



Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY

(Estd. 1986) Oorgaum, Kolar Gold Fields, Karnataka – 563120

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DEEP LEARNING FOR RECOGNIZING HUMAN ACTIVITIES USING MOTIONS OF SKELETON JOINTS

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ABSTRACT

With advances in consumer electronics, demand have increased for greater granularity in differentiating and analyzing human daily activities. Moreover, the potential of machine learning, and especially deep learning, has become apparent as research proceeds in applications such as monitoring the elderly, and surveillance for detection of suspicious people and objects left in public places. Although some techniques have been developed for Human Action Recognition (HAR) using wearable sensors, these devices can place unnecessary mental and physical discomfort on people, especially children and the elderly. Therefore, research has focused on image-based HAR, placing it on the front line of developments in consumer electronics. This paper proposes an intelligent human action recognition system which can automatically recognize the human daily activities from web cameras using human skeleton information, combining the techniques of image processing and deep learning. Moreover, due to low computational cost and high accuracy outcomes, an approach using skeleton information has proven very promising, and can be utilized without any restrictions on environments or domain structures. Therefore, this paper discusses the development of an effective skeleton information based HAR, which can be used as an embedded system. The experiments are performed using two famous public datasets of human daily activities. According to the experimental results, the proposed system outperforms other state-of-the-art methods.

KEY WORDS:

Human action recognition, consumer electronics perspective, skeletal joints, formation of relative joint image, deep learning.


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FACE DETECTION AND RECOGNITION FOR AUTOMATIC ATTENDANCE SYSTEM USING ARTIFICIAL INTELLIGENCE FOR REAL TIME APPLICATION

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ABSTRACT

Face is the crucial part of the human body that uniquely identifies a person. Face Recognition is a method of identifying or verifying the identity of an individual using their faces, it is widely utilized in many applications reminiscent of system security and door system. The proposed work describes the way to take student's act victimization face recognition which is enforced with the help of Camera and Open CV formula using the face characteristics as biometric, the face recognition system can be implemented. The most demanding task in any organization is attendance marking. In traditional attendance system, the students are called out by the teachers and their presence or absence is marked accordingly. However, these traditional techniques are time consuming and tedious. In this project, the Open CV based face recognition approach has been proposed. This model integrates a camera that captures an input image, an algorithm for detecting face from an input image, encoding and identifying the face, marking the attendance in a spreadsheet and converting it into PDF file. The training database is created by training the system with the faces of the authorized students. The cropped images are then stored as a database with respective labels. The features are extracted using LBPH algorithm..

KEYWORDS: recognition, Camara, Open CV, biometric, integrates, capture, image, encoding, PDF, LBPH


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VLSI IMPLEMENTATION OF TURBO CODES FOR LTE SYSTEMS

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ABSTRACT

Communication is act of transmission of information. Everyone in the world experiences the need to receive information almost continuously. For communication to be successful, it is essential that sender and receiver understands a common language. When signal is transmitted there are 3 sources of transmission errors, they are: Signal bit errors, burst errors and erasure. Errors in signal may lead to miscommunication between systems. So, error correction is required to retrieve the original message. In order to detect and correct the errors, turbo codes are used. Turbo encoder and decoder is designed using the Verilog HDL Language. Turbo decoding is time consuming process. The symbol-by-symbol estimation algorithms are more complex than the sequence estimation algorithms. Therefore, Sequence estimation algorithms are preferred. The Viterbi algorithm is a hard-decision output decoding algorithm and soft-output is produced by SOVA algorithm. The SOVA Algorithm is used to reduce the latency and increase the throughput. Hence, SOVA Algorithm is preferred. Cadence tool is used which achieves simulation and synthesis of proposed turbo encoder and decoder. Physical design is implemented using Encounter tool. Floor planning, Placement and Routing are performed.

KEYWORDS: Turbo Codes, Turbo encoder, Turbo decoder SOVA Algorithm, Viterbi Algorithm, Floor Planning, Placement, Routing.


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DEFECTIVE COFFEE BEAN INSPECTION WITH GA BASED GAN OPTIMIZER USING TENSOR FLOW

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ABSTRACT

The quality of a coffee bean is determined by several factors which includes color, texture and size. This evaluation is done by human inspector, but the decision-making capabilities of humans are subjected to external influence such as fatigue, environment, light, emotions, etc. In the process of production of green beans to packaging coffee bean, the defective bean removal stage is one of most labor-consuming stage to automate this task, in order to minimize human effort. A deep learning-based defective bean inspection scheme (DL-DBIS), together with a GAN (generative adversarial network)-structured automated labeled data augmentation method (GALDAM) is used to automation degree of bean removal with robotic arms can be further improve for coffee industries. The proposed scheme can be adopted due to two main reasons. First, is that it can be easily adopted by industries as human effort in labeling coffee beans are minimized. The users can easily customize their own defective bean model without spending a great amount of time on labeling small and dense objects. Second, the scheme can inspect all classes of defective beans categorized by the SCAA (Specialty Coffee Association of America) at the same time and can be easily extended if more classes of defective beans are added. Tensor flow is used to implement this scheme.

KEYWORDS: Automatic defect inspection, machine learning, automation engineering, data augmentation, applied artificial intelligence, GAN optimizer.


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IIOT BASED HOME AUTOMATION CONTROLLED USING SENSORS AND MOBILE APPLICATION

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ABSTRACT

The concept of Internet of Things (IoT) requires the seamless connectivity of millions of heterogeneous devices. In today's World, implementation of IoT based smart home has drawn a huge attraction and become a prominent area of research. A smart home is a residence that uses internet-connected devices to enable the remote monitoring and management of appliances and systems, such as lighting and heating. Smart home technology, also often referred to as home automation or domotics (from the Latin "domus" meaning home), provides homeowners security, comfort, convenience and energy efficiency by allowing them to control smart devices, often by a smart home app on their smartphone or other networked device. A part of the internet of things (IoT), smart home systems and devices often operate together, sharing consumer usage data among themselves and automating actions based on the homeowner's preferences.

KEYWORDS: Proteus 8 professional, Arduino IDE, MIT app inventor, Arduino UNO, Sensors, LEDs.


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PREDICTING COVID-19 FROM LUNG IMAGES USING DEEP TRANSFER LEARNING

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ABSTRACT

The COVID-19 pandemic is causing a major outbreak in more than 150 countries around the world, having a severe impact on the health and life of many people globally. One of the crucial steps in fighting COVID-19 is the ability to detect the infected patients early enough, and put them under special care. Detecting this disease from radiography and radiology images is perhaps one of the fastest ways to diagnose the patients. Some of the early studies showed specific abnormalities in the chest radiograms of patients infected with COVID-19. Inspired by earlier works, we study the application of deep learning models to detect COVID-19 patients from their chest radiography images. We first prepare a dataset of 5000 Chest X-rays from the publicly available datasets. Images exhibiting COVID-19 disease presence were identified by board-certified radiologist. Transfer learning on a subset of 2000 radiograms was used to train four popular convolutional neural networks, including ResNet18, ResNet50, SqueezeNet, and DenseNet-121, to identify COVID-19 disease in the analyzed chest X-ray images. We evaluated these models on the remaining 3000 images, and most of these networks achieved a sensitivity rate of 98% ($\pm 3\%$), while having a specificity rate of around 90%. Besides sensitivity and specificity rates, we also present the receiver operating characteristic (ROC) curve, precision-recall curve, average prediction, and confusion matrix of each model. We also used a technique to generate heatmaps of lung regions potentially infected by COVID-19 and show that the generated heatmaps contain most of the infected areas annotated by our board-certified radiologist. While the achieved performance is very encouraging, further analysis is required on a larger set of COVID-19 images, to have a more reliable estimation of accuracy rates.

KEYWORDS: COVID-19, X-ray imaging, Deep learning, Transfer learning.


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COMPREHENSIVE STUDY AND DESIGN OF RECTANGULAR AND TRIANGULAR MICROSTRIP PATCH SINGLE AND 1 X 8 ARRAY ANTENNA

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ABSTRACT: An antenna array has been designed for wireless application at the frequency of 2.3GHz to 2.5GHz. The comparison study of the rectangular and triangular patch antenna based on the parameters is presented in this paper. The antennas are designed on a low cost FR4 glass epoxy with a thickness of 1.6mm. CST software tool is used for design and compare the performance of the antennas. The detailed study gives the result that the rectangular patch antenna has higher gain and vswr that is 1.099, than the gain and vswr of triangular patch antenna that is 1.45. This paper shows contrastive analysis of various performance parameters between the two antenna arrays in terms of return loss, directivity gain, radiation pattern, VSWR.

KEYWORDS: Microstrip patch, Microstrip feed line, Gain, Bandwidth, Return loss, VSWR, CST tool


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IOT BASED WEATHER STATION

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ABSTRACT

The IoT-based Weather Monitoring and Reporting System project is used to get Live reporting of weather parameters. It will Monitor temperature, humidity, altitude, and pressure. when Scientists/nature analysts want to monitor changes in a particular environment like a volcano or rainforest and agriculture to see the weather condition to get the best yield or to monitor the physical parameters in a laboratory. It then displays all data in the Blynk application. The project has been developed using ESP 32 Microcontroller, DHT 11 temperature and humidity sensor, LDR (light dependent resistor), BMP280 pressure and altitude sensor, and OLED display to show the parameters measured. This system will monitor the changes of weather condition happening over the environment and then provides the users fastest way to access the information from anywhere

KEYWORDS: IOT, weather station, android interface for wifi communication, microcontroller, embedded c/c++ and weather monitoring.


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HOME AUTOMATION USING GOOGLE ASSISTANT

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ABSTRACT

The Home Automation Systems (HAS) is the extension of the current activities performed inside the home and the home automation system can be developed easily now a days, because of powerful computational devices and Wireless Sensor Network (WSN), to IOT based automation gesture detection and control. The objective of this project is to develop the home automation system using node MCU ESP8266 board being remotely controlled by any android smartphone. Ever thought of a life where you could just command your home appliances to work as you need just by using your voice. This project will demonstrate, controlling home electronic appliances like T.V, fans, lights etc. using the internet and your voice and too low budget. Today's smart objects in the Internet of Things. (IOT) are able to detect their state and share it with other objects across the internet, thus collaboratively making intelligent decision on their own. Traditional methods of chore's are replaced by automation system which are adoptable with the modern world. The manual system are more acceptable by the new generation people. An effective implementation of Internet of Things used for monitoring regular domestic condition by sensing system. Architecture of home automation is based on application NodeMCU, mobile application, web application, relays.

KEYWORDS: IOT , MCU ESP8266 , Android Smartphone.


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Prediction of seasonal and monthly evapotranspiration using data driven models

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ABSTRACT

Artificial neural network based data driven technique is used for predicting evapotranspiration. Historical time series average temperature Cause-Effect models form monthly and seasonal data are taken as input to predict next month and next season Pan evapotranspiration (PET) and Reference evapotranspiration (RET). Results indicated good Pearson correlations value of 0.975 and 0.997 was achieved for the monthly and seasonal PET models and Pearson correlations value of value of 0.965 and 0.996 was achieved for the monthly and seasonal RET models respectively for the study area.

KEY WORDS: ANN, Cause-Effect models, Data driven, Evapotranspiration, Time series

Time series pattern fitting using computational simulation model to forecast evapotranspiration

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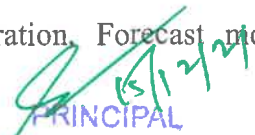
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ABSTRACT

Data mining the historical previous few quarter rainfall or average temperature or potential evapotranspiration (PET) dataset as input predictors to learn the weather and climate tend using machine learning neural network computational simulation model to forecast next quarter PET is the research study. Time series of few step-ahead quarterly rainfall or average temperature or PET is taken as input parameter to forecast next quarter PET. Learning of the nonlinear relationship between input and output is done using two different neural network algorithms for comparing the accuracy of forecast. Results indicate a good Pearson correlation value of more than 0.98 can be achieved for the quarterly PET forecast model using previous four quarter rainfall or average temperature or PET as input predictors. Average temperature as predictor gave the best performance index. Forecasted results show forecasting using four previous quarter average temperature as input predictor to forecast next quarter PET using Radial basis function neural network algorithm is the best model with R = 0.9918, RMSE = 6.15 mm and maximum deviation of 15.75 mm of the observed quarterly PET value for the study area.

