalysis and replay attacks in real-time.

Keywords: 3PAKE; elliptic curve cryptography; symmetric encryption; social network; security verification

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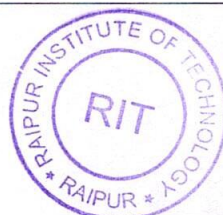
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1. Introduction

Due to the continuous technological advancements in the area of computer networks as well as information technology, the accurate authentication of users over communication networks is becoming very necessary to secure the essential data of the users during communication. Credential security methods provide easy as well as pragmatic alternatives to person recognition since they enable users to create as well as maintain their personal credentials unescorted by the need for external equipment [1]. Individuals, on the other hand, consider it harder to remember lengthy randomized sequences. Instead, individuals choose normal linguistic words that individuals may immediately identify. Natural linguistic terms, namely credentials, on the other hand, are taken from quite a small range of alternatives but instead are thus vulnerable to credential cracking attempts [2–4]. To maintain the secrecy of the confidential dataset, there is a requirement of novel protocols which could offer the desired secrecy to the secure information in real-time communication as means of the authenticated server [5]. Although, multifarious investigators



A Secure Three-Party Authenticated Key Exchange Protocol for Social Networks

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Abstract: The 3PAKE (Three-Party Authenticated Key Exchange) protocol is a valuable cryptographic method that offers safe communication and permits two diverse parties to consent to a new safe meeting code using the trusted server. There have been explored numerous 3PAKE protocols earlier to create a protected meeting code between users employing the trusted server. However, existing modified 3PAKE protocols have numerous drawbacks and are incapable to provide desired secrecy against diverse attacks such as man-in-the-middle, brute-force attacks, and many others in social networks. In this article, the authors proposed an improved as well as safe 3PAKE protocol based on the hash function and the symmetric encryption for the social networks. The authors utilized a well-acknowledged AVISPA tool to provide security verification of the proposed 3PAKE technique, and findings show that our proposed protocol is safer in opposition to active as well as passive attacks namely the brute-force, man-in-the-middle, parallel attack, and many more. Furthermore, compared to other similar schemes, the proposed protocol is built with a reduced computing cost as our proposed protocol consumes less time in execution and offers high secrecy in the social networks with improved accuracy. As a result, this verified scheme is more efficient as well as feasible for implementation in the social networks in comparison to previous security protocols. Although multifarious authors carried out extensive research on 3PAKE protocols to offer safe communication, still there are vital opportunities to explore and implement novel improved protocols for higher safety in the social networks and mobile commerce environment in the future in opposition to diverse active as well as passive attacks.

Keywords: AVISPA tool; 3PAKE protocol; hash function; symmetric encryption; social networks

1 Introduction

Due to fast advancement in information as well as diverse networking technologies, pragmatic client authentication plays a vital role to safeguard services and multifarious resources from being



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Malaria Detection from Blood Cell Images using Convolutional Neural Network Model

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Abstract

There are various ensemble models used in healthcare domain for malaria detection but detection on the basis of presence of blood cell by using conventional neural network based models are very effective and useful. In this paper, we propose a model that is named as neural network model to detect the presence of malaria parasites in human blood cell pictures. In this paper an artificial intelligence based convolutional neural network (CNN) model has been developed to categorize the red blood cell into malaria infected and uninfected types of classes. Performance of the model has been evaluated using Standard evaluation measures against the public data set of malaria blood cell images obtained quantitative scores confirms its performance which outperforms the available state-of-the-art techniques. In the presented paper a CNN based model has been proposed which has least design cost and capable to achieve high performance in terms of various standard evaluation metrics.

Keywords—Malaria parasite; Red Blood Cell; Computer-Added-Diagnosis; Medical Imaging; Deep Learning; Convolutional Neural Network

Date of Submission: 15-07-2022

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I. Introduction

Malaria is a life-threatening infection caused by the plasmodium parasite, which is spread via female anopheles mosquito bites. According to the WHO's World Malaria Report 2019, there were an estimated 405,000 malaria-related death in the previous year. The condition can be cured, but early discovery is crucial. Existing method known as Microscopic identification of infected cells is one method used to identify malaria in a Research Lab.

