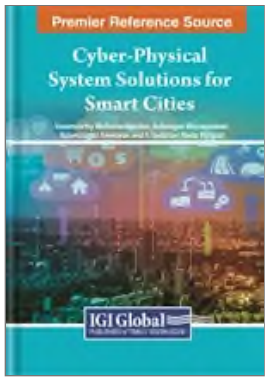

Evolution of Smart Energy Grid System Using IoT: Smart Grid, Online Power Monitoring in Buildings, Smart Sensors for Smart Grid Protection

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Abstract

The IoT is a rapidly emerging research area. It refers to an infrastructure network that includes digital data, mechanical objects, computational devices, and sensors that have unique identities. IoT delivers many solutions in various domains by providing connection of devices through the internet. Recently electricity is very important in our day-to-day lives. The consumption of electricity is also rapidly increasing. It is necessary to improve the production of electricity and also reduce the wastage of electricity in transmission lines. The energy grid refers to the next generation power grids, with bi-directional or two-way flows of electricity through the communication interface or protocols. The energy management in grid ensures stability between the supply and demand, which is maintained for reducing the wastage of electricity. In order to achieve this reduction, it is necessary to monitor the parameters of the PV system by the IoT hardware. Specifically, the authors focus on IoT technologies for monitoring the parameters of PV systems such as voltage and current by sensors in IoT.

Chapter Preview

Top

Introduction

The Internet of Things (IoT) is emerging rapidly and delivers numerous solutions in various domains. Current research on Internet of Things (IoT) mainly focuses on how to enable general objects and make them connected for sharing data or information. IoT allows sensing, identification, actuation, monitoring, decision making, communication, and management. Since IoT is the network of connected physical objects or devices. The definition of IoT by a researcher is an open and comprehensive network of intelligent objects that have the capacity to auto-organize, share information, data and resources, reacting and acting in face of situations and changes in the environment. With the help of the communication technologies such as wireless sensor networks (WSN) and Radio frequency identification (RFID), sharing of information takes place. Therefore, we can say IoT allows humans and things to be connected Anytime, Anyplace, with anything and anyone using any network and any service. According to our latest State of IoT—Spring 2022 report, released in May 2022.The number of global IoT connections grew by 8% in 2021 to 12.2 billion active endpoints, representing significantly lower growth than in previous years. Despite a booming demand for IoT solutions and positive sentiment in the IoT community as well as in most IoT end markets, IoT Analytics expects the chip shortage's impact on the number of connected IoT devices to last well beyond 2023. Other headwinds for IoT markets include the COVID-19 pandemic and general supply chain disruptions. In the end of 2022, the market for the Internet of Things is expected to grow 18% to 14.4 billion active connections. It is expected that by 2025, as supply constraints ease and growth further accelerates, there will be approximately 27 billion connected IoT devices. IoT cloud platforms are designed to be used in domains such as application development, device managen gement, data management, analytics, deployment, monitoring, visualization, and finally research purposes. IOT enterprise solutions, integrating smarter homes, innovating agriculture, building smarter cities, upgrading su e, installing smart grids, Revolutionizing wearables, Integrating connected factories, Reshaping hospitality. As tivities from domestic to commercial sector, unavoidable challenges are also increasing.

One of the important applications of IoT is the Smart grid. SG is a data communications network which is integrated with the power grid to collect and analyse data that are acquired from transmission lines, distribution substations, and consumers. The IoT enabled smart grid allows transforming the conventional energy grids into modernized Smart Energy Grid systems. The IoT-enabled Smart Energy Grid system equipped with intelligent two-way flow of data communication can significantly improve the operation and control of the traditional energy grid system. These improvements address the reliability, flexibility, efficiency of the conventional grid system. In a smart grid environment, the system must provide services including the large-scale integration of distributed renewable energy resources, establishment of live, real-time data communication between consumers and service providers regarding tariff information and energy consumption, facility to collect and transfer statistics of system parameters for analysis and infrastructure to implement necessary actions based on those analyses. Smart Energy grid generates immense data and information that needs to be transferred, processed and stored for intelligent decision making and processing.

The smart grid is an unprecedented opportunity to shift the current energy industry into a new era of a modernized network where the power generation, transmission, and distribution are intelligently, responsively, and cooperatively managed through a bi-directional automation system. Although the domains of smart grid applications and technologies vary in functions and forms, they generally share common potentials such as intelligent energy curtailment, efficient integration of Demand Response, Distributed Renewable Generation, and Energy Storage. This paper presents a comprehensive review categorically on the recent advances and previous research developments of the smart grid paradigm.

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CHICKEN SWARM OPTIMIZED DEEP LEARNING NEURAL NETWORK CLASSIFIER FOR CYCLONE PREDICTION

Abstract

Predicting wind speed with high accuracy and reliability has become difficult for weather forecasters. Over the years, a number of forecasting methodologies have been introduced for precise forecasting of wind speed and combating the ambiguity of variation. To deal with this, we created a Convolution Neural Network (CNN)-based deep learning (DL) tropical cyclone (TC) intensity forecasting system. This research proposes an adaptive K-means image segmentation method that produces accurate results for segmentation with straightforward operation and does not require interactive K value input. Applying the gray level co-occurrence matrix (GLCM), characteristics are retrieved from the segmented images. An algorithm known as chicken swarm optimization (CSO) has been proposed and it has a high operational efficiency and quick convergence speed. The combination of DL and parameter optimizer employed by the described CSO-DL model is used to predict the cyclone. The experimental findings shows that the CNN classifiers achieves the greatest testing and training accuracy of 94.7% and 95.2% respectively. The development of this model can serve as a helpful benchmark for studies on cyclone prediction.

Keywords: Deep learning, CNN, Chicken Swarm Optimization, GLCM, Cyclone Prediction.

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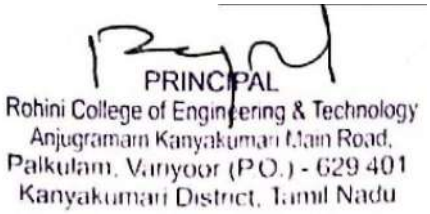


I. INTRODUCTION

The tropics and subtropics of the world are significantly threatened socioeconomically by TCs. Effective TC route and intensity forecast can reduce TC losses and fatalities by providing actionable knowledge on TC threats. This has significant social advantages. While TC track prediction has taken tremendous strides over the past several decades, TC strength prediction has only slightly advanced [1, 2]. Powerful TCs have the potential to intensify into typhoons, which are unexpected natural disasters that cause yearly losses in human lives and property. The forecast of the TC's path is extremely difficult because of all these complicated issues. Thus, it is crucial to research and implement novel TC track forecasting methodologies considering the effect of TCs on society as well as the intricacy associated in their forecast. The basic foundations of conventional track forecasting methods are a mathematical approach and statistics equations. Despite the fact that these techniques have become increasingly common in tandem with the advancement of technological devices and tracking techniques, they remain to be hampered by significant complexity and comparatively poor forecasting precision [3-5]. Furthermore, these conventional approaches are constrained by their inherent limitations, which prevent them from analyzing included data features and force them to depend excessively on rules that are summed up by past information without taking into account the intricate relationships between meteorological factors and TC monitors on both attribute and spatial measurements. DL methods are now effectively used in identifying objects, processing natural languages, and processing images [6, 7]. They have demonstrated significant benefits in handling big quantities of complicated time-series information in two different ways. Initially using a CNN, for example, DL algorithms can better enhance their generalization abilities by extracting implicit characteristics from a dataset that span many variables. Thus, a DL methodology is a suitable strategy for our track forecasting investigation.

The substance of the photos will be impacted by the cyclone images' common traits, such as unpredictable sound, low contrast, inhomogeneity, weak borders, and unconnected portions. Pre-processing procedures helped to solve this issue. Preprocessing is a crucial part of image processing since it improves the image clarity for extraction of features and classification. The preprocessing procedures deal with noise reduction, image improvement, and removal of certain marks. For automated and semiautomatic picture segmentation, there were numerous methods available in the image segmentation phases. It is quite challenging to eliminate the noise and unique markings that are present in images because of the poor image contrary, uniformity weak limits, and noise [8, 9]. The technique of splitting a picture into a number of meaningful, separate sections that have the same properties is known as image segmentation. The precision of picture segmentation, an essential technology in image processing, impacts the success of the subsequent activities. The present segmentation method has had different degrees of success given its level of complexity and challenge, but further study in this area still confronts many obstacles. The clustering research method splits data sets into multiple categories in accordance with a predetermined standard; as a result, it finds extensive use in the segmentation of images. Our methodology, which relies on the initial technique, enhances both the design of the program and its precision of picture segmentation [10, 11]. In the meantime, this work suggests a novel approach for calculating K in the K-means clustering algorithm. The image segmentation technique presents in our paper has found widespread use and produced effective results for cyclone picture. In this research, the GLCM is employed to extract texture data.

Bio-inspired meta-heuristic algorithms have effectively handled numerous optimisation challenges [12]. They take advantage of the optimization issues' sensitivity for ambiguity and inaccuracy to produce workable solutions at cheap computational cost. As a result, meta-heuristic algorithms to deal with optimization uses, such as PSO [13], ACO [14], and BAT [15], have gained a lot of research attention. Each of these algorithms derive swarm intelligence from the natural principles governing biological structures. The process of using what we can learn from nature to improve algorithms is currently ongoing.

In this research, a CNN-based DL TC intensity forecasting system is proposed where distortion in the image pre-processing is reduced using a median filter, and the image is further segmented using K-means to accurately estimate the TC and a novel bio-inspired optimization approach called CSO is presented to train CNN.