KEY WORDS: Computational simulation, Data mining, Evapotranspiration, Forecast model, Machine learning


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PRINTED CIRCUIT BOARD FAULT DETECTION USING IMAGE PROCESSING IN MATLAB

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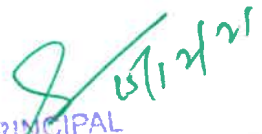
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ABSTRACT

Printed circuit boards are blooming in current trends in the electronic field where it is easy to design with less cost. *But there are design faults during the manufacturing of PCBs which may lead to huge losses in production.* PCB fault detection plays a vital role; generally, it's difficult to detect the faults in PCB manually. So many emerging technologies as came into existence to detect the fault in PCBs. Since there are some drawbacks regarding accuracy. We are using Image processing-based technologies which are to detect faults in PCBs with much accuracy and get results faster compared with other technologies. By using these techniques we can group 14 defects in PCB that are breakout, pinhole, open circuit, under etch, mouse bite, missing conductor, spur, short, wrong side hole, conductor to close, spurious copper, excessively short, missing hole, over etch. This will be easy to analysis the fault and correct them. We take the standard image and test image use Morphological operation and classify the above defects based on the segmentation process like hole segment, line segment, thin line segment, and thick line segment. Based on this four the 14 defects are classified which makes the work easier to identify the defects. If we use the binary image so we get the exact output in the form of either level 0 or level 1 by varying the intensity level of RGB the binary image is obtained in MATLAB. And we use this MATLAB we can use the median filter to remove the noise from the image and we use surf descriptors to help to detect the matching features of the PCB datasets. Region props in Matlab we use the bounding box to find area, length, and height for defected areas.

KEYWORDS: Surf descriptors, binary images, morphological operations, segmentation, median filter, region props, bounding box, Image processing.


PRINCIPAL
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DEPRESSION DETECTION FROM SOCIAL NETWORK DATA USING MACHINE LEARNING TECHNIQUES

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ABSTRACT

Social networks have been developed as a great point for its users to communicate with their interested friends and share their opinions, photos, and videos reflecting the moods, feelings and sentiments. This creates an opportunity to analyze social network data for user's feelings and sentiments to investigate their moods and attitudes when they are communicating via these online tools. Methods Although diagnosis of depression using social networks data has picked an established position globally there are several dimensions that are yet to be detected. In this work, The aim is to perform depression analysis on Twitter data collected from an online public source. To investigate the effect of depression detection, machine learning technique is proposed as an efficient and scalable method. The result is to evaluate the efficiency of the proposed method using a set of various psycholinguistic features. It shows that the proposed method can significantly improve the accuracy and classification error rate. In addition, the result shows that in different experiments support vector machine gives the highest accuracy than other Machine learning approaches to find the depression. Machine learning techniques identify high quality solutions of mental health problems among twitter users.

KEYWORDS: Natural language processing ,Machine learning ,Social network ,Depression .


PRINCIPAL
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CONVOLUTION NEURAL NETWORK FOR HUMAN ACTIVITY RECOGNITION IN VIDEOS: LITTERING ACTIVITY DETECTION

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ABSTRACT

The earth is what we all have in common. Many people have forgotten how to walk lightly on the earth as its other creatures do. Various organizations and individual volunteers focused on multidimensional work and solutions to stop humans from filling the world with trash. Litter has the potential to harm human health, safety, welfare, as well as the environment. The mass production of disposable goods also produced a growing mountain of waste. The environment can be kept clean and hygienic only through human activities. In this project, a technique to recognize humans littering is proposed and the activity is detected.

A convolutional neural network is used to resolve and extract the patterns from video framework and validate with the threshold to make a decision. In this technique, various sample videos are validated and persons with and without littering activities are identified.

KEYWORDS: Human health, litter, humans littering, Convolution neural network, threshold, video framework.


PRINCIPAL
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AN EFFICIENT IOT BASED COVID-19 MONITORING SYSTEM USING CNN CLASSIFIER

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ABSTRACT

As we are aware of the current pandemic situation that is Covid-19 which is spreading all over the world. Covid-19 spreads mainly by droplets produced as a result of coughing or sneezing of Covid-19 infected person, it can also spread from contact with infected surfaces or objects. Any person who comes into close contact with someone who has Covid-19 is at increased risk of becoming infected themselves. As it is spreading widely it is difficult to get the report on required time, hence to detect Covid-19 “Positive or Negative” within 30minutes of time we are using an efficient IoT based Covid-19 Monitoring System Using CNN Classifier. In this process we are using sensors such as heart rate sensor, temperature sensor, and respiratory sensor to collect data from a person and it is transmitted wirelessly with the help of Bluetooth module and to the Arduino uno. These data are being processed using MATLAB and CNN Classifier is used to predict the result whether it is “Positive or negative” based on this result, best accuracy and efficiency is achieved.

KEYWORDS: MATLAB, CNN Classifier, Bluetooth module, Arduino uno, Heart rate sensor, temperature sensor, respiratory sensor.


PRINCIPAL

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BITCOIN PRICE PREDICTION USING MACHINE LEARNING TECHNIQUE

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ABSTRACT

In this 21th century of advancing science and technologies , digitalization is emerging rapidly and is much gravitating in the current marketing and business activities. The attention towards cryptocurrencies like Bitcoin is being increasing deliberately. So with this former view ,In our thesis we have attempted to predict the Bitcoin price accurately in consideration of some major parameters that affect the Bitcoin value. In our investigation, we aim to monitor then capture the frequent price fluctuations and identify daily trends in Bitcoin market and predict the Bitcoin price much concisely. Our data set precisely consists of various features relating to the Bitcoin price and payment network over the course of five years, recorded daily. With this available particulars and along with the aid of machine learning technique specifically using SARIMA technique we intend to extract more appropriate results and thereby accomplish the thesis objective with an efficacious conclusion.

KEYWORDS: Bitcoin, cryptocurrency, machine learning, SARIMA , price prediction etc


PRINCIPAL
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A DEEP LEARNING TECHNIQUE FOR IMAGE BASED PLANT DISEASE DETECTION AND CROP YIELD PREDICTION

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ABSTRACT

Crop diseases are a major threat to food security, but their rapid identification remains difficult in many parts of the world due to the lack of the necessary infrastructure. Crop yield is a highly complex trait determined by multiple factors such as genotype, environment, and their interactions. Accurate yield prediction requires fundamental understanding of the functional relationship between yield and these interactive factors, and to reveal such relationship requires both comprehensive datasets and powerful algorithms. The combination of increasing global smartphone penetration and recent advances in computer vision made possible by deep learning has paved the way for smartphone-assisted disease diagnosis. We designed a deep neural network (DNN) approach that took advantage of state-of-the-art modelling and solution techniques. Using a public dataset of images of diseased and healthy plant leaves collected under controlled conditions, we train a deep convolutional neural network to identify crop species and diseases. The trained model achieves an accuracy of 99.35% on a held-out test set, demonstrating the feasibility of this approach. Our model was found to have a superior prediction accuracy, with a root-mean-square-error (RMSE) being 12% of the average yield and 50% of the standard deviation for the validation dataset using predicted weather data.

KEYWORDS: Plant Disease, Crop yield, Convolutional Neural Network, Deep learning, Detection, Prediction.


15/12/2021
PRINCIPAL
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DESIGN A MILLIMETER WAVE WITH AN ARRAY OF MICROSTRIP PATCH ANTENNA FOR 5G APPLICATIONS

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ABSTRACT:

Antenna is an electrical device which converts electric power into radio waves, the radio waves are electromagnetic waves which carry signals through the air at a speed of light with no transmission loss. There is a rapid increase of mobile data growth, high speed communication and efficiency in carrying the data has been dropping considerably due to the network congestion, to avoid data dropping and congestion designing an millimeter wave with an array of microstrip patch antenna for 5G application. The designing work covers 2 aspects of microstrip antenna design, the first is to design of a single rectangular microstrip patch antenna for 5G application which is designed on Rogers RT Duroid 5880 substrate with standard thickness of 0.787mm having relative dielectric constant (ϵ_r)=2.2 and $\tan\delta=0.0013$, which resonates at the frequency ranges from 30GHz to 50GHz with the return loss >-15 dB and bandwidth > 1 GHz. The second is the design of arrays of rectangular microstrip patch antenna, the antenna array resonates at four different frequencies ranges between 30GHz to 50GHz, a better performance in bandwidth, Gain, Return loss and VSWR is obtained. The simulation process is done through the HFSS (High frequency structure simulator) tool.

KEYWORDS: Millimeter wave, Microstrip patch antenna, 5G applications, Microstrip feed line, arrays, Gain, Bandwidth, Return loss, VSWR, S-parameter, HFSS tool.


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GRADING OF HARVESTED MANGOES BASED ON QUALITY EVALUATION AND MATURITY PREDICTION USING MACHINE LEARNING TECHNIQUE

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ABSTRACT

It is very important to do proper Grading of fruits to increase the profit in Agriculture. Nowadays sorting of the fruits like Mango, Banana, Dates and Grapes is performed manually, for this getting adequate manual expert during the period is difficult. Hence in this project, we are going to propose the technique for grading the mango automatically according to the features of the fruit i.e., consider to grade the quality. In this system mangoes are graded in three types like Green Mango, Yellow Mango and Red Mango which are based on machine learning method. This system considers RGB values, size and shape of the mangoes. This system uses Posterior analysis to obtain good probability. This helps to train system to detect appropriate maturity of mangoes. The experiment is conducted on machine learning technique i.e., Naive Bayes Algorithm. This algorithm is used to predict the probability of different class based on various attributes. From the previous system, this system gives more accuracy as posterior analysis is used.

KEYWORDS: *Quality Evaluation, Maturity Prediction, Naive Bayes Algorithm, Posterior Analysis and Grading.*


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FIRE DETECTION USING SURVEILLANCE CAMERA BY DEEP LEARNING TECHNIQUES

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ABSTRACT

The detection of manmade disasters particularly fire is valuable because it causes many damages in terms of human lives. With the current advancement of the Technologies, like deep learning models such as convolutional neural networks (CNN) are used. However, many of the existing research has only been assessed on balanced datasets, which can lead to the Unsatisfied Results and Mislead RealWorld Performances as Fire is a rare and abnormal real-life event . As a new fire detection technology, image fire detection has recently played a crucial role in reducing the fire losses by alarming user's early. To verify the effects of existing preprocessing and feature extraction methods on fire detection when combined with CNN. Here the recognition performance and learning time are evaluated by changing the VGG-19 CNN structure while gradually increasing the convolution layer. Also that the preprocessing method, with pooling i.e, max pooling and the feature extraction method have many benefits in terms of learning speed. Keywords: Image processing, Deep learning, Convolutional neural network, VGG-19, Feature extraction, Classifier

15/12/2024
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SIGNIFICANCE OF PLASTIC IN IMPROVING THE PROPERTIES OF REGUR SOIL

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ABSTRACT

Black cotton which is called as an expansive soil has a property of Shrink and Swell depending upon the availability of water content which causes hazard to the structures constructed over them. This paper was an attempt which was made to increase properties of regur soil by adding plasticstrips in different sizes. Disposal of plastic has become one of the Challenging task. In our currentproject we are using plastic waste in different proportion will results in reducing the problem of disposing plastic waste. Plastic strips of size (5 mm × 7.5 mm, 10 mm × 15 mm, 15 mm × 20 mm)are prepared and added to Black cotton Soil at different treatment levels (0.5%, 1% and 2%) by weight . From the Laboratory results we can observe that there was a significant improvement in properties such as maximum Dry Density, Free Swell, Unconfined Compression Test and direct sheartest.It also showed that adding additives to expansive soil will be effective for improvement in properties of BC Soil. The desiccation cracking behavior and swelling of the soil also reduced to a smaller extent. It was also observed that there is an slight improvement in maximum dry density and little reduction in optimum moisture content

KEYWORDS: Plastic bottles (PET), MDD & OMC, and UCC Test


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UTILIZATION OF BLACK COTTON SOIL WITH AD MIXTURE IN MANUFACTURE OF BRICKS

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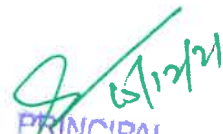
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ABSTRACT

The black cotton soil is a type of expansive soil which have swelling and impervious nature. In the past years, a wide range of alternative bricks have been available in the field of construction with change in the raw material for the same product. Here we are using Black Cotton soil as raw material in manufacturing bricks with the addition of some admixtures to change the properties of the black cotton soil. Admixtures are added to black cotton soil sincethey exhibit high swelling and shrinkage. This analysis study describes the practicability of utilizing black cotton soil as a raw material with admixtures in the production of bricks. Clay is replaced with black cotton soil as an alternative raw material

Keywords: Black cotton soil, admixtures, rice husk ash construction, expansive soil


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PARTIAL REPLACEMENT OF CEMENT WITH GLASS POWDER IN CONCRETE

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ABSTRACT

Concrete is one of the world's most used construction material due to its versatility, durability and economy. Sustainable construction practice means creation and responsible management of a healthy built environment considering resource efficiency and ecology. Manufacturing of cement is a major source of greenhouse gas emissions. Million tons of waste glass is being generated annually all over the world. Once it becomes as waste it is disposed as landfills, which is unsustainable as it does not decompose in environment. Glass material when ground to a very fine powder shows pozzolanic properties which can be used as partial replacement for cement in concrete. Glass is replaced in certain intervals of 5% and strength is noted down.