The model is both overpriced and monotonous. In 2018, the WHO African Region recorded 93 percent of all malaria cases worldwide. In addition, the region has one of the lowest per capita incomes in the world.

A quick, less expensive, and more reliable alternative to microscopic malaria testing has been proposed in this model. Malaria is a parasitic disease produced by the plasmodium parasite, which spreads throughout the human body via female anopheles bites, which can then be passed on to others by mosquitoes that bite malaria patients.

It cannot, however, pass from one person to another. Malaria can be transmitted from mother to foetus, but it can also be contracted through blood transfusions or sharing syringes. High fever, chills, septicemia, pneumonia, gastritis, enteritis, nausea, vomiting, and mortality are just some of the symptoms that an infected person may experience.

Malaria is commonly found in areas with hot, humid temperatures near natural water sources, which serve as the breeding ground for anopheles mosquitoes, which transmit dangerous diseases. In order to fulfill purpose of malaria detection,

This paper gives an overview of the use of different techniques and models that can be used for malaria detection accurately and efficiently. Combination of various techniques and models has been used in various expert system. This paper also conveys information related to the efficiency of the model proposed by different researchers.

II. Literature Review

a. Using Image processing based approaches

Roy et al. [1] utilized traditional image processing based mechanism such as color based pixel discrimination method, segmentation process, watershed segmentation to detect malaria parasite from thin smear blood images [1]. In this work author used image segmentation smoothing processing technique to find out malaria parasite in image obtained from giemsa stained peripheral blood fragment. Additionally image processing in any other detection in blood sample had also been computed. Similarly padmapriya et al. had




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Comparative study of deep learning models on face recognition

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Abstract: In the fields of image analysis and computer vision, face identification poses a difficult problem. This work, Face Recognition, analyses these problems and uses them to identify or verify a person using deep learning techniques. A face in an image is automatically found via facial recognition. 40 attributes and datasets with a maximum of 200,000 faces were used in this study on celebrity faces. This dataset features a variety of angles, backgrounds, and facial expressions. Using VGG16, AlexNet, and GoogleNet, the technique recorded test accuracy of 96.15 percent, 96.81 percent, and 97.73 percent.

Index Terms - Transfer Learning, Face Recognition, VGG16, Alexnet, GoogleNet, Classification Model, celebrity face dataset.

I. INTRODUCTION

Face detection technique is utilised extensively in the field of vision because it has a distinctive stability and flexibility compared to the identification of fingerprints and other technologies [1]. Humans perform face recognition on a daily basis, but developing the same computer system and increasing precision is an ongoing effort. The study of face recognition dates back to the 1950s [2]. Visual pattern recognition struggles with face identification. When viewing visual information, people frequently notice visual patterns. The brain interprets this information as logical thinking. A computer is a pixel in a single matrix, whether it be for video or images [3].

In the fields of image analysis and computer vision, face identification poses a difficult problem. This work, Face Recognition, analyses these problems and uses them to identify or verify a person using deep learning techniques. A face in an image is automatically found via facial recognition. 40 attributes and datasets with a maximum of 200,000 faces were used in this study on celebrity faces. This collection of facial expressions, perspectives and backgrounds.

The machine must identify what a particular bit of data in the data means. This is a challenging diagnostic issue for the identification of visual models. Knowing which information relates to which component and component with regard to facial recognition. How can we confirm or establish the identification of the person in the photo given the provided face photo and celebrity photo site? This is a significant issue with facial recognition [3].

Complex face traits can be detected using deep learning-based methods [4]-[5]. The in-depth learning-based strategy achieves notable success in resolving issues that have for years hampered the best efforts of the intelligence community is a factor that pertains to many commercial and government research fields and has shown to have a complicated architecture in high-quality data. Convolutional Neural Network (CNN), Stacked Auto encoder [6], and Deep Belief Network (DBN) [7] are a few in-depth learning algorithms that can be utilised to tackle this problem. CNN is the most used picture and visual algorithm [8].