II. RELATED WORKS

Jie Lian et al [2020] [16] have developed a unique geographical location-based DL model to forecast tropical storm tracks utilizing a variety of meteorological variables. A CNN, a GRU layers and a multidimensional feature selection layer make up this model. Our suggested model is capable of handling data from time series efficiently and enhance generalizability. In the future, we are going to contrast our suggested approach with more contemporary numerical and statistical techniques and enhance the model through taking into account numerous TC and TC’s intensities.

Snehlata Shakya *et al* [2020] [17] have made a study for improving the spatial resolution and feature diversifications in an existing dataset, the interpolation and data enhancement approaches are used. CNN are employed to identify photos as either storm or nonstorm using the artificially enhanced data as a training set. It is anticipated that categorization performance will have an impact on cyclone eye location performance. Because of the curve of the planet's surface, flat photos are ineffective and will need to be added individually in the future, if they become available.

Pingping Wang et al [2020] [18] have discussed OSIP, a two-step technique based on DL network identification of objects and IP, is developed to locate the TC centre by analysing TC properties such as architecture and shape in satellite IR images. OSIP is highly effective and universal since it does not require the ergodic approach for estimation of parameters. Future research can create a more ideal framework using reliable central data to successfully fulfill the challenging task of predicting the TC intensity in real time.

Le Liu et al [2019] [19] have demonstrated a group of pathways characterizing a volatile process may be condensed into a representative set, which can then be utilized to create a representation that subtly conveys the ambiguity through its spatial distribution. If it is not essential to maintain the initial recordings but acceptable to create a new set that maintains the spatial distribution of the original set, our method can be used. Our technique divides the set into roughly equal-sized subsets by iteratively finding median pathways, which creates a set of sample tracks. If the technique were to be employed in a live event, more work would be required in order to enhance it.

Hui Li *et al* [2020] [20] have developed a hierarchical generative adversarial network (HGAN) to generate future imagery from satellites of typhoon clouds, providing a visual way for forecasting them. A local discriminator plus a global generator make up the HGAN. Its hierarchy structure and several subnetworks, which record all of the typhoon fluctuations and favour producing distinct future typhoon cloud images, are how it is built. In an HGAN, two networks constantly compete with one another, which can cause training to be unreliable and sluggish. Furthermore, HGANs frequently need a lot of training data for them to perform well.

III. PROPOSED SYSTEM

An original method for detecting and classification of cyclones is presented, one that makes use of the K-means segmentation method with selectively GLCM feature selection. The detailed structure of the suggested method is shown in Figure 1.

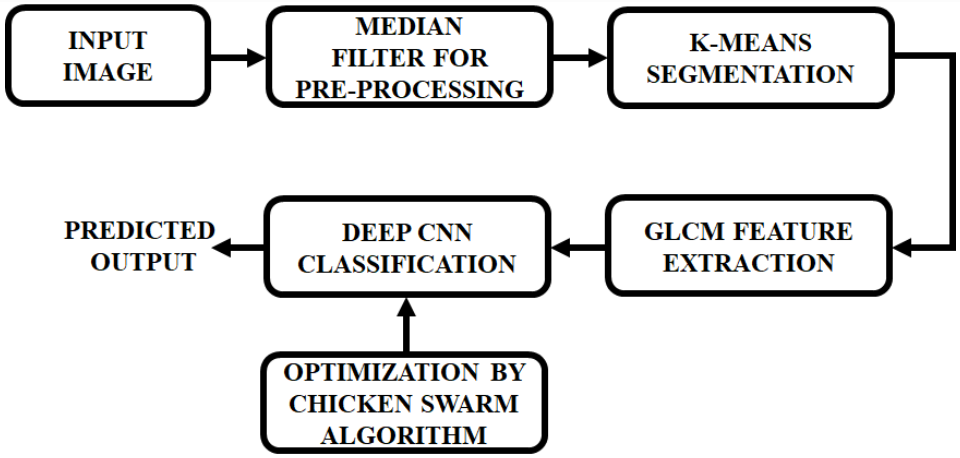


Figure 1: Proposed network

Figure 1 shows the suggested method for locating TC via analysing images. The system's input is an image of the cyclone. After using a median filter to reduce unwanted noise, the pre-processing of this shot improves its aesthetic appeal. We first increase the contrast of the input photo before using the k-means method to separate the images in order to detect the cyclone. The extraction of multiple properties, including colour, texture, and entropy-controlled most dominating qualities, is necessary for categorizing images. After the output of CNN is trained using a CSO method with a specific structure for the cyclone characteristic and the training variables, the result is forecasted using GLCM to compute the peculiar dependence of gray levels in an image.

1. **Image Preprocessing:** Pre-processing is largely used to improve image quality and set the stage for further processing by removing or reducing the irrelevant and unnecessary background features in mammography images. Pre-processing is thus required to improve quality. We pre-processed the photos before training the data. By removing the unnecessary and distracting features, this process improves the model's effectiveness. The preprocessing processes with a few modifications that worked best for the data we used.

The dataset's raw picture was trimmed to get rid of the header files and white edges. The photos were then subjected to image multiplication with a few further modifications. This step's goal was to eliminate extraneous details like grid lines, geographic boundaries, and landscape. In the traditional method of image binarization, pixels with intensities greater than a predetermined threshold are transformed to one, while those with lower intensities are changed to zero. The result of our program continued to be an image, but the pixels with intensity above a certain threshold kept their initial values, while the remaining pixels were changed to the minimum or zero. As a consequence, other elements were eliminated while just the vortex and surrounding cloud patches remained with their original pixel values. The threshold was chosen to be an appropriately optimized multiple (often 1.4) of the image's median pixel intensity. The produced image was then subjected to image erosion, the high frequency and noise elements are eliminated by filters.

Median filtering - A median filter is a linear Gaussian filter that is used to minimise noise from impulses in photographs. A nonlinear filter known as a median filter is used to minimise noise during preprocessing. Additionally, it is employed to keep an image's edges intact. The median value of nearby values is used to substitute each value in the filter. The neighbours of the filter frame the scene. This is going to be applied to the whole picture. Additionally, depending on how much of the original matrix is visible through the filter window, every component of the null matrix will modify the value it holds to the middle value in the initial matrix. Depending on the dimension of the filter window, the operation will be continued till any values in the null matrix change to the median value of the initial matrix.

A digital image with m rows and n columns in the two-dimensional sequence can be represented by

$$\{f(t,s); t = 1,2,\dots,m; s = 1,2,\dots,n\} \quad (1)$$

The two-dimensional array median filter's output is therefore

$$O(x,y) = \text{med}\{f(t,s)\}, (t,s) \in A(x,y) \quad (2)$$

2. **Segmentation By *K*-Means Algorithm:** K-means is one of the basic algorithms for clustering used in the partitioning approach. By grouping the K points in the space, the K-means algorithm's fundamental notion is to group the items that are nearest to each other. The measurements of each cluster's centroid are adjusted repeatedly until the best clustering outcomes are attained. A common example of a clustering technique based on the prototype function is the K-means algorithm. The target value of optimization is the distance between the data point and the prototype. The approach of discovering extreme parameters for functions is used to get the iterative adjustment procedures. The K-means algorithm uses Euclidean distance as a comparable metric to obtain the best classification for a cluster centre vector at the beginning of the process so that the index of evaluation is as small as possible. As a clustering criteria function, the error square sum requirement is employed. While the K-means method is effective, the quantity of K must be specified beforehand, and it is extremely hard to figure out the value of K. Frequently, the number of groups into which the provided data c wn beforehand.

This approach is highly efficient, but because it requires knowing how many clusters there are, K, it poses some challenges for automated calculations. The K values for the K-means segmentation method are determined using a combination of method for the most linked area and K-means. Extensive testing has revealed that K typically has a value between 2 and 10. To determine an accurate K value, we restore the image to just include the target item using the maximum connected domain algorithm, record the result, and then contrast it to the K value. The steps of the algorithm are listed below:

start K from 2 to 10

choose random K cluster centroids $\mu_1, \mu_2, \ldots, \mu_k \in R^n$

If $K \leq 10$, repeat{
For each pixel $x^{(l)}$

$e^{(l)}$=index (from 1 to K) of cluster centroid closest to $x^{(l)}$
For k=1 to K

μ_k: −mean of points assigned to cluster k
Compare the findings for the most related domains.
If right ,print results, break;
Else K=K+1;
}

This adaptive K-means method's pseudo code demonstrates how, when selecting the K value, it begins at 2 and gradually rises to 10. Our extensive set of research results show that cluster K is often chosen between 2 and 10. The K-means technique's success depends on choosing the right K value. We begin by choosing K = 2, which means that the segmentation of the image begins with two clusters. The total amount of segmentation results is ultimately determined using the greatest associated domain method. The K value has been chosen successfully if the final segmentation result's number of images equals it. If the K value is different, it will be raised until the two numbers mentioned above agree.

3. **Extraction Of Texture Teatures Using GLCM:** The particular dependence of the gray levels in an image is determined utilising the GLCM. The total amount of rows and columns and the total amount of gray levels in the image are identical in GLCM. Co-occurrence matrices can be built in four different spatial orientations: 0°, 45°, 90°, and 135°. The average of the previous matrices is used to generate another matrix. Let $\boldsymbol{P_{i,j}}$ represent the co-occurrence matrix and NxN represent the matrix's size. The frequency that a pixel with gray level i is spatially connected to a pixel having gray level j is represented by each element (i,j). Figure 2 shows the creation of GLCM from a grayscale image.