KEYWORDS: Concrete- versatile, durable, economical. Glass powder- Pozzolanic


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ANALYSIS AND DESIGN OF TALL BUILDING

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ABSTRACT:

Present study is focused on the design and performance of a multi-storied residential building. Static and dynamic analysis of various models using different structural systems and are examined using ETABS software. The performance analysis of tall building for different models are performed to find the optimum structural system by using lateral loads. This paper discusses the analysis adopted for the evaluation of tall buildings under the effect of wind force and earthquake using ETABS. Tall building of height 360ft has been analyzed for Bangalore region India standard code of practice IS-875(part 3) and IS-1893 is used for analysis. Here, the lateral story displacement, story shear and drift are analyzed in different direction.

KEYWORDS:ETABS, Lateral story displacement, Story shear, Story drift


15/12/21
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SEISMIC ANALYSIS OF MULTI STOREY ASYMMETRIC BUILDING USING ETABS

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ABSTRACT

India is prone to strong earthquake shaking, and hence earthquake resistant analysis is essential. The engineers do not attempt to make earthquake proof buildings that will get damaged even during the rare but strong earthquake. Such buildings will be too robust and also too expensive. Practically no building can be made earthquake proof. The engineering intention is to make buildings earthquake resistant, such buildings resist the effects of ground shaking, although they may get damaged severely but would not collapse during the strong earthquake. Thus, the safety of people and contents is assured in earthquake resistant design of buildings and there by a disaster is avoided. This is a major objective of seismic design codes throughout the world in recent times. The sixth revision of IS 1893 (part 1):2016, “criteria for earthquake resistant design of structures” have been published by bureau of Indian standards recently in December 2016. In this new code many changes have been included considering standards and practices prevailing in different countries and in India Extended three-dimensional analysis of building systems – “ETABS 15” is a special purpose computer program developed specifically for building systems. The main objective of this study is to review seismic analysis of, multi story buildings by various researchers using ETABS as per the provisions code IS 1893 (part 1): 2016. The various parameters considering in analysis by researchers irregularity, mass irregularity, re-entrant corners, different locations of shear walls, different building shapes, masonry infill walls, etc.

KEYWORDS: ETABS, seismic analysis, mass irregularity, locations of shear wall, earthquake resistant building.


15/12/24

PRINCIPAL
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"A STUDY ON MECHANICAL PROPERTIES OF M40 GRADE CONCRETE WITH FOSROC ADMIXTURE"

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ABSTRACT:

Now-a-days concrete works are becoming predominant and construction industry looking towards optimizing their resources. The construction industry is an important sector of the economy and plays a key role in national level and economic development. In the construction industry, in the presence of concrete elements choices are being made depending on requirement of developed infrastructure. Government contracts becoming popular in construction industry for development of infrastructure related to health, transport, as well as education sector.

"Fosroc" admixture is to provide excellent acceleration of strength gain at early ages and major increases in strength at all ages by significantly reducing water demand in a concrete mix. In this project concrete cubes are casted and tested for 3 days, 7days and 28 days. Usage of admixture "Forsoc" is also considered and optimum mix design in arrived by trying different combinations like 5%, 10% 15% and 20%. The test adopted include compressive strength test and durable test like water absorption test. Results will be tabulated and recommendations being provided for the industry based on the results of the study. Based on the results recommendations for further studies is also provided.


13/12/21
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USE OF RICE HUSK ASH IN COMPRESSED STABILIZED EARTH BLOCKS

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ABSTRACT

The construction practices of today depend heavily on materials like conventional burnt clay bricks or concrete blocks. These are high energy intensive materials which consume lot of thermal energy during production and thus one of the main contributors to the global warming throughout the world.

Concern for sustainable technology has increased research activities on the production of more durable constructions materials. In recent times, Usage of sustainable materials with substitute the concrete material with Rice Husk Ash to improve properties namely strength, Durability and etc. This is possible due to the high pozzolanic activity from Rice Husk Ash. Although, the effectiveness of RHA depends greatly on its quality which entire depends on its productions process which are yet to be established completely.

However, the focus of this study is not identifying the best production process but to explore the effectiveness of one of the possible uses of RHA in the construction industry. In the present work, the CSEB's are locally prepared using the materials available surrounding Bangalore and Kolar. Since the blocks are purely made out of soil are prone to shrinkage, the stabilization of the blocks is necessary. Therefore an attempt is made to stabilize these blocks using Rice Husk Ash and cement in varying proportions. Rice Husk Ash reduces the density of blocks resulting in lightweight and high strength blocks. In this project different combinations of blocks was prepared with variations in Rice Husk Ash with cement Such as (i.e. cement ration as 4%, 6%, 8% & RHA ratio as 7.5%, 10%, 12.5%, 15%) and Along with these block few control mix blocks are also included and are tested for Wet Compression test, Water Absorption Test, Efflorescence Test, dimensionality Test. According to the tests performed on the prepared blocks the following results were obtained. For Wet Compressive test the result was obtained for different Ageing periods of 7 days, 15 days, 30 days, which was varying from 0.32 MPa to 4.72 MPa. For Water Absorption test the result were varying from 19.4% to 12.4%. For Efflorescence test it was – Slight to nil values and finally for Dimensionality test the measurements were ± 5 mm error. Finally with all the result of the test that were performed was observed and checked thoroughly. At last we finally came to a conclusion that, the most suitable combination with had exceptionally good results were seen when the ratios of "RHA was 10% and cement ratio was 8%".

KEYWORDS:

Rice Husk Ash (RHA), CSEB (Compressed Stabilized Earth Blocks), Sustainable Materials.

PRINCIPAL

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COMPARITIVE STUDY ON PARTIAL REPLACEMENT OF COCONUT SHELL CONCRETE WITH CONCRETE AND CONVENTIONAL CONCRETE

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ABSTRACT:

Aggregates provide volume at low cost, comprising 66 percent to 78 percent of the concrete. Conventional coarse aggregate namely gravel and fine aggregate is sand in concrete will be used as control. While natural material is coconut shell as coarse aggregate will be investigate to replace the aggregate in concrete. In this studies, three different concrete mixes with different the combination of natural material content namely 0%, 10%, 20%, 30%. Three sample specimen will be prepared for each concrete mixes. The aim behind this is to use low cost material like coconut shell and thus taking close to the concept of low cost housing. All precaution is taken to maintain serviceability, strength and durability of the members. Thus it will be helpful for civil engineers and society to adopt this concept to fulfill the basic need of human that is housing.

KEYWORDS: Partial replacement, coconut shell, conventional concrete, light weight concrete


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DESIGN AND DEVELOPMENT OF 0.5HP SINGLE PHASE INDUCTION MOTOR

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ABSTRACT

Induction Motors are responsible for consumption of nearly 40% of electricity globally, as these are the driving force behind each fan, compressor, pump and nearly every mechanical load which have rotational motion. About 30 million new electric motors are put in use every year for industrial application alone. Despite the advent of permanent magnet-based motors, single phase induction motors (SPIM) out numbers all other types of induction motors, because of its simple and robust construction and low cost. Hence small improvement in the performance of SPIM may greatly impact energy consumption worldwide and reduce carbon footprint eventually (in case of slip ring induction motor). However, this machine cannot deliver optimal efficiency standards. The main benefit with MATLAB Simulink is that in the electromechanical dynamic model can be accomplished in a simple way and it can be simulated faster using function blocks. In this paper optimal design parameter (choice of core material, stator winding, stator and rotor slots, sub-phase capacitor and SWG of copper conductor).Using the MATLAB Simulink the efficiency and torque performance is obtained by selecting the suitable parameters (values).Using MATLAB Simulink the performance characteristics are obtained and this performance characteristics is compared with the practical data and this Simulink and practical data are validated and percentage error will be found.

KEYWORDS:Energy conservation, Induction Motors, MATLAB Simulink


15/12/21
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FOOT STEP POWER GENERATION USING PIEZO ELECTRIC TRANSDUCERS

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ABSTRACT

One of the basic needs of today's life is electric power. A large amount of electric power is needed for various operations, energy demand is increasing linearly day by day along with the increase in population, and this project focuses on the power generation from the increased population without negatively affecting the environment. The footstep walking and running energy is converted in to electricity with the help of piezoelectric crystals. It is a non-conventional system in which the mechanical energy from the footsteps is converted in to electrical energy. This system can be implemented in many public places. By using piezo electric crystals, the pressure of the footstep deforms the crystal and produced electrical energy as output. The footstep power generation, here we proposed is an advanced footstep power generation system that uses the piezo electric sensors to generate power through footsteps as a source of renewable energy that can be obtained while walking on a certain arrangement like stepping foot on a piezo tiles, this project describes the use of piezoelectric materials in order to harvest energy from people walking vibration for generating and accumulating the energy.

The basic working principle of footstep power generation system is based on piezo electric sensors. When the flooring is engineered with piezo electric technology, the electrical energy produced by the pressure is captured by the flow sensors and converted to an electrical charge by piezoelectric transducer. These sensors are placed in such a way that it generates maximum output voltage. This output is provided to our monitoring circuitry which is microcontroller based circuit that allows user to monitor the voltage and charges a battery, and this power source has many applications. Our project model is cost effective and easy to implement.

KEYWORDS: Footstep power generation, Piezoelectric sensors, Battery, Electricity.

15/12/21
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REGENERATIVE BRAKING ON E-BIKE

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ABSTRACT

As the basic law of Physics says 'energy can neither be created nor be destroyed it can only be converted from one form to another'. During huge amount of energy is lost to atmosphere as heat. It will be good if we could store this energy somehow which is otherwise getting wasted out and reuse it next time we started to accelerate. Regenerative braking refers to a system in which the kinetic energy of the vehicle is stored temporarily, as an accumulative energy, during deceleration, and is reused as kinetic energy during acceleration or running. Regenerative braking is a small, yet very important, step toward our eventual independence from fossil fuels.

These kinds of brakes allow batteries to be used for longer periods of time without the need to be plugged into an external charger. These types of brakes also extend the driving range of fully electric vehicles. Regenerative braking is away to extend range of the electric vehicles. In many hybrid vehicles cases, this system is also applied hybrid vehicles to improve fuel economy. A normal car is only about 20% efficient, meaning some 80% of the energy it expends is wasted as heat created by friction. Regenerative braking could reclaim as much as half of that wasted energy, which equates into more motion produced by the fuel we are paying for instead of using that fuel to create heat that is being dissipated uselessly into the environment.


15/12/2024
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IoT BASED INDUSTRIAL AUTOMATION USING ZIGBEE COMMUNICATION STANDARD

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ABSTRACT

The current industrial revolution is the industry 4.0. One of its main aim is the replacement of old communication that uses wired links with new communication that is wireless communication. It mainly improves the mobility, reduce the deployment cost, cable damage and improves the scalability. The agenda of our work is to connect devices to IoT so as to improve the accessibility of the industry from anywhere in the world which can automate all of its operation. The proposed system uses Zigbee communication protocol along with the IoT service. IoT can connect anything on the internet enabling communication between devices to achieve smart monitoring, control and administration.