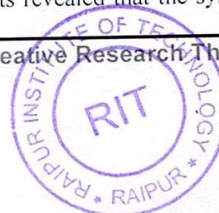
II. RELATED WORK

For facial recognition categorization, a few have utilized a variety of Machine Learning, DeepLearning, and Hybrid algorithms. A couple of the papers are listed below :

Di Wang et al, have created a convolutional neural network-based algorithm for facial recognition. Every data set is gathered locally. We must personally review some of the inappropriate images when gathering data sets online, choose three Chinese characters as our research subjects, gather 200 images for each character, and then gather the recognition accuracy of our improved model, which ranges from 68.85 percent to 79.41 percent after sets checking [1].

Edy Winarno et al., has introduced an attendance system based on a face recognition system using the CNN PCA method and real-time camera. In order to detect and identify faces as a person's identity and to store them in a face database, the attendance system uses faces as objects. Up to 98 percent accuracy in facial recognition can be achieved using the suggested technique [3].

Yong Li et al, introduced a neural network testing-based facial recognition system. The suggested activity fireliably locates and measures faces in the image using the AdaBoost algorithm. Next, facial features are isolated and removed using a deep convolution neural network. CNN training database is tested using CMU PIE. The recognition results will then be displayed visually. Preliminary testing using current laboratory employees as test subjects revealed that the system properly detects facial recognition function and



RESEARCH NOTE

Open Access



Glaucoma-TrEl: A web-based interactive database to build evidence-based hypotheses on the role of trace elements in glaucoma

Jyoti Kant Choudhari¹, Martin Eberhardt², Tanushree Chatterjee¹, Bettina Hohberger^{3*} and Julio Vera^{2*} 

Abstract

Objective Glaucoma is a chronic neurological disease that is associated with high intraocular pressure (IOP), causes gradual damage to retinal ganglion cells, and often culminates in vision loss. Recent research suggests that glaucoma is a complex multifactorial disease in which multiple interlinked genes and pathways play a role during onset and development. Also, differential availability of trace elements seems to play a role in glaucoma pathophysiology, although their mechanism of action is unknown. The aim of this work is to disseminate a web-based repository on interactions between trace elements and protein-coding genes linked to glaucoma pathophysiology.

Results In this study, we present Glaucoma-TrEl, a web database containing information about interactions between trace elements and protein-coding genes that are linked to glaucoma. In the database, we include interactions between 437 unique genes and eight trace elements. Our analysis found a large number of interactions between trace elements and protein-coding genes mutated or linked to the pathophysiology of glaucoma. We associated genes interacting with multiple trace elements to pathways known to play a role in glaucoma. The web-based platform provides an easy-to-use and interactive tool, which serves as an information hub facilitating future research work on trace elements in glaucoma.

Keywords Oxidative stress, glaucoma, Optic nerve, Intraocular pressure, Protein-trace element interactions

Introduction

Glaucoma is an optical neuropathy affecting the inter-pupillary and parapupillary area of the optic nerve's (ON) head and the retinal nerve fiber layer [1]. The most validated risk factor for glaucoma is the rise of IOP [2]. The literature contains abundant data suggesting the multifactorial nature of glaucoma, including its connection to vascular changes [3, 4], interrupted retrograde transport of neurotrophins [5], ocular ischemia [6], and oxidative stress [7]. Several lines of evidence suggested that oxidative stress harm the trabecular meshwork (TM), resulting in an increased IOP and injury of the retinal ganglion cells (RGC), which provokes cell death and ON damage [8]. Oxidative stress refers to the damage caused by the

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13 Phytoremediation of Mine Tailings

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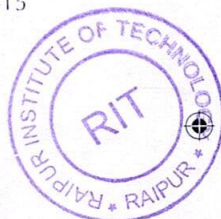
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13.1 INTRODUCTION