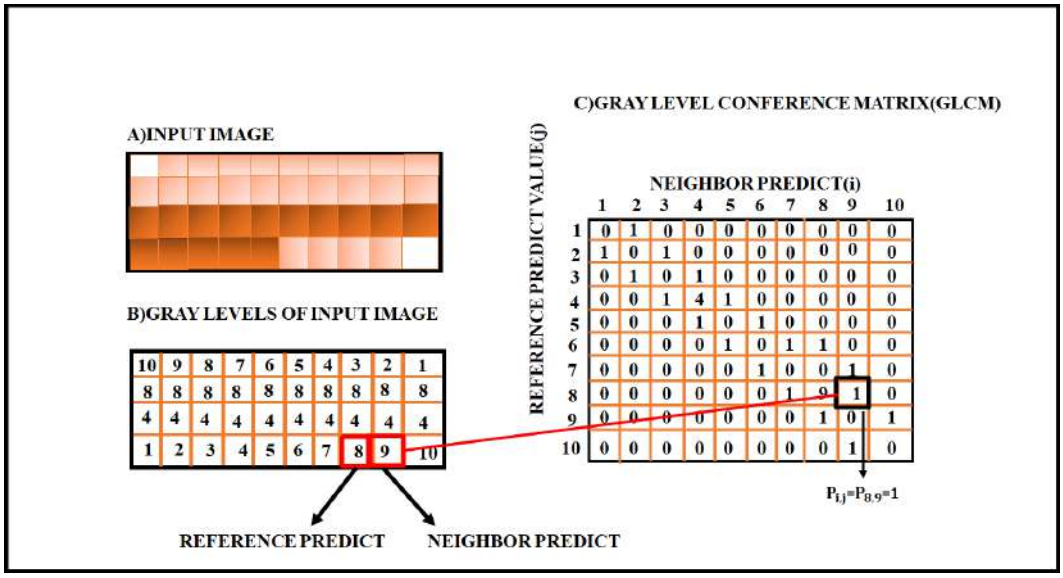


Figure 2: Construction of GLCM from an image

The example input image has 10 different shades of gray. GLCM depicts the relationship between neighbouring pixels (i) and (j) in a variety of orientations. The relationship between the pixels is determined in this instance horizontally and to the right (0°). Each of the items in GLCM (i, j) has a zero value at the beginning. Each element's value is modified based on how many pixels are present at once. Contrast, correlation, dissimilarity, energy, homogeneity, are texture features that can be determined using GLCM. Table 1 contains the formulas for calculating these attributes.

Table 1: Formulas to Calculate Texture Features from GLCM

SI.NO	GLCM Feature	Formula
1.	Contrast	$\sum_{i,j=0}^{N-1} P_{i,j}\,(i-j)^2$
2.	Dissimilarity	$\sum_{i,j=0}^{N-1} P_{i,j}\,(i-j)$
3.	Homogeneity	$\sum_{i,j=0}^{N-1} \frac{P_{i,j}}{1+(i-j)^2}$
4.	Energy	$\sum_{i,j=0}^{N-1} P_{i,j}^{2}$
5.	Correlation	$\sum_{i,j=0}^{N-1} P_{i,j}\,[\frac{(i-\mu_i)(j-\mu_j)}{\sqrt{(\sigma_i^2)(\sigma_j^2)}}$

4. **Deep Convolutional Neural Network:** Multiple layers of neurons make up a common deep CNN model and each layer extracts varying levels of non-linear information from the input, including low to high level features. The output of local convoluted filters in each layer is subjected to a nonlinear activation equation in order to produce nonlinearity in every layer.

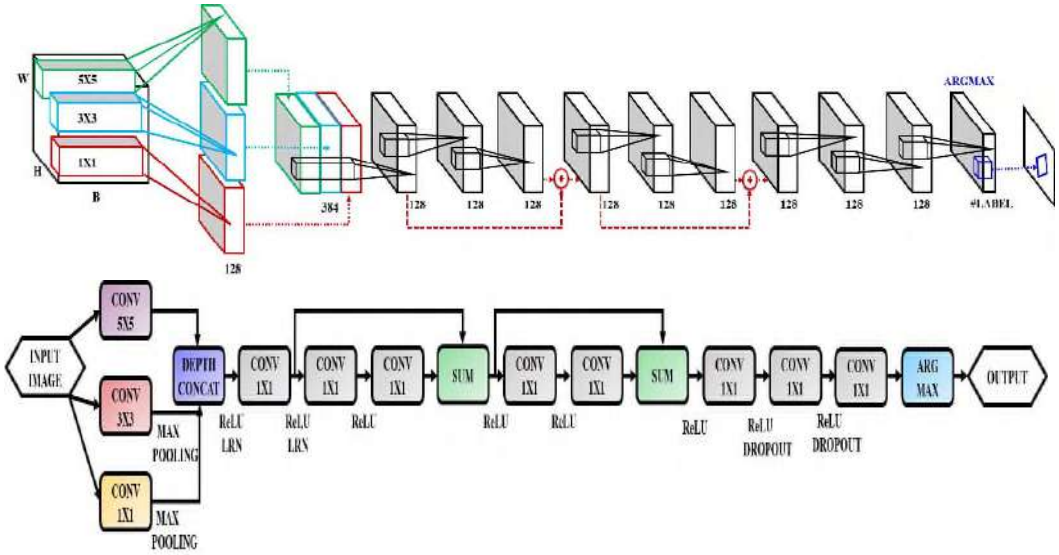


Figure 3: CNN Architecture

The connections between the input and output blobs of the convolutional layers are shown in the first row. Each convolutional layer's output blob includes an indication of how many filters are present. A system flowchart can be seen in the second row.

In order to lay the groundwork to understand the structure of the proposed network, we first outline the design of Alex Net, a popular deep CNN model, as depicted in Figure 3. Three fully linked layers and five convolutional layers make up Alex Net. Each layer that is fully linked has linear weights WF C that represent the connection between the input x and output y relationship.

$$y = W_{FC}.x, \tag{4}$$

Where the input and output vectors are represented by x and y. Local nonlinear features are extracted from the input via a convolutional layer with N local filters $W_{C.i}$, i = 1, 2,..., N, and are written as:

$$y = \{W_{C.i} * x\}_{i=1,2,\ldots,N}, \tag{5}$$

When there is a convolution, and. All $W_{C.i}$,i=1,2,...,N have carefully calculated filter sizes that are substantially smaller than the size of WF C. Several non-linear elements are utilized in equation (6), including dropout, softmax, the ReLU, and LRN. In order to extrapolate filter reactions, LRN restores each stimulation ai over localized activations of n adjacent filters centered on the location (n_x, n_y)

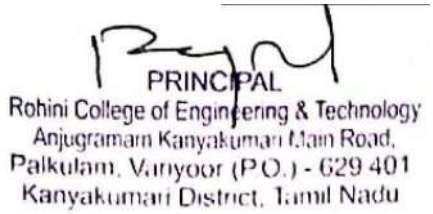
$$a_i^*(p_x, p_y) = a_i(p_x, p_y)/(k + \alpha \sum_{j=i-n/2}^{i+n/2}(a_j(p_x, p_y))^2)^\beta, \quad (6)$$

Where the hyper-parameters k, n are present. Max pooling, which is frequently employed for decreasing dimensionality in CNN, down samples the result of layers by substituting a portion of the output with the highest possible value. ReLU reduces values that are negative to zero and is utilized by the system to only learn parameters that have positive activations. Dropout, a function that accepts any value between 0 and 1, compels the output of each layer's individual nodes to be probability zero below a predetermined threshold. In this study, we made use of a 0.5 threshold. Dropout lessens excessive fitting concurrent multiple training data adaptations (also known as "complex coadaptations"). The logistic function, also known as the gradient-log-normalizer of the categorical probability distribution, is a generalization known as softmax.

$$P(y = j|x, \{f_k\}_{k=1,2,\ldots,K}) = \frac{e^{f_j(x)}}{\sum_{k=1}^{K} e^{f_k(x)}}, \quad (7)$$

When the input and output of the classification function f_j , for the j^{th} class are x and y, respectively. For probabilistic multiclass categorization, especially HSI classification, softmax is hence helpful.

5. **Chicken Swarm Optimization Algorithm:** The CSO approach is used to lower the Mean Square Error (MSE) by optimally modifying the CNN model's hyperparameters. The CSO method's high parallelism and flexibility make it favoured over other optimization strategies. The CSO imitates a chicken swarm's behavior and activity, and it is defined as follows: Each of the several groups that make up CSO has some chicks, hens, and a dominating rooster. In accordance with the fitness function, the amount of chicks, roosters, and hens is decided. The chicken that has the highest fitness rating is referred to as the rooster (group leader). The chicken with the lowest fitness value, though, is the chick. The majority of chickens are hens, and they are deliberately kept in that category.