As per our idea, here we are using different sensors such as temperature, fire & air quality, AC voltage and AC current sensors. These sensors sense their respective parameters and pass it on to Arduino in real time, displays the same on LCD & under any abnormalities in industrial environment buzzer and relay circuit is activated which takes control over faulty conditions with less time compared to manual detection and operation of fault occurrence. All the above real time parameters and operations done are sent to central system using Zigbee communication and the same is sent to BLYNK Cloud using Wi-Fi protocol. To achieve this work both hardware and software is used. Any smartphone installed with BLYNK application can be remotely connected to the central system.

KEYWORDS: IoT technology, industrial automation, Zigbee communication, industry 4.0, wireless sensors network, Arduino.

15/12/21
PRINCIPAL
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DESIGN AND IMPLEMENTATION OF CONTACTLESS HUMANBODY TEMPERATURE MEASUREMENT AND AUTOMATED HAND SANITIZER DISPENSER

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ABSTRACT

In these critical days of the COVID-19 pandemic, it is difficult to know whether a person is infected with the virus or not. Because the virus will spread from person to person through air medium which results in rapid spreading. During the sanitizing process or checking a person for the infection of the virus an another person i.e. the one who checks, needs to be closer to the one who needs to be checked, at this time the one who checks is in danger to the infection of virus. In order to overcome this situation "Implementation of contactless human temperature sensor and automated sanitizing dispenser" can be used. By using this idea we can use a machine without an human being and reduce the number of affected persons.

As per our idea, here we are using an contactless sensors rather than a contact sensor in order to avoid the contact between the two members. When a person is instructed to stand at the defined place, which is suitable for the sensor to sense. The sensor senses the temperature of the human body and generates the signal and transfers the signal data to the ARDUINO where it converts signal data into a digital data in a suitable way of displaying it on the LCD. After this process the person is allowed to pass if he has normal body temperature and sanitized by the automated sanitizer dispenser, If the temperature of the person is more than the normal temperature the buzzer will give an alert sound, and the person is not allowed to pass through. This idea requires both hardware and software components for its working.

KEYWORDS: Contactless sensors, ARDUINO, LCD, Buzzer, Ultrasonic sensor, Driver, DC-DC Buck converter, Solenoid valve

15/12/2021
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DESIGN OF STEP-DOWN AC TRANSFORMER FROM 230V TO 60V AC

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ABSTRACT:

-In the Expeditionally changing technologies in the power industry ,new references labeling new technologies .Based on this reality, we need to track up the international affairs and schemes taking place in the modern transformer design field .Dependable and meticulous solution methods is demanded by the complexity of transformer design .Engineers must guarantee that conformance with the enforced criteria is met while keeping manufacturing costs low while designing tranformers. Transformer is the common device which is found in electrical system that links the circuits which operates at different voltages.

Transmission and distribution of electrical energy are the primary part of the transformer. Designing of a step-down transformer from 230V to 60V AC is done by hardware designing, MATLAB programming and MATLAB simulation. Design is based on computer optimization techniques. Hardware designing is completed by taking the output of O.C and S.C test.


15/1/2019
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DEVELOPMENT AND OPTIMIZATION OF HYBRID POWER GENERATION AND STORAGE TO PROMOTE CLEAN ENERGY

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ABSTRACT

Energy is critical to the economic growth and social development of any country. Indigenous energy resources need to be developed to the optimum level to minimize dependence on imported fuels, subject to resolving economic, environmental and social constraints. This led to an increase in research and development as well as investments in the renewable energy industry in search of ways to meet the energy demand and to reduce the dependency on fossil fuels. Wind, hydro and solar energy are becoming popular owing to the abundance, availability and ease of harnessing the energy for electrical power generation.

Stand-alone power generation systems make use of solar PV and turbines to produce and store the energy for future use. Solar electricity has regulations that it could not produce power within the night and in the cloudy season so we want to triumph over this drawback we will use each wind, solar and hydro together so that any individual of source fails every other supply will maintain generating the electricity and in accurate weather situation. It is a hardware proposed design of a compact stand-alone hybrid power generation system using wind-hydro-solar resources. This system can be implemented in industries/houses where the wind and solar energies are obtained by turbine and PV-Cells, during the rain the water is allowed to flow through a mini-turbine which in-turn produce energy during the rain fall. Finally total energies will be acquired simultaneously for charging the batteries and is utilized for satisfying the electrical demands of domestic and rural areas. Uninterrupted power can be supplied in industries and factories using an inverter.

KEYWORDS: Environmental and social constraints, Wind, hydro and solar energy, Stand-alone power, Solar electricity, Mini-turbine, Uninterrupted power


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A GREENER APPROACH TO HARVEST ENERGY USING PIEZO SPEED BREAKER

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ABSTRACT

The energy saving, generating, and compensating is the deal of the day. A lot of effort has been spent to generate power from speed breaker and many mechanisms implemented for the same goal. This method of Electrical power generation needs no input power. This Project is implemented by using simple drive mechanism such as piezo and roller, some interfaced Electrical components and chain drive Mechanism. The electro-kinetic power generator is a method of generating electricity by harnessing the kinetic energy of automobiles that drives over the track. In order to overcome this problem, we need to execute the techniques of optimum use of conventional sources for conservation of energy. One such technique is explained here. The count of vehicles passing over speed breakers on roads has increased these days. Such speed breakers are designed for heavy vehicles, as it increases the input torque and ultimately results in increasing the power as output. The main approach of the project is to lighten the street light and to light the villages utilizing the jerking pressure over speed breaker in highways and roadside.

Then, this mechanical energy can be transformed to electrical energy using generator or dynamo which can be stored with the use of a battery. All these conversions take place in an electro- mechanical unit. This energy saved during the daytime can be used at night to light the street lamps. Therefore, by using this arrangement a large amount of energy can be conserved which can be used to fulfill our future demands.

KEYWORDS: Speed breaker, piezo devices, roller mechanism, belt drive mechanism, electro-mechanical unit.


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TO IMPLEMENT 3 PHASE FAULT PROTECTION FOR UNDER VOLTAGE, OVER VOLTAGE AND OVER LOAD CONDITIONS USING AURDINO

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ABSTRACT

Automation in the distribution field permits utilities on actualizes all the adaptable control for distribution systems, which can be used to upgrade efficiency, reliability, quality of electric service. Automation not only upgrades those qualities but also reduces human effort and saves time. Under, over voltage and over load problem is one of the common types of problems which lead most of the insulation and appliance damage throughout our country. The paper aims to develop micro-controller based auto-recloser for the three phase supply system, The circuit breaker closes automatically after a brief interruption in the event temporary fault while it remains in tripped condition in case of permanent fault. This mechanism will possibly replace the mechanical relays in the system and combine it with data acquisition system which will increase system efficiency and reduce the cost of line equipments. In this paper we are going to show how under, over voltage and over load problem leads a system into catastrophic situation and also describe how those problems can be minimized economically using automation with auto closer system with alert in IOT system.

Keywords: Microcontroller, Auto recloser system, three phase system, IOT.


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SOIL AND WATER QUALITY MONITORING IN OPEN CAST MINES

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ABSTRACT

The opencast mining deteriorates the environment in numerous ways. One of the aspects of environment, it harms the most to the Soil and Water. Thus, estimation of quality of Soil and Water is extremely important for proper assessment of the associated hazards. Due to lack of proper planning and negligence of regulations, an appreciable amount of environmental degradation and ecological damage to Soil and Water occurs. The soil samples are collected from the mines. To analyze the parameters like pH, organic carbon, soil nitrogen, calcium, magnesium, potassium, and Sulphur of soil. The water samples are collected from the mines. To analyze various physical, chemical, metallic, and organic parameters were found which included determination of turbidity, conductivity, solids, iron, chromium content, pH, hardness, ammonia, nitrate, sulphate, phenol, fluoride, phosphate and organic parameters of importance such as Dissolved oxygen, Bio-chemical Oxygen Demand and Chemical Oxygen Demand. For control the soil and water pollution it is suggested that appropriate steps must be taken by the industry, State Pollution Control Board and the Government to prevent pollution of soil and water. Implementation of preventive measures proposed can be helpful to a great extent.

KEYWORDS: Soil and water, estimation of quality, analyses of parameter, State Pollution Control Board, Implementation of preventive measures


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DEVELOPMENT OF REAL TIME MONITORING SYSTEM TO DETECT DUST POLLUTION IN OPENCAST MINES

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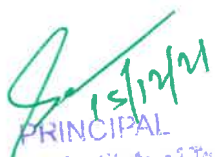
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ABSTRACT

Air quality in the mining sector is a serious environmental concern and associated with many health issues. Air quality management in mining regions has been facing many challenges due to lack of understanding of atmospheric factors and physical removal mechanisms. A modeling approach called the Real time monitoring of Dust pollution is developed to predict dust particulate concentration in the mining region. Opencast mining dominates major portion in India. Different sensors detected data were utilized to compute dust generation due to different mining activities. Work zone air quality, ambient air quality and seasonal variations are described revealing high pollution potential due to suspended particulate matter and consequent impact on human health. So, for this a continuous air monitoring is required for environmental protection and geological mining it is required for the mineral mining plant to protect its surroundings from the effects of mining operations.

KEYWORDS: Dust pollution, Particulate, ambient


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ASSESSMENT OF STABILITY OF A PANEL IN AN UNDERGROUND COAL MINE USING NUMERICAL MODELLING

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ABSTRACT

Mining is one of the most important sectors for the progressive development nation. In which Underground coal mining is of two types, the longwall method and bord and pillar method. That Bord & pillar mining is most commonly used in India. The extraction of coal from underground sources is filled with many uncertainties. Underground coal mining involves problems like panel stability, roof control, spontaneous heating of coal, mine fire, explosion, and many others. Bord and pillar method of working is generally adopted for a seam with a thickness greater than 1.5 m. Coal being the major producer of electricity from underground, coal mining cannot be avoided totally. In these many years, scientists and researchers have worked on the issue of creating a safe atmosphere underneath the surface. At greater depths, this bord and pillar method becomes uncontrollable as effects of ground pressure which are not easily predictable, the problem of pillar failure was encountered. Hence, A detailed parametric study is conducted using the FLAC^{3D} (Fast Lagrangian Analysis of Continua) to analyze the panel stability of an underground coal mine for varying geomining conditions.

KEYWORDS: Panel Stability, Numerical Modelling, Underground Coal Mining, Local Mine Stiffness, Strain Energy


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IoT BASED WATER LEVEL MONITORING SYSTEM

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ABSTRACT

The Monitoring and Management of Neyveli Hydro-geological basin is inevitable for sustainable lignite development in this region. Mining of lignite from the Neyveli lignite field is faced with a hydrological problem due to water in the artesian aquifers below the lignite seam exerting an upward pressure which is being controlled through pumping with optimum level. Using of dip- meter to monitor water level in borehole is the daily routine of NLCIL to overcome this situation this paper discusses an IoT based water level monitoring system that measure the water level in real-time. To demonstrate this the system where the sensors placed over the containers to detect the water level and compare it with the container depth. The system makes use of AVR Arduino microcontroller, LCD screen, Wi-Fi adaptor for sending data and a buzzer. The LCD screen is used to display the status of the exceeding level of liquid in the containers. The buzzer starts ringing and as well alarm ring in mobile phone of user.