The fine waste material, generally from crushed rock, dumped soil, water or trace metal elements left after the target mineral extraction from ores in mining sites is termed mine tailings (MTs). The removal of the top soil horizon containing microbes, nutrients, seeds as well as humic substances initiates the mining operations. The presence of heavy metals in high amounts, low levels of micronutrients, organic/inorganic carbon-based material, and poor water-holding efficiency associated with fluctuating pH are general mine tailing conditions (Li et al., 2019b; Tardif et al., 2019; Wang et al., 2017). The impact of mine tailings contaminants and their disposal sites is responsible in terms of damage to environmental and population health, as unclaimed mining sites generally remain unvegetated for tens to hundreds of years, and exposed tailings can spread over tens of hectares via aeolian dispersion and water erosion intruding on human habitats. Acid mine drainage (AMD) generation from leachates of the MTs is another major concern related to mine tailings. AMD seriously affect the ecosystem, leading to a state of distinct absence of vegetation, which accelerates the migration of metals to the adjacent ecosystems (Gagnon et al., 2020b; Khoeurn et al., 2019). In three Norwegian mine tailings, fine particles revealed maximum toxicity during contact with sediments when released into sea water (Brooks et al., 2019). The presence and properties of particles greatly affect the soil and water composition of the areas near the mine sites whereas the same is also governed by the physicochemical property of the site (Miller et al., 2018).

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243





SIMULATION OF GRID CONNECTED SOLAR PV WITH MULTILEVEL INVERTER FOR INTERFACING PHOTO-VOLTAIC CELL

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Abstract: This paper is based on the modelling of solar PV module with MPPT techniques and then connected to the multilevel inverter for interfacing after that connected to grid like loads. In this simulation the major part is maximum power point control which can be accomplished by various methods and fuzzy control system found to be very attractive now a days because it sets the rule table for particular input what should be the output and the input value need not to be very accurate. According to the variations of solar radiation due to the weather, time and location the value needs to be set and get the desired values after that a multilevel inverter has been connected to convert the output and connected to load grid as per the load end requirements. Simulation is done on a Matlab software and the result is analyzed.

Index Terms - Maximum power point tracking system (MPPT), Pulse Width Modulation (PWM), Insulated gate bipolar transistor (IGBT), Total harmonic distortion (THD), static synchronous compensator (STATCOM), and fuzzy logic control (FLC)

I. INTRODUCTION

With more demand for electricity, continuously raising fuel costs and more concerns of global climate change have leads to more and more use of renewable energy sources. These energy resources have got more fame due to the depletion of non-renewable energy sources and their adverse impact on the environment. The energy extracted from Solar is one of the alternative renewable energy sources. In case of solar PV, the energy is collected as dc which, further can be converted into ac by the use of inverter and then subsequently fed to utility grid or it may be used in isolated load. The inverter output can be fed to the grid as well as standalone system. The main objective of Grid connected SPV system is to supply the local loads and any surplus power generation have to be injected into the grid [1]

Energy not only plays an important role in our life but also in the overall economy of the country. The requirement for energy is increasing in our daily life due to the industrial revolution. In the most developing country like India, the large share of energy generation mainly depends upon non-renewable energy sources. The gradual depletion of these sources such as fossil fuels, oils, etc. leading the developing countries towards the un-sustainability of civilization. Along with that, the generation of energy through conventional sources is also a reason for greenhouse gases. It has become a global challenge to reduce the emission of greenhouse gasses like CO₂ and CO₃ to ensured secure, clean, and affordable energy. Whereas clean and sustainable energy is perfectly generated through renewable energy sources [1]. There are many renewable sources of energy such as solar energy, wind energy, Hydro energy, etc. The Photovoltaic (PV) system is the most efficient renewable source of energy which has taken the great attention of the researchers.

The MPPT working principle is based on the maximum power transfer theory. The power delivered from the source to the load is maximized when the input resistance seen by the source matches the source resistance. Therefore, in order to transfer maximum power from the panel to the load the internal resistance of the panel has to match the resistance seen by the PV panel. For a fixed load, the equivalent resistance seen by the panel can be adjusted by changing the power converter duty cycle [4].