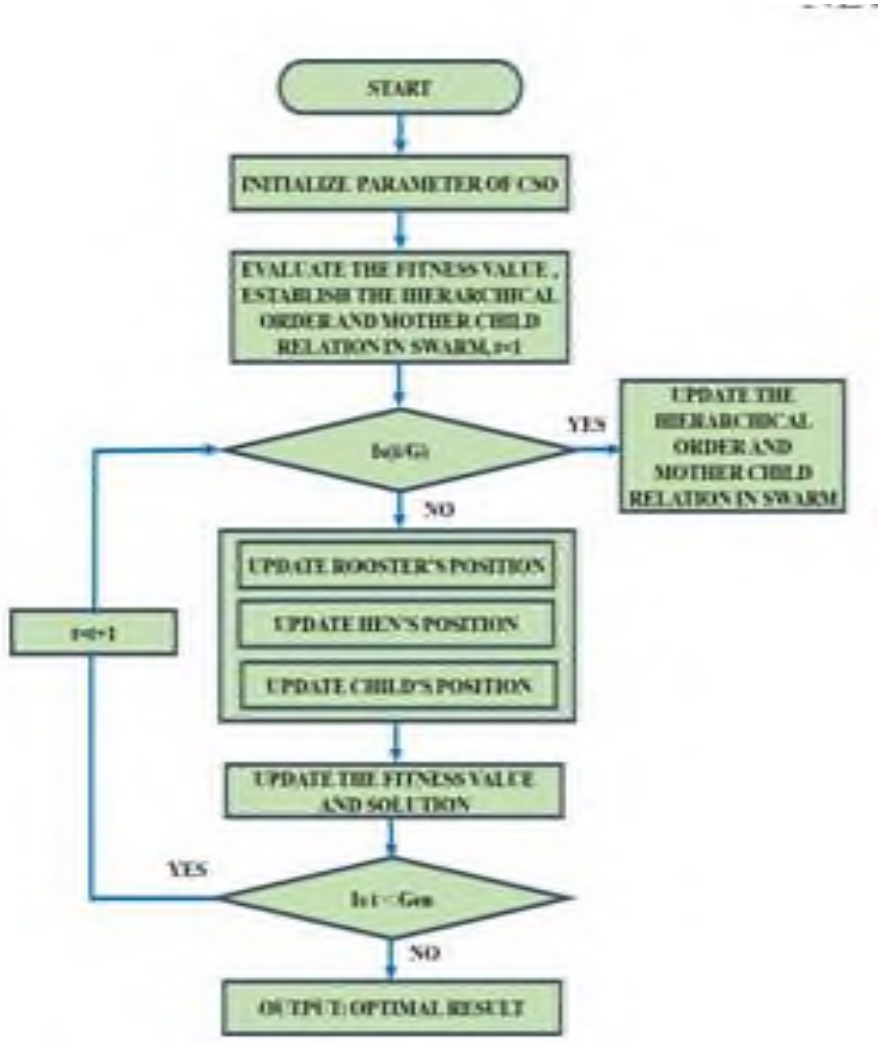


Figure 4: Flowchart of CSO

In the (G) time step, the group's mother-child and dominance linkages both remain the same and improve. To update the rooster's location, the equation for the chicken motion is provided below.

$$X_{ij}^{r+1} = X_{ij}^{t} * (1 + \text{randn}(0, \sigma^2)) \quad (8)$$

Where,

$$\sigma^2 = \begin{cases} 1 & \text{iff}_k \geq f_i \\ \exp\left(\frac{f_k - f_i}{|f_i + \varepsilon|}\right) & \text{otherwise} \end{cases} \quad (9)$$

Where $k \in [1, N_r], k \neq i$, and the total amount of roosters is N_r. In this example, $X_{i,j}$ stands for the position of rooster count i in the j^{th} dimension at the moment t during the t+1 iteration, randn $(0,\sigma^2)$ generates a random Gaussian integer with mean 0 and variance σ^2 , ε stands for a constant with the smallest value, and f_i stands for the fitness score of the corresponding rooster i: The hen modifying location is used in the subsequent equation (10).

$$X_{ij}^{r+1} = X_{ij}^{t} + S_1 \text{randn}\left(X_{r1,j}^{t} - X_{i,j}^{t}\right) + S_2 \text{randn}\left(X_{r2,j}^{t} - X_{i,j}^{t}\right) \quad (10)$$

In which S_1 is calculated in (11)

$$S_1 = \exp\left(\frac{f_i - f_{r1}}{|f_i| + \varepsilon}\right) \quad (11)$$

Then replace S_1 in equation (12)

$$S_1 = \exp\left(f_{r2} - f_i\right) \quad (12)$$

While $r1, r \in [1, \ldots, N], r1 \neq rr$ specifies the index of the rooster, $r2$ denotes the hen or rooster in the swarm, and randn is used to generate an arbitrary value with a uniform distribution. Finally, the following equation implements the chick updating position:

$$X_{ij}^{r+1} = X_{ij}^{t} + FL\left(X_{m,j}^{t}, X_{i,j}^{t}\right), FL \in [0,2] \quad (13)$$

Now $X_{m,j}^{t}$ shows the place of i^{th} chick mother

IV. RESULTS AND DISCUSSION

The TC Identification via Image Processing method suggested in this work is carried out utilizing the Python software platform. The results of simulation are produced by the median filter with image processing technique. Original TC pictures are represent in Figure 5.

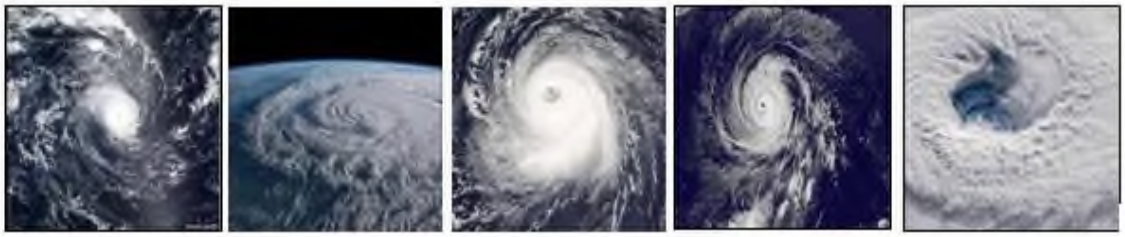


Figure 5: Original Image

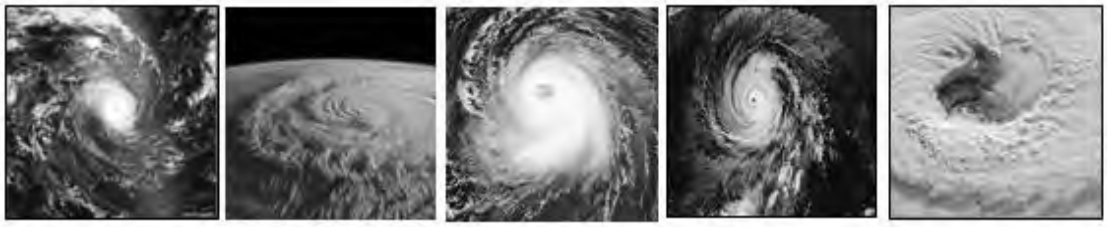


Figure 6: Gray Scale

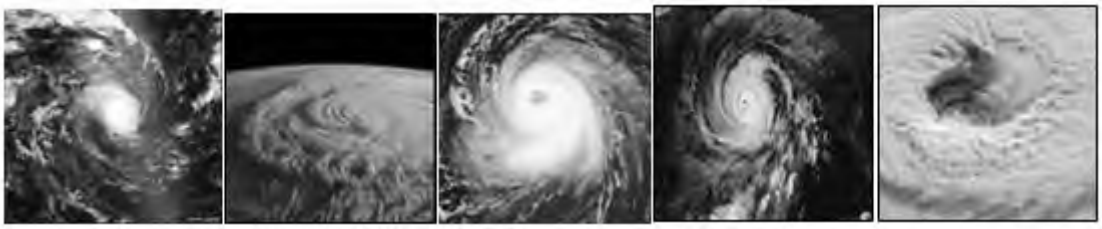


Figure 7: Median Filter

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The median filter method has been used to filter an image. It is employed on the TC image to keep some elements while getting rid of others. Preprocessing is primarily used to enhance the appearance of TC images, but it can also enhance a number of other aspects of TC images, such as increasing their visual appeal, removing extra noise and unwelcome background elements, improving the interior of the region, and preserving its edges. Therefore, the proposed median filter enhances TC image quality while reducing noise.

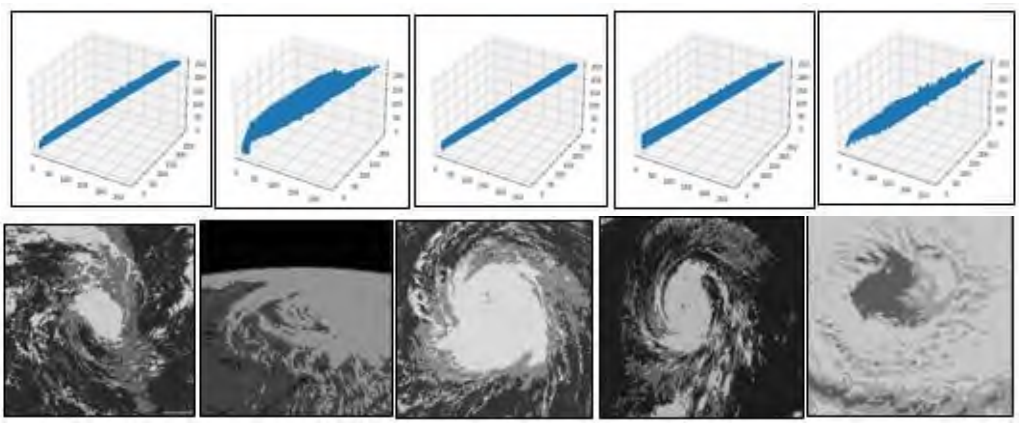

Figure 8: K-Means Segmentation

Here the images are divided into segments in order to make simpler to analyze, is required. It is intended to pinpoint various boundaries, including lines, circles, and curves. The segmentation of the image (retinal vessel segmentation) establishes whether a specific pixel represents a vessel or not. The K-Means Segmentation technique was used to create the segmented TC image in this case, and the results are displayed in the Figure above. It is tested against the conventionally known vascular network and displays unmistakably successful results.

Table 2: Feature Extraction

Images	**Extracted feature**				
	Homogeneity	**Correlation**	**Dissimilarity**	**Energy**	**Contrast**
Image.1	0.09624	0.89214	19.79704	0.01122	863.14482
Image.2	0.38106	0.97395	7.82335	0.19307	195.86033
Image.3	0.15318	0.91467	18.14730	0.01653	864.32641
Image.4	0.15662	0.89984	16.76999	0.03249	713.55068
Image.5	0.18422	0.95835	7.20654	0.02194	115.55706

The collection of data for the extraction of characteristics which includes homogeneity, energy, dissimilarity contrast, and correlation are shown in the aforementioned table. The results have been acquired using the GLCM technique on datasets. To pick appropriate features for the classifier's development is the main goal of feature selection. In this work, the CSO-based feature selection approach is used; it has the benefits of quicker training times, reduced overfitting, and avoidance of the dimensional problem while still producing the model.