KEYWORDS: Ultrasonic Sensor, Micro Controller, LCD display, Buzzer, 7.4V battery, Wireless network (Wi-Fi), Blynk App


15/12/2021
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SEQUENCE OF BACKFILLING AND MONITORING THE SLOPE

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ABSTRACT

The most influencing factors that contribute to the enhanced slope stability are cohesion and angle of internal friction. By using cohesion and angle of friction of the soil, the sequence in which the refilling must be taken place to maintain the stability is determined. Slope stability is the major issues associated with the overburden dumps in the opencast mining scenario. Statistical data reveals that more than half of the accidents occurring in the opencast working are due to the failure of the slope and reason behind this is the improper design of the benches and insufficient works on finding the geo-technical parameters. The management of risks associated with slope instability is an essential process in the safe and economic operation of open cut mines. The 'slope stability radar' (SSR) has been developed to better manage those risks. The SSR remotely scans rock slopes to continuously measure any surface movement and can be used to detect and alert users of wall movements with sub-millimeter precision. This project work exhibits the extensive study of the factors contributing to the slope stability, various stabilization techniques for slope stability, laboratory-oriented works regarding finding the geo-technical parameters of the overburden. Slope stability monitoring and evaluating play vital role in the risk management of open cast mines. Generally, Issue of slope failure occurs at open cast mines due to undisciplined mining, impacts of weather conditions. Slope stability radar provide slope stability warning impending failure and it has used for setting out threshold value.

KEYWORDS: opencast mine, slope stability, slope stability radar, monitor


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ROCK FRAGMENTATION ANALYSIS USING WIPFRAG

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ABSTRACT

Size of rock fragments subsequent to blasting has direct impact on cost of transportation and processing. The cost increases with the increasing size of the fragments. This necessitates quick and accurate measurements of size distribution of fragmented rocks to decide further course of action for optimizing the cost of entire operation. There are many such measurement methods available and used by industry/researchers but most of the methods are time consuming and not precise. In such scenario WipFrag came as an automated image based granulometry system that uses digital image analysis of rock photographs and video tape images to determine grain size distributions. In this project, images of rock pile samples will be captured at different angles using camera and analysis of cumulative size distribution and optimum rock fragmentation will be carried out using Wip Frag.

KEYWORDS: Rock fragmentation, blasting, size distribution, WipFrag, image analysis


15/12/21
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PRECISION JUMBO DRILLING USING ULTRASONIC SENSORS WITH WIRELESS DISPLAY SYSTEM

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ABSTRACT

Jumbo drilling is a major task where accuracy often fails since large drillings requires minute accuracy, here is an attempt to develop a prototype drilling machine. Drilling assembly shall be mounted on a chaise with four wheels and drive. This vehicle Is completely wirelessly controlled by using Wi-Fi technology. Drilling angles are set through wireless controller and drilling depth will be continuously monitored and data will be displayed through an LCD. Sensor will be used to monitor the drilling depth and drill hole angle during drilling with Hc-sr04 ultrasonic sensor and angle sensor.

KEYWORDS: Jumbo drilling, minute accuracy, prototype, Wi-Fi technology, LCD, Hc-sr04ultrasonicsensor, angle sensor.


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REMOTE MONITORING SYSTEM FOR MINE SAFETY USING WIRELESS SENSOR NETWORK

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ABSTRACT:

Today safety of miners is major challenge. Miner's health and life vulnerable to several critical issues, which includes not only the working environment, but also the after effect of it. Mining activities release harmful and toxic gasses in turn exposing the associated workers into the dangers of survival. This puts a lot of pressure on mining industry. To increase the productivity and reduce the cost of mining along with consideration of the safety of workers, an innovative approach is required. Miner's health is in danger mainly because of the toxic gases which are very often released in underground mines. Areas in which these gases are present, are considered as critical regions. A real time monitoring system using wireless sensor network, which includes multiple sensors, is developed. This system monitors surroundings environmental parameters such as temperature, humidity and multiple toxic gases this system also provides an early warning, which will be helpful for all miners present inside the mine to save their life before any casualty occurs. The system uses Zigbee technology to establish wireless sensor network. which is suitable for operation in harsh environment.

KEYWORDS: Toxic gases, Wireless Sensor Network, Zigbee Technology.


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Illumination Survey in Opencast Mines

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ABSTRACT

The primary objective of the project was to develop a systematic scientific approach for achieving better illumination standards in the mine and ensuring safe visual working environment in the selected opencast mines with regard towards the statutory standards. The research investigation was carried out with the aim to conduct illumination survey to check if the standards were met with respect to Directorate General of Mines Safety (DGMS) standards at different places of work in the mine and of different HEMMs followed by design of appropriate illumination systems based on illumination requirements. The illumination survey of existing lighting system in various working areas i.e., haul road, coal transport road, dump yard, OB and coal faces, dump road, workshops. The instrument used for the survey was a Metravi-1332 Light meter. The illumination models were designed for haul road, coal transport road and dump road using DIALux software and virtual luminaries were used according to the requirement. The illumination models were designed for haul road, coal transport road and dump road using DIALux software and virtual luminaries were used according to the requirement. The road lighting designs were performed as per CIE EN 13201 standard, which is used internationally for road lighting. The design models satisfied the required minimum lighting as stated by DGMS standards. For OB and coal faces it is better to install a mobile lighting arrangement (tower mounted/truck mounted) as the face moves rapidly and the peripheral lighting provided won't be able to illuminate the face as the face advances.

KEYWORDS: Illumination, haul roads, dump roads, DIALux, DGMS


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PRINCIPAL
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ROCK DRILL BIT INTERACTION STUDIES

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ABSTRACT

To study the rock-drill interaction and study the wear rate of the drill bits. In this project we are going to study the complete wear rate of the drill bits (i.e., button bits). The field visit will be carried out in hard rock metal mines. In most of the metal mines, the button bits are commonly used, and these bits are used for getting high production of the mines. The life of the bit basically depends on the total meterage drilled will be studied in detail. These studies will be carried out in different type of rock conditions. Rock sample will be collected from the mines, to study the petrological and mineralogical characteristics and to study its influence on the drill bit wear rate. The main objective of the project is to determine the rate of wear for different button bits and evaluation of drilling performance and suggest suitable measures to achieve their rated production.

KEYWORDS: Drill bits, button bits, drilling performance, rated production


PRINCIPAL
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AN IMPROVED TECHNIQUE FOR IDENTIFYING FAKE NEWS ON SOCIAL MEDIA NETWORK USING SUPERVISED MACHINE LEARNING CONCEPTS

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ABSTRACT

Fake News in the form of dark journalism or propaganda that comprises of intentional or frauds spread via conventional print and broadcast news media or online social media. The concocted data is primarily spread by social media but is periodically dispersed through mainstream media. Fake information is written and issued with the intention to inform in order to barter the authority, entity, or individual, and/or increase financially or politically, frequently applying sensationalist, dishonest, or outright fabricated headlines to increase readership, online sharing, and net stop revenue. In the latter case, it is interconnected to shocking online clickbait headlines and relies upon ad revenue generated from the process, irrespective of the truthfulness of these printed, posted and shared stories. Deliberately misleading and misleading fake news differs from overt humour or parody, which is meant to entertain rather than inform its people. If writing a narrative with a false message attracts users, the benefits advertisers and improves ratings. Simple access to online advertising-income escalated political polarization, and the quality of social media, mainly those Twitter and Facebook information Feed, have all been implicated in this distribution of fake news, which competes with legitimate news stories. Hostile regime actors have also been implicated in generating and spreading fake information, especially within elections. This paper presents an improved technique for identifying fake news on social media network and checking for the realness of news, that we consume on our routine day based on the supervised machine learning concepts. During the first phase, we manage our data and prepare it into the required format for the next phase, which is processing the data using supervised machine learning concepts i.e., Naïve Bayes technique, and in the last phase, we validate the processed antonyms output for concluding the legitimate news amongst the questionable media news.

KEYWORDS: Fake News, Social Media Network, misleading, Legitimate News, Supervised Machine Learning, Naïve Bayes.


PRINCIPAL
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AN IMPROVED TECHNIQUE FOR HUMAN ACTIVITY VIDEO CLASSIFICATION USING MACHINE LEARNING CONCEPT

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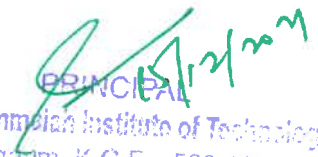
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ABSTRACT

In this project, a new improved system called Human Activity Recognition system is presented. The proposed system (HAR) aims to identify human activities over the input gray-scale image based on supervised deep learning technique. It contains two phases such as training and recognition. In the first phase, the (HAR) system train the finite number of human activities image set based on improved supervised classification technique includes to perform various operations namely, preprocessing, feature extraction and similarity measures over the input image dataset. Second phase, the proposed system recognize the test human activity image and its respective action over the trained human activity image set based on standard probability technique. Experimental result shows that the proposed (HAR) system is well suitable to recognize the human activities with good accuracy.

KEYWORDS: Human Activity Recognition (HAR), gray-scale image, improved supervised classification technique, standard probability technique.


PRINCIPAL
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AN IMPROVED HANDWRITTEN DIGITS RECOGNITION USING HISTOGRAM AND ML TECHNIQUES

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ABSTRACT

This paper presents an improved technique called Handwritten Digit Recognition System (HDRS) based on supervised pattern recognition technique. The proposed HDRS system aims to identify and recognize digit over the handwritten number in the grayscale image based on supervised pattern recognition technique. This HDRS system consist of two phases training and digit recognition respectively. The training phase containing 3 stages called pre-processing, feature extraction and training. In the pre-processing stage, the HDRS system improving a fixed image content quality based on standard arithmetic operation. In feature extraction stage, the proposed system extract the feature over the blocks based on histogram technique. In the last stage the HDRS system separate the feature set of image set into 10 distinct classes based on supervised classification technique. The digit recognition phase contains additional stages other than stages in phase-1 are so called as segmentation, mapping, pattern matching and validation. In segmentation stage the proposed system spilt the pre-processed image into finite number of non-overlapping segmented blocks with individual digit in the image. The feature extraction stage performs as explained earlier. In mapping stage the extracted feature is mapped over trained data set and identify respective class based on threshold method and generate respective digit. In validation stage, the obtain result that is result obtain from pattern matching stage is validated to be right or wrong based on the probability of true and false values comparing with over all train samples. Experimentation result shows that the proposed system is well suitable to identify the digit over the hand written data in the image with the good accuracy.

KEYWORDS: Hand Written Digit Recognition System, Supervised pattern recognition, Grayscale image, Standard arithmetic operation, Histogram, Supervised classification, Threshold method.


PRINCIPAL
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AN ENHANCED APPROACH OF IDENTIFYING DISTINCT CLUSTERS IN THE COLOR IMAGE USING AGGLOMERATIVE CLUSTERING CONCEPT

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ABSTRACT

Image processing is a method to perform some operations on an image, in order to get an enhanced Image or to extract some useful information from it. It is a type of signal processing in which input is an image and output may be image or characteristics/features associated with that image.

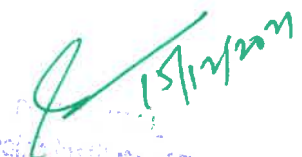
Image Clustering plays a significant role in the field of computer science because it aims to identify a group of similar pixels that belongs together or to a specific region and is different from other regions. In this paper, Automatic Clustering of Color Image (ACCI) Technique is proposed.

It aims to identify distinct number of clusters over the color image using improved agglomerative clustering technique. The proposed project consists of three stages namely - pre-processing, clustering and validation respectively.

In the first stage the color image is split into finite number of blocks with size of $2*2$. Next stage, the input color image block set is divided into distinct cluster based on sequence of merging operation using improved Limited Iteration Agglomerative Clustering (iLIAC) technique. In the final stage, the proposed (ACCI) technique validates the cluster result which is obtained in the previous stage by Effective Cluster Validation Method (ECVM).

The proposed ACCI system is appropriate to automatically identify distinct clusters over the color image with higher similarity using the improved agglomerative clustering technique as compared to the existing technique.

KEYWORDS: pre-processing, clustering, validation, Automatic clustering of color image.


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COUNTERFEIT PRODUCT IDENTIFICATION USING BLOCKCHAIN TECHNOLOGY

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ABSTRACT

Block chain technology is an open distributed ledger that can record transaction of peers. As it is distributed, Block chain is typically managed by peer to peer network. Working simultaneously to solve complex mathematical problems in order to validate new blocks. In Block chain each block will be hashed and that hash value will be used for linking new block, even transactions of the block also get hashed and Merkle tree is used to keep track of hash values of transaction by making all hash values of transactions into single hash value. The proposed system is capable of detecting the counterfeit products, using the QR code which is embedded on the product which provides the information of the product by using block chain technology. We described block chain with product anti-counterfeiting in that way manufactures can use this system to provide genuine product without having to manage direct operated stores. Now a day's fake products are floating a lot in the market. They are sold at cheaper rates than original products. Sometimes, they are even sold at the same rate. Block chain has a way to prevent such malpractices too.