With the modern lifestyles and the fast growth in industries the energy supply and demand chain has been subjected to remarkable strain. In addition, the issues of climate change and the need to diminish carbon footprints have added to the strong thrust for companies and nations to invest in alternate energy sources, particularly the renewable energy (RE) resources. Among the available RE resources, SPV source has emerged as one of the finest green energy resource and seen as a better replacement for conventional energy. The contribution of the energy harvested through the SPV systems had been significant in the past decade in meeting the national as well as international energy demands. In addition, the enhanced scale and eco-friendly nature of solar energy have attracted many researchers to propose scholarly research in this area. [2].



A Pitch Control Strategy of Wind Turbine by Using Fuzzy Logic Control System

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²Assistant Professor Electrical Department, Raipur Institute of Technology

Abstract – This paper deals with the pitch angle control of wind turbines. Due to the non-linearity and complex dynamics of these wind energy systems becomes a tough job. To solve this purpose we propose a fuzzy logic control system. Major aim is to maximise the energy produced from the wind turbine irrespective of non-linearity of wind. A strategy of maximum power point tracking has been used from so long and the fuzzy logic intervention will make this control system more intelligent. Simulation results are shown and discussed with the Matlab/Simulink simulation software to validate the proposed control strategy. This control strategy has a good performance in terms of dynamic response and output.

Key Words: Fuzzy logic controller (FLC), Pitch angle controller, THD (Total harmonic distortion), STATCOM (static synchronous compensator), Permanent magnet synchronous generator (PMSG), Insulated gate bipolar transistor (IGBT)

1. INTRODUCTION

The use of coal for energy production has proven to be one of the main contributors to climate change. Thermal plants are a source of carbon dioxide emissions. Even today, these sources of energy are widespread. For example, in Spain only in 2016 coal produced 60% of all carbon dioxide emissions. This air pollution is estimated to cause more than 500,000 asthma attacks each year around the world [1]. Therefore, to slow climate change and achieve the Paris Climate Goals [2], fossil-based energy sources must be replaced by renewable energy such as wind, hydro and solar.

The world constraint of fossil fuels reserves and additionally the ever growing environmental pollutants have driven powerfully throughout ultimate many years the occasion of renewable strength sources (RES). The necessity of getting obtainable property power systems for substitution bit through bit trendy ones demands the improvement of systems of power provide based on smooth and renewable resources. At present, solar electric photovoltaic (PV) era is ahead redoubled significance as a RES application because of distinctive blessings like simplicity of allocation, high responsibility, absence of gasoline value, low preservation and absence of noise and wear thanks to the absence of moving factors or practical's. Moreover, the alternative energy characterizes a clean, pollutants-loose and inexhaustible power supply. Additionally to those elements are the declining value and expenses of solar PV modules,

associate degree increasing efficiency of sun cells, producing generation enhancements and economies of scale [3].

For the installation of wind energy MNRE scheme (The Ministry of New & Renewable energy) has introduced to aware more and more people about this technology, government also gives incentives in order to promote wind energy. Wind is air in motion; this is actually derived from solar energy. About 2% of total solar flux that reaches the earth's surface is transformed into wind energy due to uneven heating of atmosphere. This kinetic energy of wind is used to gain the rotational motion of wind turbine which is coupled with an electrical generator to supply over a region acting as stand-alone or supplying power to a grid. An actual WECS (Wind energy conversion system) be considered as follow [4]

Consumption of Electricity by Sectors in India during 2017-18

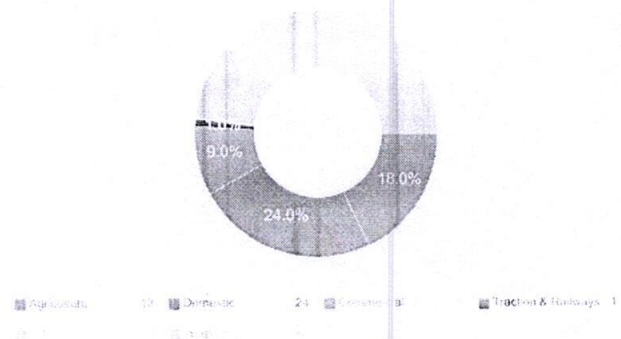


Fig -1: Electricity consumption pattern in India

As per the energy scenario we can see that according to the latest survey from the government of India. Electricity consumption pattern in various sectors like in agriculture it is 18%, domestic 24%, commercial 9%, Railways 1% and in Industries it is very high approximately 42% of the total electricity generation.