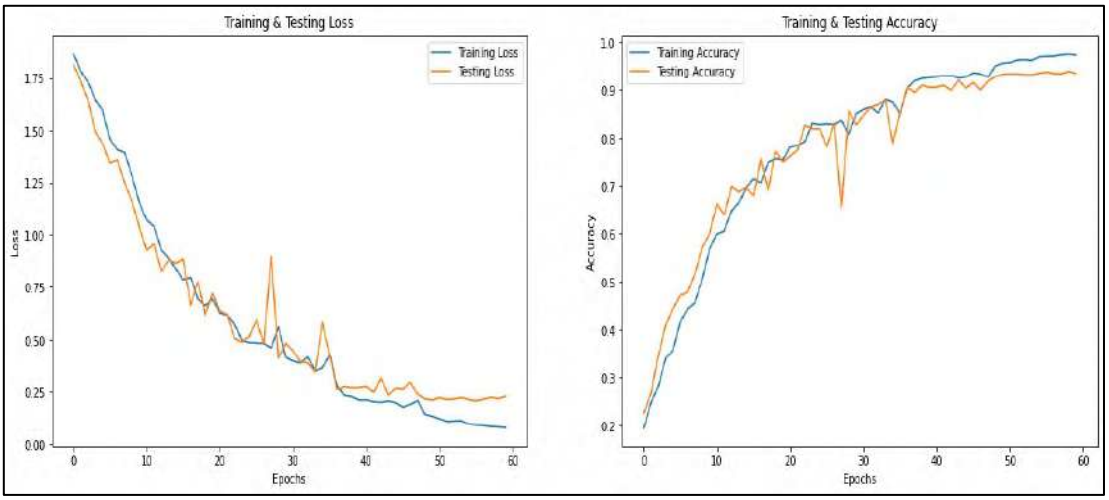

Figure 9: Accuracy & loss of CNN classifier

The accuracy and loss of the CNN classifier's testing and training periods are shown in Figure 9. The suggested CNN classifier has better accuracy loss with reduced testing & training loss, as shown by the graph. The suggested method successfully recognizes TC in colored photos as a consequence.

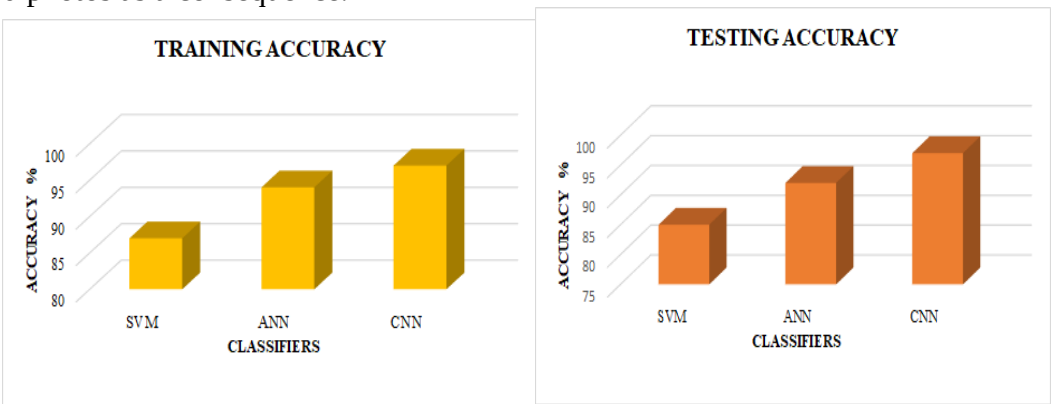

Figure 10: Comparison analysis of classifier accuracy

Figure 10 shows a comparison analysis of the training and testing accuracy of classifiers. It is clear from the findings that the suggested CNN classifier .

V. CONCLUSION

The lives of people and the environment have both been significantly impacted by TC. As massive volumes of meteorological and surveillance data continue to amass, traditional methodologies for forecasting TC tracks confront new hurdles in terms of forecasting efficacy and accuracy. Recent research has demonstrated that DL approaches are highly efficient and precise at predicting data in complex systems. From a large number of datasets, they may learn about both spatial and temporal characteristics. In this research,

utilizing historical data on TCs and a variety of meteorological variables, we suggested a unique DL model based on CNN models to forecast the TC's courses. K-means clustering technique is utilized for image segmentation, and GLCM is employed for feature extraction. The CSO algorithm is used, which lowers the error, to alter the CNN strategy hyperparameters in the best possible way. The hybrid DL and hyperparameter optimizer employed by the described CSO-DL model is used to calculate the cyclone. The experimental findings shows that the CSO-CNN model has the highest nonlinear fitting and generalization capabilities, the best precision and a low absolute average error value. CNN classifiers achieves the greatest testing and training accuracy of 94.7% and 95.2% respectively.

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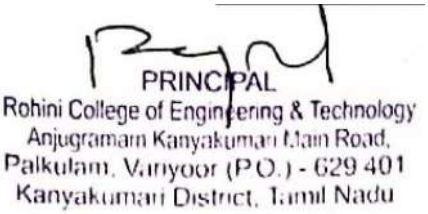

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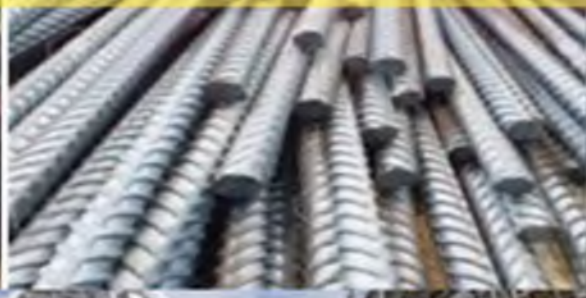

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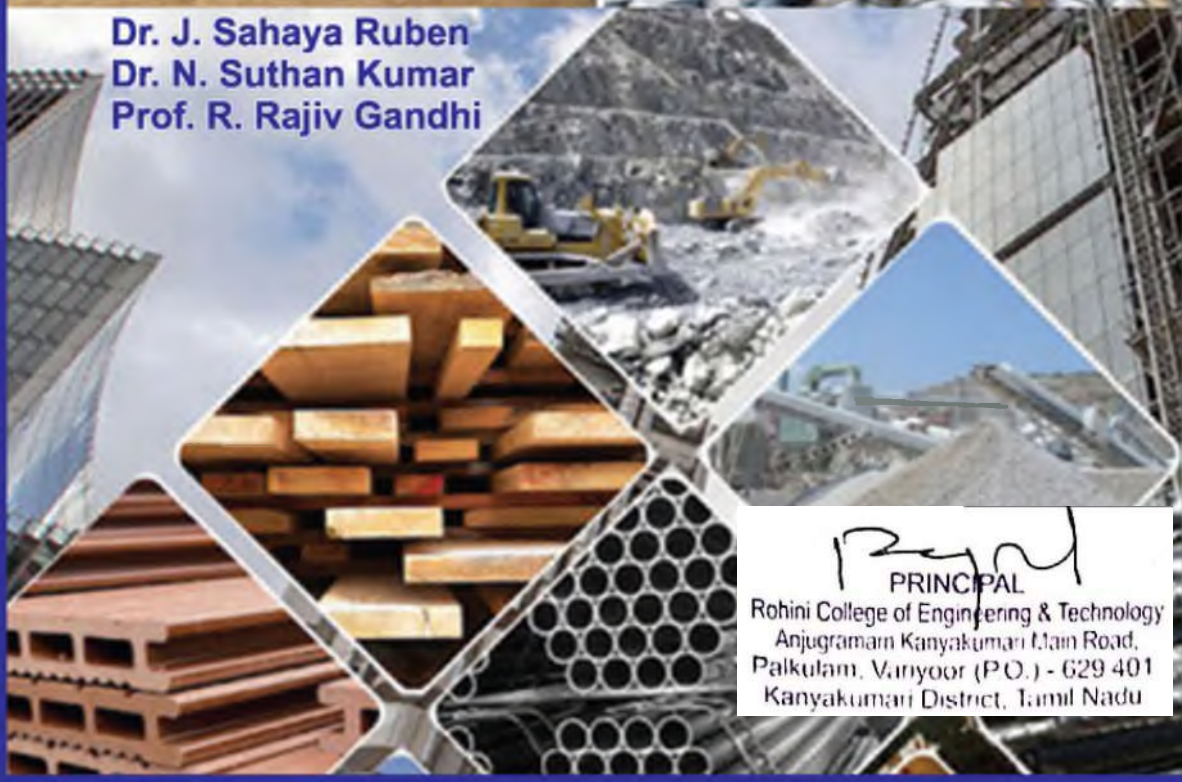

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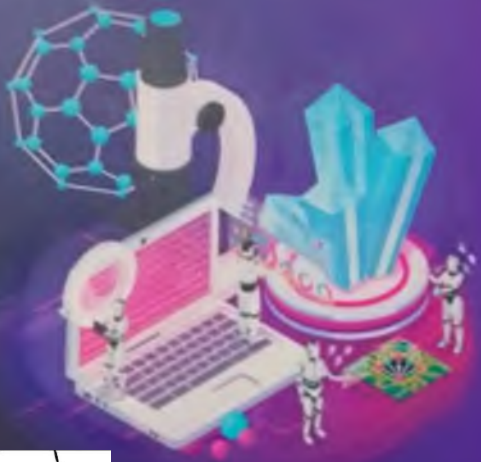