KEYWORDS: Block chain technology, peer to peer network, hash value, Merkle tree, QR code, counterfeit, anti-counterfeiting, malpractices.


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ANAMOLY DETECTION IN CROWDS USING MULTI VIDEO INFORMATION

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ABSTRACT

At present, the existing abnormal event detection models based on deep learning mainly focus on data represented by a vectorial form. But here, Anomaly detection in crowds using Multi video information is a system capable of detecting unusual activities in crowds from real-world data captured from multiple cameras. The detection is achieved by classifying the distinct movements of people in crowds, and those patterns can be different and can be classified as normal and abnormal activities. Statistical features are extracted from the data set collected by applying sliding time window operations. A model for classifying movements is trained by using Deep learning technique. The system was tested by using two data sets collected from CCTV during social events gathering. Results show that data can be used to detect anomalies in crowds as an alternative to video sensors with significant performances. Our approach is the first to detect any unusual behaviour in crowd with non-visual data, which is simple to train and easy to deploy. Security is always a main concern in every domain, due to a rise in crime rate in a crowded event or suspicious lonely areas. Abnormal detection and monitoring have major applications of computer vision to tackle various problems. Due to growing demand in the protection of safety, security and personal properties, needs and deployment of video surveillance systems can recognize and interpret the scene and anomaly events play a vital role in intelligence monitoring.

KEYWORDS: Abnormal Event Detection , re-sized , gray scaled , convolutional neural network , image classification , testing and training , predict performance , accuracy .


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IOT BASED SMART MIRROR


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ABSTRACT

This paper depicts the design and development of smart mirror that represents an elegant interface for glancing information and also used for thief detection in a home environment. A smart mirror is a system that functions as mirror with additional capability of displaying date, time, current temperature, news reminders, news-updates, weather details. A smart mirror that receives a online news and display it using Internet of things (IoT) circuitry. There is never an end to devices that can be made 'smarter' with the help of adequate technology. There are lot of smart display devices but mirrors provide an interactive environment while displaying information. This paper presents the design and development of a smart mirror using raspberry pi with additional features which provide face recognition for security and smart unlocking process. Using face recognition technique, we can detect the user's face and verify the user.

KEYWORDS: *Iot, RaspberryPi-3B+, News Reminders, News-updates, Calendar, Weather-updates, Mirror, Face recognition*


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IOT BASED FOREST TRACKER USING RASPBERRY PI MODEL

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ABSTRACT

Over the last two decades, the forest fire has been increased dramatically, due to forest fire animals are not secure and moves out of the forest boundaries. In this system the Forest monitoring unit has been developed to provide a monitoring and communication solution for Forest protection. The system provides an intelligent forest environment monitoring solution based on the Raspberry pi, analogical and digital sensors.

The user's accessibility to the collected data is ensured via Internet and a mobile application that allows the user to receive notifications, whenever fire or animals are detected. This Forest monitoring solution is an IOT project, addressed to public and private forest owners as well as to national environmental and disaster response authorities.

The purpose of the IOT concept is to transform the real world and every day electronic devices, appliances, etc., into intelligent interconnected virtual objects. By keeping the user informed on the state of things and giving the users control of things, a better global humans- devices-humans communication can be achieved.

KEYWORDS: Camera, Sensor, Detection, Convolutional neural network, Image classification, Testing and Training, Predict performance, Accuracy.


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DEVELOPMENT OF RANDOM AUTHENTICATION SYSTEM ON E-LEARNING PLATFORM

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ABSTRACT

Due to easiness and expansion in property of smart mobile devices, it is becoming inevitable for mobile applications to have an important role in higher education systems. Currently educational institutions are choosing online platform to conduct classes and exams. The existing system doesn't monitor the attentiveness of the student throughout the session, whether the student is present virtually. Since conducting the exams, scanning and uploading the documents are done through different applications, it is a long process which is time consuming. In this paper, we will be developing "The LEARN" application which allows the faculties to check the attentiveness of the student and generate automatic attendance using facial recognition, where the camera will get turned on at random instance of time. Online streaming is done using WebRTC. Notification service is provided to faculties, if a foreground or background application comes into picture on the student's application and classes and examination schedule will be notified to students. The Online examination service allows the students to attend exam online and upload the answer scripts using FPDF after completing the exam through same application in the specified time. Online meeting services enhance faculties and students to interact virtually.

KEYWORDS: Online Exam, Attentiveness, WebRTC, FPDF, Facial recognition.


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AN INNOVATIVE APPROACH TO PROVIDE COMMUNICATION INTERFACE BETWEEN DEAF AND DUMB PEOPLE

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ABSTRACT

The deaf and dumb people face problems in communicating with others. Addressing the problems and issues of individuals with Visual, Hearing and Vocal Impairment through single aided system may be a powerful job. The paper focuses on finding a unique technique that aids the visually impaired by letting them hear what is represented as text, and letting them visualize what is been represented as voice command, it is achieved by the technique that captures the video through a camera and convert it text form and visualize which is in audio form by speech to text conversion technique. Our goal is to design a desktop human computer interface application that facilitates communication among such people with normal ones. This can be achieved by making use of YOLO algorithm. This algorithm detects the objects in real time using convolutional neural network. This algorithm outperforms the other detection methods, including DPM and R-CNN, when generalizing from natural images to other domains.

KEYWORDS: Hand Gestures, Image Processing, Annotation, Label Image, Feature Extraction, Training, Testing, TensorFlow Object Detection.

PHD
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FACE MASK DETECTION USING CNN AND TEMPERATURE SCREENING

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ABSTRACT

The COVID-19 pandemic forced Government across the world to impose lockdown to prevent virus transmissions. This resulted in the shutdown of all economic activity and accordingly the production at manufacturing plants across most sectors was halted. While there is an urgency to resume production, there is an even greater need to ensure the safety of the work force at the plant site.

Face Mask Detection has evolved as a very popular problem in Image Processing and Computer Vision. Many new algorithms are being devised using Convolutional Architectures have made it possible to extract even that pixel details. We aim to design a Binary Face Classifier which can detect any Face Mask present in the Frame irrespective of its alignment. We present a method to generate accurate Face Segmentation Mask from any arbitrary size input image. Beginning from the RGB image of any size, the Method uses Predefined Training Weights of MobileNetV2 Architecture for Feature Extraction. Training is performed through Convolutional Neural Networks to Semantically Segment out the faces present in the image. Data Augmentation is a technique to artificially create new training data from existing training data. Gradient Descent is used for training while Binomial Cross Entropy is used as a Loss Function. Hyperparameter optimization or tuning is the problem of choosing a set of optimal hyperparameters for learning algorithm. That yields an optimal model which minimizes a predefined loss function on given independent data. Further the output image from the FCN is processed to remove the Unwanted Noise and False Prediction if any and make Bounding Box around the Faces.

The Ultrasonic Sensor sends out 8 pulses of Ultrasonic sound when you pull the trigger line high these Sound Waves travel with the speed of sound. When the waves hit an obstacle, they bounce back and the sensor receives the waves. The sensor then pulls the echo pin high for few milliseconds. When connecting this sensor to an Raspberry pi, it is possible to measure the time between sending and receiving the pulses. Once we detect a person, then with the use of Infrared sensor we will be able to detect the temperature of that person. This project describes an efficient and economic approach of using Machine Learning to create safe environment in a manufacturing setup.

KEYWORDS: Binary Face Classifier, Semantic Segmentation, CNN, FCN, MobileNetv2, Data Augmentation, Hyperparameter Optimization, Ultrasonic Sensor, Infrared Sensor, Raspberry pi

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A GRAPHICAL PIN ENTRY SYSTEM WITH SHOULDER SURFING RESISTANCE

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ABSTRACT

Personal identification number or PIN based authentication systems are most commonly used authentication systems. Due to maturity and simplicity, these authentication systems are vastly deployed in many different areas such as point of sale (POS), electronic door access system and in different kinds of mobile applications. However, due to limited password space and small password length, they are highly susceptible to different kinds of shoulder surfing attacks. In this paper, we have proposed a graphical PIN entry scheme that provides resistance against shoulder surfing attacks. To alleviate the shoulder surfing attack in our proposed scheme, we have used specialized interface design and indirect PIN entry method. For indirect PIN entry method we have used extra information in the form of reference location, which is not observable for the attacker. The results of the user study show that this scheme provides a reasonable balance between security and usability.

KEYWORDS:

Authentication, Personal identification number, Shoulder surfing

15/12/21
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A SMART GADGET FOR WOMEN SECURITY BASED ON IOT CONCEPT

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ABSTRACT

This project aims at providing security for women by detecting Heartbeat rate of a person whenever they face threat. That is the reason to develop this project that can act as a rescue device and protect at the time of danger. After detecting signals, the sensor transmits the output electrical signals to the controller. The Controller receives the signal from the sensor as an analog input signal and hence it generates the output parameters of each sensor and displays it on the LCD display. The sensors used in the proposed system are flex sensor, temperature sensor, MEMS accelerometer, sound sensor pulse rate sensor. Each sensor is used to detect signals of human (women) who is in abnormal situations. If values of any sensor signal cross the threshold limit indicating that the women are in threat and according to victim condition, when 4 sensors out of 5 sensors crosses the threshold limit the buzzer is activated. Hence the GPS transmits the location to the ESP32 and then the controller transmits the signal. Finally, the alert message "I am in danger" along with the latitudinal and longitudinal location is send to the registered contact number. The Internet of Things (IOT) describes the network of physical object that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. This ability to send and/or receive information makes things smart, and smart is good. This project aims at providing security for women by detecting Heartbeat rate of a person whenever they face threat. The main drawback of these applications and services is that the initial action has to be triggered by the victim which often in situation like these doesn't happen. We use biosensors in this application.

KEYWORDS: Controller, sensors, GPS, input signal-analog, buzzer, Flex sensor, mems accelerometer, temperature sensor, pulse rate sensor, sound sensor, IOT, triggered, Threshold, longitude and latitude.


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DETECTING PHISHING WEBSITE USING MACHINE LEARNING

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ABSTRACT

Trying to gather personal information through deceptive ways is becoming more common nowadays. In order to assist the user to be aware of the access to such websites, the implemented system notifies the user through email and also pop-up, when trying to access a phishing site. Many blacklisted websites has been published to appear as an original site in order to trap user by asking them to input their personal details. For example password, bank account, email address etc. Machine Learning was implemented to develop this proposed system. A Machine learning technique identifies phishing URLs typically assess a URL based on some feature or set of features extracted from it. A pop up notification will be displayed when user clicks on the blacklisted URL. A message from admin will be displayed once user clicks "OK" from the pop –up notification and also a message from admin will be displayed as user received the Gmail notification, so that individuals can be alerted while browsing or accessing a particular website. Therefore, it can be utilized for identification and authentication and become a legitimate tool to prevent an individual from getting tricked.

KEYWORDS: Blacklisted, phishing, alert, pop-up notification, Email notification, Feature Extraction, Machine Learning.


PRINCIPAL
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PAIRING-FREE CP-ABE BASED CRYPTOGRAPHY COMBINED WITH STEGANOGRPHY FOR MULTIMEDIA APPLICATIONS

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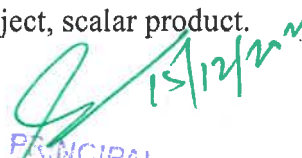
ABSTRACT

Technology development has led to rapid increase in demands for multimedia applications. Due to this demand, digital archives are increasingly used to store these multimedia contents. Cloud is the commonly used archive to store, transmit, receive and share multimedia contents. Cloud makes use of internet to perform these tasks due to which data becomes more prone to attacks. Data security and privacy are compromised. This can be avoided by limiting data access to authenticated users and by hiding the data from cloud services that cannot be trusted. Hiding data from the cloud services involves encrypting the data before storing it into the cloud. Data to be shared with other users can be encrypted by utilizing Cipher Text-Policy Attribute Based Encryption (CP-ABE).