In every developing country the electricity requirements will increase day by day and surveys conclude that the demand will raise up to several lakhs megawatts and for fulfilling the requirements that electricity needed in several upcoming years the option is to generate more and more electricity and will cause a great adverse effects on the environment.

So green energy schemes should be promoted and various researches are going on the field of wind energy as well as solar energy to generate power from this nonrenewable sources and to generate a better output for the supply to loads or grids.

Our work will focus on the pitch control of wind turbine as it requires a good control system for the better output and we propose a fuzzy logic control system with predefined inputs and outputs.

Modelling of Solar PV with Enhanced Boost Converter and PWM Based Inverter

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ABSTRACT

This work represents analysis of a solar PV array and connection up to the grid with various components in details in different conditions. In this work PV array is connected with a boost converter and after that an inverter is required for the conversion to a well and smooth waveform of ac output voltage. Due to so many nonlinear characteristics of solar radiation the frequency and amplitude variation is the most common problem so a PWM based inverter is used in this model. A fault analysis also been done on this model. The output voltage & current as well as active and reactive power has been explored and analyzed. The simulation has been done on a Matlab software and simulation results obtained and analyzed.

KEYWORDS: Pulse Width Modulation (PWM), Insulated gate bipolar transistor (IGBT), THD (Total harmonic distortion), STATCOM (static synchronous compensator), PV (Photovoltaic), THD (Total harmonic distortion) SVC (Static VAR compensator)

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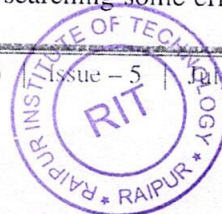
INTRODUCTION

With the modern lifestyles and the fast growth in industries the energy supply and demand chain has been subjected to remarkable strain. In addition, the issues of climate change and the need to diminish carbon footprints have added to the strong thrust for companies and nations to invest in alternate energy sources, particularly the renewable energy (RE) resources. Among the available RE resources, SPV source has emerged as one of the finest green energy resource and seen as a better replacement for conventional energy. The contribution of the energy harvested through the SPV systems had been significant in the past decade in meeting the national as well as international energy demands. In addition, the enhanced scale and eco-friendly nature of solar energy have attracted many researchers to propose scholarly research in this area. [1].

The world constraint of fossil fuels reserves and additionally the ever growing environmental pollutants have driven powerfully throughout ultimate many years the occasion of renewable strength sources (RES). The necessity of getting obtainable property power systems for substitution bit through bit

trendy ones demands the improvement of systems of power provide based on smooth and renewable resources. At present, solar electric photovoltaic (PV) era is ahead redoubled significance as a RES application because of distinctive blessings like simplicity of allocation, high responsibility, absence of gasoline value, low preservation and absence of noise and wear thanks to the absence of moving factors or practical's. Moreover, the alternative energy characterizes a clean, pollutants-loose and inexhaustible power supply. Additionally to those elements are the declining value and expenses of solar PV modules, associate degree increasing efficiency of sun cells, producing generation enhancements and economies of scale [2].

The warming of global surfaces increasing day by day. The warming caused due to release of toxic gases. Main reason of these gases in the environment is due to air pollution caused by generation plants that all uses fossil fuels like coal, fuels, gas etc. This causes acid rain, depletion of ozone layer and radioactive emission these effects can be minimized by searching some effective solution. Solution must