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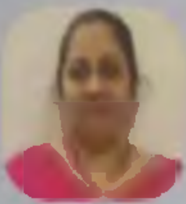

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This is to certify that Dr/Mr/Ms/Mrs JACKSON DANIEL I ME PhD (Prof/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled DIAGNOSIS OF BENIGN MELANOMA AND ATYPICAL SKIN LESIONS FROM DERMOSCOPIC IMAGES BY IMPLEMENTATION OF ABCD FEATURE EXTRACTION RULE

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangalore, India and Azteca University, Mexico

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This is to certify that Dr./Mr./Ms./Mrs S.MOHANALAKSHMI ME PhD (Prof/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled ENHANCING DIABETIC RETINOPATHY SEVERITY CLASSIFICATION WITH DUAL OPTIMIZATION IN DEEP LEARNING MODELS

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs SUDARSON RAMA PERUMAL.T ME PhD (ASP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled AN EFFICIENT, SECURE AND LIGHTWEIGHT AUTHENTICATION SYSTEM FOR VANETS USING ANFIS-WOA AND LBK

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs SUMI M S ME PhD (ASP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled A SELECTIVE FUSION METHOD FOR ACHIEVING ENHANCED SENSING IN COGNITIVE RADIO

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr. Mr. Ms. Mrs ALREJI ME PhD (ASP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled SPACE ROBOTICS

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICTAMESS 2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr / Mr / Ms / Mrs JACKSON DANIEL I ME PhD (Prof/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled NOVEL AND HYBRID FRAMEWORKS FOR ATTACK DETECTION AND SECURE TRANSMISSION IN MANET

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS 2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico.

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This is to certify that Dr/Mr/Ms/Mrs JACKSON DANIEL I ME PhD (ASP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled SECURED DATA TRANSMISSION IN INTERNET OF THINGS USING GAUSSIAN EMBEDDING METHOD

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs M.S.SUMI ME PhD (ASP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled FOG REMOVAL BASED ON CYCLE CONSISTENT ADVERSARIAL NETWORKS

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs S.SOBANA ME (AP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled DETECTION OF RETINOPATHY OF PREMATURITY BASED ON MODIFIED CNN

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs R.V.NAGARAJAN ME (AP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled UNDERWATER IMAGE ENHANCEMENT BY MULTI SCALE FUSION TECHNIQUE AND DEHAZING

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr./Mr/Ms/Mrs NISHA G KRISHNAN ME (AP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled CITRUS FRUIT RECOGNITION BASED ON SINGLE STREAM MODIFIED MOBILE NET V2 MODEL

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs E.SREE DEVI ME PhD (Prof/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled ADVANCED LEARNING TECHNIQUES FOR EFFICIENT AND ACCURATE IMAGE DEMOSAICING AND DENOISING IN MODERN DIGITAL CAMERAS

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs JASMINE J C SHEEJA ME PhD (ASP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled SHIP DETECTION FROM OPTICAL SATELLITE IMAGES BASED ON SALIENCY SEGMENTATION AND STRUCTURE LBP FEATURE

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify That Dr/ Mr/ Ms/ Mrs M.REJI ME PhD (ASP/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled A NOVEL DEEP LEARNING – BASED MMSE EQUALIZATION TECHNIQUE FOR WAVE DISTURBANCE MITIGATION IN OFDM SYSTEMS

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/ Mr/ Ms/ Mrs E.SREE DEVI ME PhD (Prof/ECE) of ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY has presented the paper entitled DEEP GUIDED NETWORK BASED IMAGE DEMOSAICING

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IMPLEMENTING ECO-FRIENDLY BUILDING PRACTICES AND MATERIALS IN CONSTRUCTION PROJECTS

Anandu B, PG Student, Department of Civil Engineering, M.E.T Engineering College

Abstract: Implementing eco-friendly building practices and materials in construction projects involves the adoption of sustainable strategies to minimize environmental impact. This abstract explores various approaches, including the use of renewable energy sources, recycled and sustainable materials, energy efficient designs, and water-saving systems. It emphasizes the importance of considering life-cycle assessments, community engagement, and certifications like LEED to ensure adherence to green building standards. The integration of these practices not only reduces the environmental footprint but also enhances building efficiency, promotes healthier environments, and adds long-term value to construction projects.

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INVESTIGATING THE POTENTIAL OF AUGMENTED REALITY IN CONSTRUCTION SITE SAFETY TRAINING

Divya Vidyadharan, PG Student, Department of Civil Engineering, M.E.T Engineering College

Abstract: Construction plays an important role in the prosperity of nations and is expected to grow to new heights in the next decade. This significant expansion along with the increased complexity and sophistication of construction projects and rapid technological advances of Industry. Also, construction industry is one the least digitized industries in the world, which has made it difficult for it to tackle the problems it currently faces. Information is the lifeblood of modern construction. Advances in Information and Communication Technology have been and are continuing to progress at rapid rates. Construction companies that are successfully able to adopt and integrate new technologies will gain a competitive edge. One emerging technology that has great potential to transform the construction industry is Augmented Reality (AR). While AR has been of interest to researchers for some time, no single research effort has yet comprehensively investigated the opportunities, benefits, challenges, and future paths toward implementing AR in modern construction. The main objective of this research is to investigate the potential of AR throughout the lifecycle of a construction project from the perspective of the construction industry. Furthermore, the opportunities and challenges of AR applications in construction were identified and presented in this study. This study provides insights into key AR applications as it applies to construction-specific challenges, as well as the pathway to realize the curable benefits of AR in the construction industry.

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ENHANCING THE STRUCTURAL EFFICIENCY OF STEEL TRUSSES

Sam Daniel Muthu Singh, PG Student, Department of Civil Engineering, M.E.T Engineering College

Abstract: Although structural steel is used to erect huge items such as skyscrapers due to its strength and ability to hold much more weight than other materials, it can also be used in smaller commercial buildings, homes, apartment, complexes and so much more. Structural steel can be used for ceiling and floor joist as well as for roofing providing more sustainability to the project. Using steel can help to create stronger structure that is able to stand up to not only more weight but also higher winds providing more protection than other options. Choosing to work with steel will prove to help save time on any construction project. Since time means money then you will find that you'll be able to save on the allotted budget for the job. Steel comes precut and ready to use. You also don't have to deal with doing re-cuts when human error has reared its ugly head. Working with steel can simply be faster allowing workers to complete a project before an estimated time as well.

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GAZELLE OPTIMIZATION-BASED VOLTERRA FILTER FOR THE DENOISING OF RICIAN NOISE FROM MRI IMAGES

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Abstract: For medical diagnosis, the major roles of Magnetic Resonance Imaging (MRI) applications are Denoising. The noise would decrease the image quality and make further classification difficulties in MRI images. An unwanted noise frequently interferes with the capture of medical images, distorting the information. The unwanted noises such as Rician noise and Gaussian, present in the MRI image might impair the accuracy of a clinical diagnosis. Nowadays, numerous MRI Denoising models were performed by using various filters. But, the shortcoming of computational cost, execution cost, higher noise level, and so on minimize the performance of the Denoising process. To tackle these challenges, we propose the Gazelle Optimization Algorithm (GOA)-based Volterra filter for MRI image Denoising. In this work, we removed the Rician noises from the collected dataset. The dataset images w :abase

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based on discrete images and T1-weighted MR images and the simulation works are handled using MATLAB software. The performance metrics like normalized mean squared error (NMSE), structural similarity index (SSIM), Mean square error (MSE), and Peak Signal to Noise ratio (PSNR) to evaluate the overall performance of the proposed method. Further, the effectiveness of the proposed framework is validated by using various filters like Wavelet transforms like VisuShrink and BayesShrink with Non sampled Shearlet transform, Efficient Nonlocal means (ENLM) filter, Differences of Gaussian filter, Bendlet transform, Volterra filter and etc. However, the performance of the proposed work is superior to Denoise the MRI images when compared to the other existing filters.

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PUMPED STORAGE SYSTEM INTEGRATED WITH AN OFF-GRID SOLAR PV SYSTEM WITH SMART ENVIRONMENT MONITORING SYSTEM USING IoT

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Abstract: Hydropower with reservoir is the only form of renewable energy storage in wide commercial use today. Storing potential energy in water in a reservoir behind a hydropower plant is used for storing energy at multiple time horizons, ranging from hours to several years. Pumped storage hydropower plants (PSH) are designed to lift water to a reservoir at higher elevation when the electricity demand is low or when prices are low, and turbine water to produce electricity when demand is high and/or prices are high. PSH are often designed with a relatively high capacity to operate in turbine or pumping mode for only few hours each. Artificial reservoirs are often used with limited capacity of storing water. Water from upper reservoir is opened and which rotates the turbine coupled with motor and generates electricity during peak demand. Solar panel of standalone mode is used to pump water from lower reservoir to upper reservoir during low demand. Future challenges for PSH development are connected with technical improvements to increase the potential head and the flexibility in pump mode, and also business models, grid integration, environmental and social issues related to the increasing need for energy storage, and balancing services followed by the increased deployment of renewable and intermittent energy sources.

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HEALTH AND SAFETY MANAGEMENT IN CONSTRUCTION PROJECTS

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Abstract: Safety and Health management in Construction has always been a big issue in India. Though much improvement in construction safety has been achieved, India still continues to lag behind most other countries with regard to safety. A measure of safety management could be used to identify those areas of safety that need more attention and improvement. Safety management is a leading performance indicator that can provide insight into safety performance before accidents have occurred. Main objective of this paper is to identify the factors that affect safety and health in construction sites and the measures adopted to improve safety and health in construction sites. The aim of this research is to evaluate the safety and health management in construction project to regulate health and safety of construction workers. The reviews of literature are the primary step in obtaining information from previously related studies. Questionnaire survey is used to gather information about health and safety management in construction projects. A survey questionnaire is designed and responses are collected about various factors affecting health and safety in construction projects. The questionnaire design took into consideration the objectives of the study with the aim to answer the research questions. Meetings with members from the industry were conducted to identify the right questions required and to present them in a clear and an unambiguous format. Analysis of the collected data is done based on the collected details and the best solution is identified for improving safety.