CP-ABE is used which is a cryptographic technique that controls access to the encrypted data. The pairing-based computation based on bilinearity is used in ABE due to which the requirements for resources like memory and power supply increases rapidly. Most of the devices that we use today have limited memory. Therefore, an efficient pairing free CP- ABE access control scheme using elliptic curve cryptography has been used. Pairing based computation is replaced with scalar product on elliptic curves that reduces the necessary memory and resource requirements for the users. Even though pairing free CP-ABE is used, it is easier to retrieve the plaintext of a secret message if cryptanalysis is used.

Therefore, this paper proposes to combine cryptography with steganography in such a way by embedding crypto text into an image to provide increased level of data security and data ownership for sub-optimal multimedia applications. It makes it harder for a cryptanalyst to retrieve the plaintext of a secret message from a stego-object if steganalysis were not used. This scheme significantly improved the data security as well as data privacy.

KEYWORDS: Cipher Text-Policy Attribute Based Encryption (CP-ABE), pairing-based computation, pairing free, elliptic curve cryptography, steganography, stego-object, scalar product.


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DETECTING THE CRIMINAL RECIDIVISM BEHAVIOUR CLASSIFICATION USING MACHINE LEARNING TECHNIQUE

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ABSTRACT

There are numerous cases in the recent times, where a criminal commits a crime, immediately after being granted parole, this is called Criminal Recidivism, the act of recidivism poses a great threat to the society and thus needs to be checked. This paper posits a machine learning approach to detect and predict the tendency of criminal to commit recidivism the proposed system helps classify the criminals into Low, Medium and high risk of committing recidivism. Features like 'Ethnic code', 'Marital status', 'Age', 'Sex code', 'Legal status' and many more are considered while training the model on the dataset.

Supervised Classification Algorithms are implemented, and voting is subsequently done, to select the algorithm with the highest accuracy. An approach for crime detection in India using Data mining techniques is proposed in this paper, the approach consists of the following steps Data pre-processing, clustering, classification and visualization, Data mining techniques are often applied to criminology as it provides good results.

Criminology as it provides good results. Criminology is a field which studies about various crime characteristics. Analysing crime data means exploring crime data. Crime is identified using k-means clustering and the clusters are formed based on the similarity of the crime attributes. The Random Forest algorithms and neural networks are applied in the data for classification.

KEYWORDS: criminal recidivism, criminology, data pre-processing, clustering, data mining, kmeans clustering, clusters.


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AN OPTIMAL DRIVING SYSTEM BY USING WIRELESS HELMET

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ABSTRACT

In this current world where technology is growing up day by day scientific researchers are presenting new era of discoveries, the need for security is also increasing in all areas. At present, the vehicle usage is basic necessity for everyone. Simultaneously, protecting the vehicle against theft is also very important. Traditional vehicle security system depends on many sensors and cost is also high. When the vehicle is stolen, no more response or alternative could be available to help the owner of the vehicle to find it back. The main goal of this project is to protect the vehicle from any unauthorized access, using fast, easy-to-use, clear, reliable and economical face recognition technique.

In this purpose system using a wireless communication between bike to helmet, bike to signal section, bike to caution boards. The system will be comprised of a helmet module including microphone and a bike mounted base unit. The system will make use of different wireless communication protocols like ratio frequency protocols, Bluetooth protocols and Zigbee protocols.

It is a project undertaken to increase the rate of road safety among motocyclists several countries like India enforcing regulations to wear a helmet while riding. The idea is obtained when the increasing number of fatal road accidents over the year in cause for concern among motocyclists. The accident detection system communicates the vibration values to the processor which continuously monitors for erratic variation. When an accident occurs, the related details are sent to emergency contacts by utilizing a SMS alert. Using the global positioning system the vehicle location is obtained.

KEYWORDS: Face recognition, Helmet, Signal section, Ratio frequency protocols, Bluetooth protocols, Zigbee protocol, Accident detection, Erratic variation, SMS alert.

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IMPROVED COMMENT SENTIMENT ANALYSIS METHOD USING DEEP LEARNING

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ABSTRACT

Sentiment Analysis of the comment text from the social media is helpful for understanding the public opinion on the product review. The essence of sentiment analysis is the text classification task, and different words have different contributions to classification. The classification provides that the product is positive or negative based on the comment text provided by the user's of the product.

Our proposed system uses the comment text of the product from the online platform and perform the data-preprocessing and feature extraction. The processed data are given as input to the bidirectional long short term memory (BiLSTM) to make the text classification effectively, the sentiment is positive or negative of the comment is obtained.

The system will be tested with the comment text collected by the user product review from social media, e-commerce website, and the result shows that the product has the positive or negative reviews.

KEYWORDS: Sentiment Analysis, Preprocessing, BiLSTM, e-commerce, Product Reviews.


PRINCIPAL
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DETECTING FAKE TWITTER BOTS ON TWITTER USING SVM AND NEURAL NETWORKS ALGORITHMS

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ABSTRACT

In the last years big social networks like facebook or Twitter acknowledge that on their network are forged and duplicate accounts. With these accounts, their creators can distribute false information, support or attack an idea, a product, or an election applicant, influencing physical network users in making a decision. They exploit the implicit belief relationships between users in order to achieve their hateful aims, for example, create hateful links within the posts/tweets. For detecting Twitter accounts, we make use of serval new features, which are more effective and robust than existing used features (e.g. number of Users/followings/followers, etc.). We evaluated the proposed set of features by exploiting very popular machine learning classification algorithms, namely Support Vector Machine (SVM) and Neural Networks (NN).

Their admiration has led to the different problem such as creation of fake accounts and spreading of fake information also creation of fake accounts and spreading of fake information also creation of malicious content, Such situations may cause damage to the real-world events which are directly related to peoples, commercial entities, learning fields, etc, In this paper, we present our system build with the aim of recognizing fake users of Twitter social network.

Today social networks have been part of many people's lives. Many activities such as communication, promotion, advertisement, news, agenda creation have started to be done through social networks. Some malicious accounts on Twitter are used for purposes such as misinformation and agenda creation. This is one of the basic problem in social networks. Therefore, detection of malicious account is significant. In this study, machine learning-based methods were used to detect fake accounts that could mislead people. For this purpose, the dataset generated was pre-processed and fake accounts were determined by machine algorithms are used for the detection of fake accounts. Classification performances of these methods are compared and the logistic regression proved to be more successful than the others.

KEYWORDS: Twitter accounts, Support Vector Machine, Neural Network, Logistic Regression, Machine Learning, Fake Account..

EARLY DETECTION OF DEPRESSION IN TEXT SEQUENCES

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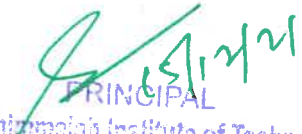
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ABSTRACT

Depression is ranked as the largest contributor to global disability and is also a major reason for suicide. Still, many individuals suffering from forms of depression are not treated for various reasons. Previous studies have shown that depression also has an effect on language usage and that many depressed individuals use social media platforms or the internet in general to get information or discuss their problems. This project addresses the early detection of depression using machine learning models based on messages on a social platform. In particular, a convolutional neural network based on different word embeddings is evaluated and compared to a classification based on user-level linguistic metadata. An ensemble of both approaches is shown to achieve state-of-the-art results in a current early detection task. This project is therefore focused on ways to classify indications of depression in written texts as early as possible based on machine learning methods. The project combines natural language processing and machine learning to detect depression level from text messages. Natural language processing is used to create a word embedding model which can convert text sentences to feature vectors. Machine learning using Neural Networks is used to classify the features vector of sentences to depression level.

KEYWORDS: Depression, early detection, linguistic metadata, convolutional neural network, word embeddings, machine learning, natural language, feature vectors.


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NOVEL APPROACH TO DATA SECURITY USING STEGNOGRAPHY AND VISUAL CRYPTOGRAPHY

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ABSTRACT

In today's Information age, Information sharing and transfer has increased exponentially. The threat of an intruder accessing secret Information has been an ever existing concern for the data communication experts. Cryptography and steganography are the most widely used techniques to overcome this threat. Cryptography involves converting a message text into an unreadable cipher. On the other hand, Steganography embeds message into a cover media and hides its existence. Both these techniques provide some security of data neither of them alone is secure enough for sharing information over an unsecure communication channel and are vulnerable to intruder attacks. Although these techniques are used to achieve higher levels of security but still there is a need for a highly Secure System to transfer Information over any communication media minimizing the threat of intrusion.

Steganography is a data hiding technique which uses images, audio or video as a cover medium. Cryptography has become an essential part of security. Image to reduce vulnerability to cryptanalysis. We overcome the drawbacks of using textual steganography as it is easier to intercept and decipher. We encrypt the plain text with a randomly generated key using XOR and One Time Pad algorithm and in turn embed it into the Least Significant Bit of the cover Image.

The main objective of the proposed method is to introduce more security of data by using visual cryptography and steganography techniques to make it more difficult to retrieve the plain text of a secret message from the stego object. The main goal is to improve security, reliability and efficiency. XOR and One Time Pad algorithm is proposed for encryption of the data. The scrambling algorithm is carried out where pixel locations are scrambled. This technique of stego Image provides extra protection. The secure message is then decrypted from the Stego image.

KEYWORDS: Image scrambling , One time pad algorithm , visual cryptography, stego image and data security


PRINCIPAL
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STUDY ON SEMI AUTOMATIC TRAIN COUPLING DESIGN USING HYDRAULIC SYSTEM

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ABSTRACT


Transportation is the key for the development of country, and it's vital to make the transportation quick and safe, perhaps Indian Railways is India's national railway system operated by the ministry of railways. It manages the 4th largest railway network in the world by size, Indian railway runs more than 20,000 passenger trains daily and large number of goods trains.

At present manual system of coupling is used, in this process the technician is forced to get down on to the track and fix the hook with meshing part. This is time consuming and also it leads to human fatality.

The present work highlights the Semi-automatic coupler that is designed to ensure a permanent mechanical and hydraulic connection between the engine and compartment unit. It does not need to be uncoupled unless there is any emergency or when in a maintenance workshop. To build structurally strong and reduce time for coupling, this System is used.

In this process there is no human errors, the coupling speed is faster, reduces potential impact damage and increases passenger protection.

KEYWORDS: Transportation; Hydraulic System; Coupling; Semi-automatic Coupler.


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EFFECT OF THERMO HYDRAULICS PARAMETERS ON PERFORMANCE OF HEAT EXCHANGERS

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ABSTRACT

Heat exchangers play a significant role in process industries for the efficient heat transfer between fluids when they are in direct or indirect contact. They can transfer heat between a liquid and a gas or between two gases or as a liquid to liquid heat exchanger. They, in this manner, form indispensable and inescapable equipment in an extensive variety of industries such as power generation, food processing, refrigeration, desalination, air conditioning, automobiles and electronics cooling. An extensive variety of heat exchangers are available in the market to take into account the requirements of various industries, like shell and tube heat exchangers, double pipe heat exchangers, plate type heat exchangers and spiral heat exchangers and so on. Based on the process requirements, the type of fluid, its phase, operating temperature, density, viscosity, pressure, chemical composition and various other thermodynamic properties, the appropriate type and size of the heat exchanger can be chosen. In this study an experimental setup of shell and tube heat exchanger with a rotated triangular tube layout with six baffles having 25% baffle cut is studied. The work is carried out for different mass flow rate and number of baffles. From the experimental results, the heat transfer coefficient, pressure drop, overall heat transfer coefficient is obtained. The same setup is modeled and imported to numerical analysis with the equivalent boundary conditions. The numerical simulations are carried out to identify the effects such as heat transfer coefficient and pressure drop by using commercial CFD package. The shell side heat transfer coefficient, pressure drop, overall heat transfer coefficient and performance factors are obtained from three different tube layouts and three baffle cuts among varying number of baffles along with different mass flow rates. The CFD results of heat transfer coefficient, pressure drop and overall heat transfer coefficient are observed and compared with the experimental results. The modifications are done in CAD model for further investigations. The models are simulated to know the influences of tube layout and other design parameters on thermo hydraulic parameters. These, thermo hydraulic parameters are very helpful in evaluating the performance of shell and tube heat exchangers. It is observed that the triangular tube layout is giving better results comparing to other layouts.