DESIGN & ANALYSIS OF SOLAR PANEL ON WIND LOAD

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Abstract

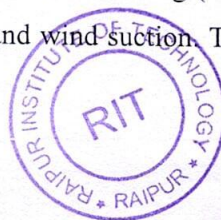
Solar energy is the abundantly found renewable energy which is free of cost and the use of solar energy resources is increasing rapidly. Following this trend, the implementation of large area solar arrays is considered to be an essential. Many design approaches of the supporting structures have been presented in order to achieve the maximum efficiency. They are loaded mainly by aerodynamic pressures. Optimization plays very key role in product design and prevent un-necessary inventory satisfying the functional needs. But optimization with apt design helps to build efficient products in the everyday competing market. Stress analysis plays important role in optimizing the design. Due to the advance in computer based finite element software's design process is made simple by easier simulation methods fast replacing prototype built up and testing. In current work investigates the effect of real time wind flow on stress developed and torque generated. CAD model and drawings of solar panel support structure is developed using CREO 2.0 software with the help of existing model and CFD analysis is conducted using ANSYS CFX. In order to find the most optimum result several models in the form of different deflector design (flat, conical, circular, elliptical, and parabolic) were tested.

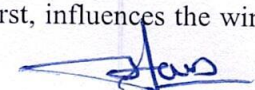
Keywords: Wind Loads, FEA, Aerodynamic loads, ANSYS CFX, Renewable Energy.

* Corresponding author

1. INTRODUCTION

PV panels absorb sunlight as a source of energy to generate electricity. A photovoltaic (PV) module is a packaged, connected assembly of typically 6x10 photovoltaic solar cells. Photovoltaic modules constitute the photovoltaic array of a photovoltaic system that generates and supplies solar electricity in commercial and residential applications. Wind load plays a central role for two reasons: The wind subjects the solar PV modules, and the PV mounting system to excessive force and the wind load influences how close the solar PV panels must be mounted to the edges of the roof. The higher the wind load, the larger the distance to the roof edge should be chosen. The wind load is defined as the exerted loading which flows on the building (or even the solar PV modules). This effect is divided into the loading via the wind pressure and wind suction. The first, influences the wind-facing




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DESIGN & ANALYSIS OF SOLAR PANEL ON WIND LOAD

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Abstract

Solar energy is the abundantly found renewable energy which is free of cost and the use of solar energy resources is increasing rapidly. Following this trend, the implementation of large area solar arrays is considered to be an essential. Many design approaches of the supporting structures have been presented in order to achieve the maximum efficiency. They are loaded mainly by aerodynamic pressures. Optimization plays very key role in product design and prevent un-necessary inventory satisfying the functional needs. But optimization with apt design helps to build efficient products in the everyday competing market. Stress analysis plays important role in optimizing the design. Due to the advance in computer based finite element software's design process is made simple by easier simulation methods fast replacing prototype built up and testing. In current work investigates the effect of real time wind flow on stress developed and torque generated. CAD model and drawings of solar panel support structure is developed using CREO 2.0 software with the help of existing model and CFD analysis is conducted using ANSYS CFX. In order to find the most optimum result several models in the form of different deflector design (flat, conical, circular, elliptical, and parabolic) were tested.

Keywords: Wind Loads, FEA, Aerodynamic loads, ANSYS CFX, Renewable Energy.

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1. INTRODUCTION

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JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

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

“Studies On Water Supply Distribution System of Mungeli Town (C.G)”

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Abstract : Water is essential for the existence of life on earth. Also the quality of water used by living beings is equally important. Therefore, in order to ensure the availability of sufficient quantity of good quality water, it is necessary to plan and build suitable water supply schemes for the town, existing water supply system in Mungeli town is not sufficient to fulfill the water demand of the residents of the town for day to day use. Once the project is completed and in use, the town shall benefit in the following ways- Sufficient quantity and good quality water for drinking, cooking, washing, cleaning etc. shall be available to the residents of the town. Water shall be available for sanitation purposes, which shall decrease the diseases and so boost overall health conditions in the community. Water shall be available for plants and gardens which shall help reduce the environmental pollution and increase the beauty of the town. Easy availability of water shall attract small and medium scale businesses and hence increase the economic growth of the town.

Index Terms –Water, Intake well, Raw Water Rising Main, Clear water Rising Main, Water Treatment Plant, Elevated Service Reservoir, Water supply Distribution network.

1. INTRODUCTION

1.1 BACKGROUND

Municipal governments and other institutions in India, responsible for providing civic services are facing an acute shortage of capacity and resources, not with standing the Constitution (seventy-fourth) Amendment Act, 1992 on Municipalities.