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RISK MANAGEMENT IN CONSTRUCTION PROJECT

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Abstract: The construction industry is inherently complex and dynamic, characterized by numerous uncertainties and potential risk that can significantly impact project outcomes. This project explores the critical role of effective risk management in mitigating uncertainties and enhancing the project success within the construction sector. There are three main stages in the systematic approach to risk management in construction industry. These stages include: risk identification, risk analysis, risk assessment, risk mitigation, risk monitoring. The general methodology of this study relies largely on the survey Questionnaire which was collected from the local building contractors of different sizes by mail or by personnel meeting. A thorough literature review is initially conducted to identify the risk factors that affect

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industry as a whole. The survey questionnaire is designed to probe the cross-sectional behavioural pattern of construction risks construction industry. Also aims at discovering the frequently used techniques in risk identification and analysis. It also attempts to identify response to clarifying the different classifications of risk sources in the existing literature of developing countries, and to identify the future research directions on project risks in the area of construction in developing countries. A questionnaire was designed and circulated to collect responses about various risks occurring on construction sites. As a result, the people working on the projects face various risks such as operational requirements, cost overruns, and various types of accidents during a project. The risks were analysed using the risk matrix method with the help of assessment forms, and further solutions were given to minimize the risks in a construction project.

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IMPROVING THE RECOGNIZABILITY OF AERIAL IMAGE SEGMENTATION USING CROSS-CORRELATION LEARNING

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Abstract: Aerial image segmentation is fundamental in various domains including disaster and risk management, monitoring environmental attributes and urban/suburban planning. Despite advancements, segmenting these images accurately remains challenging due to a number of computational and environmental complexities. This project proposes a novel approach to improve the segmentation process in the context of aerial imagery by using cross-correlation learning. Our method relies on both spatial and contextual information present in aerial images through cross-correlation. Through the process of observing correlations between multiple regions in images, this model effectively captures the smallest details essential for precise segmentation. Unlike previous models, this project takes into account a far broader context, enhancing the recognition of segmentation boundaries. We conduct the experiment on a sparse dataset with a variety of aerial images, and the results obtained show the impeccable difference between traditional methods and our cost-effective approach, with competitive accuracy scores. Extensive analysis with similar existing methods confirms the superiority of our approach, in terms of both quantity and quality. Furthermore, our proposed framework facilitates effortless integration with existing program architectures, ensuring that all domains in remote sensing can practically adopt this method. The ability of computers to recognize environmental and geographical boundaries holds promise for various innovations and new real-world applications, making this work extremely important in terms of future enhance ability, which is also discussed.

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STUDY ON GREEN TECHNOLOGY OF SOLAR ENERGY SYSTEM

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Abstract: Green technology refers to the use of environmentally-friendly practices and resources to minimize the impact on the planet. In the context of solar energy systems, green technology refers to the use of solar panels to harness the power of the sun and convert it into clean and renewable energy. This technology helps reduce greenhouse gas emissions, dependence on fossil fuels, and promotes sustainable energy production. It's a win-win for both the environment and our energy needs! Green technology in solar energy systems has been a game-changer for sustainable energy production. Green technology focuses on harnessing the power of the sun through solar panels, which convert sunlight into electricity. This clean and renewable source of energy helps reduce our reliance on fossil fuels, decrease greenhouse gas emissions, and combat climate change. It's an exciting and eco-friendly way to meet our energy needs while protecting the environment. This paper discusses the concept, working principle, the components, methods and how to mound the solar energy system. The purpose of this study is to investigate view points on solar energy technologies for sustainable development and also explain the norms and the government standards of solar energy system. Thus, it provides the goals of tropical countries. Finally, a review of world biggest solar energy plant and floating solar energy plant. Harnessing sunlight, solar energy systems not only power our present but hold the key to an environmentally enlightened future.

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EXPLORING WASTE TO MINIMISE WASTE IN CONSTRUCTION INDUSTRY

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Abstract: The world is facing a rapid development in the field of construction due to a very large increase in human numbers. The construction industry is one of the most important modern industries because of the large increase urban development. It produces enormous waste as a result of demolition and construction operations and the environment is considered as the largest negatively affected. This paper aims to do a comprehensive review of the demolition, construction and waste management processes such as asphalt, brick, concrete, ferrous metals, glass, non-ferrous metals, paper, cardboard, plastic and wood. This paper also aims to reduce the cost and negative impact of these wastes on the neg
environment by studying practices that contribute to reducing these i

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again. Demolition waste is waste debris from destruction of a construction. Construction industry India generates about 10-12 million Tons of waste annually. While Retrievable items like bricks, wood, metal, titles are recycled in India, Concrete and masonry waste (>50% of total waste) are not recycled. This report is expected to be a pilot study towards preparation of such a manual. The objective of this study is to compile relevant literature which will give an insight into demolition waste management strategies of different countries and role of regulatory authorities in demolition waste management. The paper also studies the properties of demolition waste, its hazardous effects and suggests recycling/reuse/disposal methods.

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THE COST CONTROL AND PROJECT PROFITABILITY OF AIRPORT BUILDING CONSTRUCTION

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Abstract: An airport building is a structure located within an airport facility. It encompasses structures like terminal buildings, control towers, hangars, cargo, warehouses, administration buildings, and more. The main purpose of an airport building is to facilitate and support the operations of an airport, including passenger services, aircraft handling, cargo processing, and administrative functions. The data speaks for itself: In the study, it has been found that a staggering 91.5% of projects go over budget, over schedule, or both. Worse, less than 1% of projects are completed on time and schedule, and deliver the benefits promised. Cost overrun in construction refers to the situation where the actual costs incurred during a project exceed the initial budget or estimated costs agreed upon with the client. It is also referred to as a cost increase or budget overrun. The project work focuses on the cost control and project profitability of the construction of an airport building without affecting the time, quality, and scope of the project. The methodology used for tackling cost overrun is performed in six stages – Collection and study of literature, Selection of case, Collection of data, Upskill, Site Visit, and Recommendation. This project work will provide benefits such as economic development to the nation, the construction industry and the people.

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CONCEPTUAL AND MATHEMATICAL MODELING WHEAT DISEASE CLASSIFICATION BASED ON SINGLE SHOT LEARNING

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Abstract: In agricultural systems, the timely detection and classification of crop diseases play a pivotal role in ensuring food security and optimising agricultural productivity. This paper presents a novel approach for wheat disease classification utilising the YOLOv5 object detection framework augmented with a Position Attention Block (PAB) for single-shot learning (SSL). By integrating PAB into YOLOv5, the model gains the ability to effectively capture spatial dependencies and focus on salient regions within wheat images, thereby enhancing its discriminative power for disease classification. The proposed methodology is evaluated on a comprehensive dataset comprising various wheat disease instances, encompassing both common and rare pathological conditions. Experimental results demonstrate the efficacy of the proposed approach in accurately identifying and categorizing wheat diseases, outperforming baseline models in terms of classification accuracy and efficiency. By facilitating proactive disease control measures, Results indicate superior performance in terms of both accuracy and computational efficiency compared to existing methods, highlighting the efficacy of the proposed framework for automated wheat disease diagnosis. This research represents a significant advancement in precision agriculture, offering farmers and agricultural practitioners a robust tool for early disease detection and targeted intervention strategies previously Normalised difference Latent heat index is used to assess plant health and find the Surface water level in the soil however (NDLI) is applicable only for fewer applications and also it cannot operate in complex terrain, the accuracy of the system depends abundantly on the input data when the quality of the data is not up to the extent NDLI fails to provide accuracy.

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OPTIMUM DISPATCH PROBLEM USING FIREFLY ALGORITHM WITH VALVE POINT LOADING EFFECT

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Abstract: The major issue in power system is Economic Dispatch problem. It is an optimization problem and to reduce the total generation cost of units by satisfying equality and inequality constraints. Most of the classical problem formulation in ED problem presents deficiencies due to the simplicity of the cost models. In real life generating stations the valves control the steam entering the turbine through separate nozzle groups. Each nozzle group achieves best efficiency. Here, the economic dispatch problem formulation takes in to account of non-smooth fuel cost function due to valve point effects and making this to a real-world problem. The main objective of this project is to optimize the cost using Firefly Algorithm [FA]. This algorithm is a type of swarm intelligence algorithm based on the reaction of a firefly to the light of other fireflies. The objective is to determine the optimal combination of power outputs of all generating units in order to minimize the total cost satisfying constraints and load demand in each interval. The proposed approach has been examined and tested with the numerical results of ED problems with three-generation units.

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EXCESSIVE WATER REDUCTION METHOD IN AGRICULTURAL FIELD

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Abstract: Mannargudi is a town in Thiruvarur district in the Indian state of Tamil Nadu. Agriculture is the principal occupation of the people of Mannargudi. The village is also known for cloth weaving and metal industries. Being an agricultural town, Mannargudi's economy largely depends on the income from agriculture. In the year 2018 to 2019 many hectares of crops were damage due to excessive rainfall. The practice of agriculture has been affected due to the climatic changes. Due to heavy rain and floods crops are getting affected the idea can solve that problem w[illegible]ncreases as well as

drastic changes in the climatic changes take place. The technology will deduct the excess amount of water to enter the field and screening will be done around the field and the water will be saved in a chamber or a lake nearby for future use. In future if the climatic changes take place frequently then the problem or inconvenience in the practice in agriculture will take place which will lead to shortage of food so this method can be used when the climatic changes happens frequently and when the need for food increases.