KEYWORDS: Shell and tube heat exchanger, Triangular tube layout, CFD, Numerical simulation


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DESIGN AND FABRICATION OF MULTIPURPOSE SUPER CLEANER FOR COVID-19

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ABSTRACT

Cleanliness is the main basic need for all human beings and is the daily routine process especially in this COVID-19 times. With the new programme from the Government of India that is Swacch Bharat Abhiyan (SBA) or SwacchBharath Mission (SBM) aiming to clean up the streets, roads and infrastructure of Indian cities there is need for cleaning our environment effectively. A novel method of cleaning application for Indian conditions has been through of and we developed with modified technology suitably. Since 1952 this equipment can be used for doing the long distance and wide width areas reducing the human effort so that the cleaning can be done in a single drive. Many large machines have been made to overcome this problem but it is very costly and in order to make effortless and very efficient cleaning our super cleaner be conveniently used. So we raised with the thought to design and fabricate a single cleaning machine by which the entire cleaning processes like sweeping, mopping, sanitizing, vacuuming and cob web cleaning could be done. In our project we are aimed to use easily available materials with low cost that can be easily fabricated and easy to use and control. It being the better alternative for conventional cleaning, our multi-purpose super cleaner designed & fabricated can be ideally used in airports, railway platform, bus stand, malls, schools, colleges, hospitals, auditorium and in many other commercial places as well as for domestic cleaning too. Our proposed project could also replace the tedious human labour along with timely sanitation in crowded areas.

KEYWORDS: Swacch bharat abhiyan, Swacch Bharath Mission, COVID-19.


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A STUDY MODEL OF MULITI OPERATIONAL USING PNEUMATIC KIT

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ABSTRACT

Pneumatic actuators are the devices used for converting pressure energy of compressed air into the mechanical energy to perform useful work. In other words, actuators are used to perform the task of exerting the required force at the end of the stroke or used to create displacement by the movement of the piston. The pressurized air from the compressor is supplied to reservoir. The pressurized air from storage is supplied to pneumatic actuator to do work. Pneumatic systems are used extensively in industry, and factories are commonly plumbed with compressed air or compressed inert gases. Pneumatic actuators offer several advantages over electromechanical and hydraulic actuators for positioning applications. The pneumatic actuator represents the main force control operator in many industrial applications, where its static and dynamic characteristics play an important role in the overall behavior of the control system. Therefore, improving the dynamic behavior of the pneumatic actuator is of prime interest to control system designers. The main objective of this project is to prepare a model of multi operational Pneumatic Kit for educational purpose and future use. This report deals with the introduction, objective, reason and requirements for the project.

KEYWORDS – Pneumatic actuators; Compressor; Pneumatic kit; Compressed air.


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SMART AUTOMATED PILL DISPENSER

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ABSTRACT

In this era of modern medicine where humans are largely dependent on the use of pills/tablets. We know at least 1 or more who have to take their medication for a long term in order to live and stay healthy. In this project, we focus on a Smart Automated Machine which will help a person to take his/her pills on time according to their desired scheduling and it mainly focuses on making sure that our loved ones who are either old aged or having memory loss or have difficulty in remembering the medicines schedule, take their pills on proper time from the touch of your phone around the world. Our project is especially designed in order to solve the problem of taking in time and adequate dosage of medicine (specifically tablets) for chronic patients. This device is user friendly with alert buzzers in it which acts as reminders for tablets intake, timers for keeping a log on the daily basis time schedule and a LCD screen for viewing and to explore other features. The device is also WIFI, Bluetooth enabled for better connectivity with devices and its smartness increases when it is linked with IOT. The preliminary design is to be done by SOLIDWORKS or AUTOCAD.

KEYWORDS: Modern Science; Smart Automated Machine; Pills; Chronic patients; WIFI; IOT


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MODELLING AND ANALYSIS OF LEAF SPRING FOR LIGHT MOTOR VEHICLE

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ABSTRACT

Leaf springs are special kind of springs used in automobile suspension systems. The advantage of leaf spring over helical spring is that the ends of the spring may be guided along a definite path as it deflects to act as a structural member in addition to energy absorbing device. The main function of leaf spring is not only to support vertical load but also to isolate road induced vibrations. It is subjected to millions of load cycles leading to fatigue failure. Finite element analysis is used to determine the safe stress and payload of the leaf spring and also to study the behavior of structures under many conditions and comparison of result with different materials. SolidWorks is used for 3D modeling of leaf spring and analysis software ANSYS 14.0 is used for FEM analysis of leaf spring as FEM is an accurate, efficient and less time-consuming method of analysis. A leaf spring configuration of light commercial vehicle is chosen for study.

KEYWORDS: Leaf springs, solid works, ANSYS 14.0, FEM.


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DESIGN AND FABRICATION OF ALL TERRAIN VEHICLE DUMPER

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ABSTRACT

Material handling is an essential element in any farm land or garden. This can be done by big tractor trailers or hand carts. Small scale farmers who possess less land to operate, cannot afford expensive tractors for their small lands. Also today we don't find smaller dumpers which can help small farmers or house hold gardening. We have seen our gardeners and estate staff working hard with their hand cart to move the material in and around our college campus. Different types of All-Terrain vehicles (ATV) are available in the market which are not suitable for the farmers. Hence we decided to develop an ATV dumper which is inspired from the idea of a dump truck. This dumper is having a removable and moveable dumper which will help farmers to move heavy material through various terrain. Our present work is aimed to design and fabricate an ATV dumper which makes a viable mode of conveyance to carry heavy material with ease around the college campus. Being an ATV dumper this can also be used further for farming. The all-terrain vehicle dumper is designed and fabricated in-house, which is at a low cost. Primarily the design of our project is established using conceptual design strategy by using the Solid Edge, Solid Works and then it is analyzed using Ansys workbench for structural feasibility. After freezing the conceptual design, fabrication is carried out using arc welding. We have also used fasteners to mount various parts with dampers to minimize the vibrations so that the end user will not have any difficulty in operating or servicing the machine. Interchange or replacing parts is very easy and convenient as all standard fasteners are used which are readily available in the market. It is fitted with a 150 cc petrol engine for powering the rear wheels of the cart and has a single seat for the driver. 4 wheels are used for stability and safety. Finally, the "All-terrain vehicle dumper" is tested with various loads and terrain conditions and worked satisfactorily as intended to. This will be a user-friendly cart, perfectly suitable for the all-weather and all terrain conditions. Instead of using big tractors for a small and medium farm land or agricultural land, farmers can use this ATV dumper to move or carry or transport things around their land.

KEYWORDS: Ansys, Solid edge, Solid works, fasteners.


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OPTIMISED DESIGN AND ANALYSIS OF TRESTLE JACK

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ABSTRACT

With the increasing levels of technology, the efforts being put to produce any kind of work has been continuously decreasing. The efforts required in achieving the desired output can be effectively and economically be decreased by the implementation of better designs. A screw jack is an example of a power screw in which a small force applied in a horizontal plane is used to raise or lower a large load. The principle on which it works is similar to that of an inclined plane. A jack is a device which is used to raise part of vehicle in order to facilitate vehicle maintenances or breakdown repairs. In normal jack system a mechanical jack is used for lifting the vehicles. The most common form is a car jack, garage jack, floor jack which lifts vehicles so that maintenance can be performed. Jacks are generally used to increase mechanical advantage (lifting the vehicle). The current work is about creating the trestle jack to lift the load of 1455 kg. This design helps to make of the thrust force of the vehicle to lift the load. In this work designed a new type of trestle jack with trestle features. The model of trestle jack is created by using catia software. The FEA model is meshed and analyzed with loading condition using abacus software, after the analysis is done the optimization of trestle jack is made of 2mm from 3mm thickness and we select the best one of the two, finally we conclude that trestle jack is suitable for lifting the heavy load up to 2500 kg automobile vehicles.

Keywords: Trestle jack, Horizontal plane, Breakdown, Maintenance, Thrust, FEA, Optimization.


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BEHAVIOR OF EPOXY COMPOSITES UNDER TENSILE AND COMPRESSIVE LOADING WITH DIFFERENT REINFORCEMENTS

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ABSTRACT

Epoxy composites are most widely used as composite materials in the majority of applications, thus the characterization of these materials for various loading and geometric configuration has become a primary concern to designers. The present work describes the mechanical characterization of epoxy composites consisting of epoxy resin, glass fibre, graphite and filler materials such as alumina, quartz and silica. Experiments like tensile test, and compressive test were conducted to find the significant influence of filler material on mechanical characteristics of fabricated composites. The test results show that with increase in filler volume fraction of alumina & silica there is a reduction in tensile & compressive strength, on the other hand the trend is different in case of quartz where, there is considerable increase in tensile & compressive strength with increase in percentage of quartz. The specimen code S1 has highest tensile & compressive strength of 26.82 and 117.68 Mpa respectively and the lowest tensile & compressive strength is for specimen A2 of 10.49 and 76.94 Mpa respectively. Further the SEM pictures unambiguously demonstrate how the initiation, propagation and termination regions have distinct appearances whose features vary with filler content, thereby demonstrating that fillers do influence the crack at all stages. The fractured facets obtained by using SEM clearly show that in all the cases the mode of fracture is brittle in nature.

KEYWORDS: Composites, Epoxy, Fillers, Tensile Strength, Compressive Strength.


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FINITE ELEMENT ANALYSIS OF SHIP LIFT TRESTLE

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ABSTRACT

Important aspects to be considered in the design of a ship lift trestle are the load acting on it, safety and appropriate selection of materials. Two different concepts of trestle are modeled having changes in thickness of their plates but subjected to same working load. Stress and displacements values in both the models are compared by changing steel grades. The best graded steel is selected which gives highest factor of safety and more service life for the trestle. Hyper mesh analysis tool using Optistruct as a solver is used to run all type of analysis of the project. Finite element static analysis is carried out to find the stress and displacement. The results are verified by using theoretical set of calculations, which are matching within the acceptable limits. Modal analysis is carried out for both free vibration and forced vibration to obtain different mode shapes (Natural frequency) & its behavior is analyzed. A safe design is optimized with endurance strength value 202.67 MPa, which is found to be safe for infinite number of stress cycles on the trestle.

KEYWORDS: *Ship lift trestle, static analysis, vibration analysis*


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CHIGARGUNTA GOLD DEPOSIT IN SOUTHERN PART OF KOLAR SCHIST BELT- A PROFIT VENTURE- A CASE STUDY

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Abstract:

In the earth's crust it is reported that 80% of the gold deposits is hosted by Archean and lower Proterozoic greenstone belts. Most of the lode gold deposits in India are confined to the southern states like Karnataka, Andhra Pradesh, Tamil Nadu, and Kerala. The central part of the Kolar Schist Belt at Kolar Gold Field (KGF) is considered as the jewel box of Eastern Dharwar Craton which yielded around 800 tonnes of gold over a century of systematic mining since 1880. From KGF just 30 km south Chigargunta gold deposit is located in the same Kolar schist belt. Bharat Gold Mines Limited (BGML) carried out commercial gold mining for over a decade at Mallappagonda, Bisanatham and Chigarunta and suspended its operation in 2001 as the cost of production of gold was high compared to the price of gold in the open market. In this paper an attempt has been made to study related to mode of occurrence of epithermal gold deposit in Chigargunta which is confined to narrow but laterally continuous shear zone distributed in metamorphic rocks. The study of multispectral LANDSAT images with different TM band combinations is used to identify potential ore-shoot in fractures/shears and related hydrothermal alteration zones. To make the mining venture profitable proposed a cost-effective 'adit' method of mining from Mallappagonda to Chigargunta till the Adakonnda block and recovery of gold by 'heap-leaching' a technique which is more amenable for low-grade ore deposits between 3.0 to 4.0 g/t. With the present surge in price of gold at the Indian market at Rs.+5 k /10 gms of standard gold when compared to Rs.10,000/10gms of gold in 2001, it is suggested that, by adopting cost effective method of mining combined with surge in gold price, resuming commercial mining operation at Chigargunta will be a profitable venture. According to BGML Annual Report- 2001 it is estimated that Chigargunta has about 7.0 lakh tons of proved reserves at average grade of +5.0 g/t (in situ).

KEY WORDS: Archean, Adit, epithermal, Kolar Schist belt, Precambrian rock, In situ grade.


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