With the foundation of the Republic of India in 1950, and consequent to reorganization of states. It was geographically the largest state until 2000. In 2000, the Chhattisgarh region was carved out to create a new state; even then it is the second largest state after Rajasthan. It covers 9.5% of the area (308,000 Sq. Km) and houses 6 per cent of the country's population (72.5 million).

These challenges place considerable pressure on municipal corporations which lack sufficient capacity to implement many of the investment programs according to plan. The heightened economic activities in urban areas create employment opportunities, education, health facilities and other social infrastructures, it attracts distressed rural population to cities. The growth of employment in urban areas is not accompanied by corresponding rise in the availability of urban amenities particularly housing stock compel them to live in slums, without adequate access to health or sanitation.

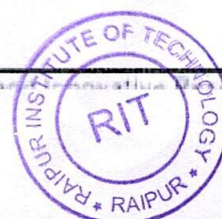
1.2 NEED OF THE PROJECT

Keeping in view the acute drinking water scarcity in the towns of Chhattisgarh, Urban Administration & Development Department, intends to execute a comprehensive and systematic Water Supply Scheme for the towns.

To achieve 100 % population coverage and ensure access to safe, adequate and equitable drinking water supply for all.

“It is essential to improve the existing service level of drinking water supply system for better health and living standard of residents by providing them potable and safe drinking water up to their doorstep for Ultimate estimated population of the respective Town till the year 2050.

With regards to the existing water supply system analysis which is catering the present water supply need of the town, there is the necessity for some new proposals and augmentation mainly Source and of some existing water supply components so that the demand for the town can be fulfilled for another 30 years (2050) of life span from the project implementing year consider as 2020. Under this program, towns have been identified for implementing (i) augmentation of the surface water source (intake and water treatment plant) as required, (ii) Up grading the existing inadequate distribution networks and expansion of the distribution system into un-served areas and (iii) optimization of present systems including reducing non-revenue water by regularizing unauthorized connections and stopping leakages.





INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

SCHEMATIC PROCESS DESIGN OF SEWAGE TREATMENT PLANT AT DHAMTARI TOWN IN (C.G.)

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ABSTRACT

The main objective of this study is to carried out design of a sewage treatment plant for Dhamtari municipality, because it has been a developing place and due to rapidly increase in population, which in results huge quantity of sewage is produced. This project is focuses on quantity of sewage generation in Dhamtari area, to avoid the pollution of town through Sewage, to construct the sewage treatment plant. The main objective of the project is to treat the sewage of the town in such a way that treated sewage complies the parameters laid by MoEF (Ministry of Environment, Forest and Climate change). Objective is also of using treated sewage for non-potable purposes and thereby improving health and living standards of the people. Effort has been made to collect the sewage at a point due to which open flow of sewage is stopped. Which helps keeping environment less polluted. The scope of this project include identify Existing sewerage system, drains, disposal of sewage, calculation of present sewage generation and calculation of future sewage generation with the help of population forecasting, Compare different technologies for treatment of sewage and propose one of them. Design treatment unit and calculating its cost estimation. STP based on SBR Technology has been considered for treatment of sewage having Capacity of 19.60 MLD. The STP technology is being selected primarily taking into consideration less land requirement and to have effluent characteristics as per MOEF, so that treated water can be reuse or discharged into inland water ways which are being potential drinking water sources.

Keywords: Sewage, Dhamtari, Climate, Environment, Schematic, SBR Technology

1. INTRODUCTION

1.1 Background of study

Dhamtari is a district in the Indian state of Chhattisgarh. It was officially formed on 6 July 1998 from an amalgamation of Dhamma and Tarni (hence the name). The district headquarters is Dhamtari. Dhamtari dividing the Raipur district currently the capital of Chhattisgarh along with Mahasamund. Raipur district was broken up into the districts of Raipur, Mahasamund and Dhamtari. Dhamtari, Kurud and Nagari are included in Dhamtari district as tehsils, and blocks. The total area of the district is 2029 km² and it is 305 meters above the sea level. In the east, Satpura range is located. It is popularly known as Sihawa Pahad.



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