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WORK SCHEDULING, TIME DELAY AND IMPLEMENTATION OF MULTI-STORIED BUILDING

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Abstract: The Problem of delays in construction industry is a global phenomenon and there is no exception. Delay will result in several negative effects like lawsuits between house owners and contractors, loss of productivity and revenue and contract termination. Thus, comprehensive study on delays in construction project is important. Delay in completion of project results in increase in the overall cost of the project. Small projects can be managed efficiently manually; whereas large projects can be better handled by the use of computer software. In this study, an effort is made in planning, scheduling and delay analysis, updating various activities, by using MS Project and MS Excel software. Manpower of each activity is determined and allocation is done using the software. Labour requirement for each activity is calculated from standards obtained from site. The main objective of the study is to identify delays, determine the impact of delay on the project duration and to quantify the damages for contractors and owners due to delay.

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ENVIRONMENTAL SUSTAINABILITY

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Abstract: Environmental sustainability has become a critical global imperative due to the escalating challenges of climate change. In response to this crisis, countries worldwide are focusing on implementing green energy innovation initiatives (GEII) to promote a sustainable future. These initiatives aim to reduce environmental degradation and foster sustainability across various sec h study, the role of green finance in driving green energy innovations w 2

articles in this domain through a systematic literature review, covering the period from 2002 to 2023. Six emerging themes were identified to understand the development and potential impact of GEII for environmental sustainability. Additionally, institutional theories were explored to understand their association with this research area. Despite the progress, several challenges remain for the speedy implementation of green innovations. However, the findings from existing literature provide valuable insights for future research. As nations collaborate to combat climate change, green energy innovations hold immense potential to revolutionize energy production and consumption, offering an alternative path toward a more sustainable future.

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ANALYSIS AND DESIGN OF AN OVER HEAD WATER TANK OF CAPACITY 20 LAKHS LITERS FOR JAL JEEVAN MISSION

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Abstract: In this paper, the analysis and design of an overhead water tank is performed using Staad The tank was proposed for Jal Jeevan Project in Kasaragod District, Kerala. The tank has a capacity of 20 lakhs liters with a height of 4.0 m and 15 cm free board. Plan area of the square water tank is 500 m2. Height of the tank above ground is 16.00 m to the top of roof slab. Depth of foundation is 1.5m below the ground level. The design guidelines followed for the design of liquid retaining structures are IS 3370 part 1&2-2009 & IS 456-2000. The wind forces are calculated according to IS 875 Part 3, 2015. The design requirements for the seismic forces are done according to IS 1893-2016 part 1,2 and IS 11682-1985 “Criteria for design of RCC staging for overhead water tanks”. To study the ductile detailing of reinforced concrete IS 13920-1993 is followed.

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PROPOSED RECEIVING STATION STRUCTURAL DESIGN

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Abstract: A receiving station is a building which accommodates large transformers to receive electric power from the source where it is produced. The electricity is then stepped up using transformers and distributed to the end users. The aim of the project is to do a complet of a 3 story Reinforced Concrete framed structure building for a Receivin ign

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basis report and the structural analysis of the building. The building is designed for lateral loads like wind and seismic loads of moderate intensity. Being an important building to be sustained at the event of a possible earth quack, the seismic detailing is done as per the relevant code of practice.

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ENHANCING REMOTE SENSING OBJECT DETECTION THROUGH OBB STACKING

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Abstract: OBB Stacking is a revolutionary ensemble learning approach designed exclusively for remote sensing object detection problems. A more reliable and accurate detection system is produced by combining many object detection methods. Because each algorithm may have unique advantages and disadvantages, OBB Stacking combines them in an effort to maximize their complementary qualities and improve overall performance. This study looks into how to best utilize advanced object detection methods in conjunction with remote sensing applications to achieve maximum accuracy. It will examine how different elements interact, as well as the state-of-the-art algorithms, pertinent datasets, and hardware and software needs for effective object detection in this field. Implementation of OBB stacking involves stacking multiple bounding boxes with varied sizes and orientations. - Superior performance of the proposed approach demonstrated, even in challenging conditions like occlusion and varying perspectives. Integration of OBB stacking into existing detection systems identified as a promising avenue for accuracy enhancement in remote sensing applications. The method, termed OBB (Oriented Bounding Box) stacking, utilizes the concept of stacking multiple bounding boxes in a hierarchical manner to better encapsulate object shapes and orientations By incorporating orientation information into the bounding box representation, the suggested approach intends to address challenges provided by irregularly shaped objects and variable orientations often observed in remote sensing data. The research shows how OBB stacking can improve the robustness and accuracy of object detection tasks in remote sensing applications through experiments and evaluations.

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HUMAN DETECTING ROBOT FOR RESCUE OPERATION

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Abstract: The world repetitively suffer from disaster condition like earthquake, gas tragedies and if want to survive we want to take helps from technology because it's very dangerous to come directly face these type of situations so that's why we are focusing on a robot who can make the task easier so human detector plays that kind of role it finds a person in certain areas where risk is there and alarms us if any person detected. Passive Infrared Sensors (PIR) are the most widely used sensors for cheap surveillance. Due to their high ended sensitivity and area of detection PIR sensors are popular in security. PIR sensors are excellent in human and animal detection. They are mostly used in triggering an intruder alarm and activating household appliances in the presence of a human. However, the output from the sensor is proportional to several temporal relationships between an object in the field of view of the sensor, the sensitivity of the sensor, PIR lens features, and the environmental heat conditions.

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OPTIMIZING THE ELECTRIC VEHICLE USING FISH SWARM ALGORITHM

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Abstract: The novelty of this research investigates the issue of distribution network load fluctuation and escalating grid cost input due to erratic electric vehicle (EV) user behavior in reaction to electricity pricing. A proposed optimization model that takes into account the cost of the power grid and the vehicle owner's response when assessing the charging and discharging price of electric vehicles. The voyage and battery state limits are defined after a study of the EV user travel rule. Utilizing a user transfer rate and unit energy cost function, a multi-objective model of charging and discharging price is constructed that minimizes electricity costs and inhibits an increase in power grid investment, all while taking user charging and discharging behavior and battery characteristics to attention. To overcome the optimization problem, an enhanced multi-target fish swarm algorithm is finally proposed. The example investigation illustrates how the suggested technique can lower the system's peak-valley load [illegible] cost input while simultaneously allowing users the control to use the gri[illegible].

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PRACTICAL FACTORS AFFECTING DELAY IN HIGH RISE CONSTRUCTION _ CASE STUDY

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Abstract: This study investigates the multifaced landscape of delays encountered in high-rise construction projects, focusing on their practical determinants within a specific construction organization. Delays in such projects incur substantial costs and impede timely project completion, prompting a comprehensive examination of the practical factors contributing to these setbacks. Employing a case study approach, this research delves into the intricacies of high-rise construction and identifies a spectrum of practical factors that significantly impact project timelines. The findings underscore the nuanced interplay of these factors, highlighting their interconnections and influence on project delays. Furthermore, the studies evaluate and mitigative measures adopted by the construction organization to address these challenges, offering insights into potential avenues for ameliorating delays in high-rise construction. The outcomes provide a foundation for refining project management strategies, enhancing industry practices and fostering more efficient and timely completion of high-rise construction ventures. This abstract gives an overview of the study's objectives, methodology, key findings and potential implications providing a concise summary of the research conducted on practical factors affecting delays in high-rise construction.

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AUTONOMOUS BATTERY MANAGEMENT SYSTEM FOR MOBILE ROBOTS

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Abstract: Battery management of mobile robots is an issue that has not been a strong focus of attention and is usually addressed by the simple use of battery thresholds. One of the main causes is that no significant method of assessment of risk of battery depletion has yet been proposed. In this paper, a novel method for evaluation of risk of battery depletion for mobile robots is proposed. Uncertainties concerning effective battery capacity, current discharge rate and energy required for reaching the station are addressed using probability density functions. This risk assessn of battery threshold by a

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customizable risk-taking parameter that will be used to define the level of gain is required for balancing a given level of risk. This risk management of battery will guarantee that decision of redirection to the station corresponds to a favourable compromise between risk and level of mission accomplishment. While the proposed approach has been tested using a simulated and real room cleaning robot, it could be applied on a wider range of mobile robots.

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IOT BASED SMART ENERGY METER WITH AUTO DAILY TARIFF CALCULATIONS OVER INTERNET

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Abstract: Innovative solutions for various industries have been developed as a result of the proliferation of Internet of Things (IoT) devices. IoT has the potential to completely change how electricity is produced, transmitted, and used in the electricity sector. The use of IoT for detecting and preventing electricity theft is one such application. Electricity is one of the basic needs in humans' daily life. Life cannot be thought without electricity since modernization has made Air Cooler, heating system, and refrigerator, etc as a basic equipment in everyone's life. Furthermore, its widely seen that domestic, agricultural, and industrial settings would not function without electricity so the generation and transmission of the same with less losses are the need of the hour. The biggest problem occurring nowadays is the theft occurring, meters which are used for measuring the consumption of units do not account this power theft and other different tampering occurring in meters. This paper discusses an Internet of Things (IoT)-based smart meter with fault detection and theft detection. Even the present conventional meters can be converted to smart energy meters with a simple change in circuit. It mainly consists of Arduino Uno, ESP8266, current sensor, etc. Where the current sensor senses the current usage and with the help of Arduino Uno it is sent to the IoT platform. From there the utility provider can real-time data like the voltage and current consumption, tariff. The proposed system also detects anomalies and theft occurring in the system with the help of current sensor by measuring the incoming and outgoing current.

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ENERGY AUDIT AT STONE SCULPTURAL WORKS INDUSTRY

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Abstract: Energy consumption in industrial and commercial facilities is a major expense for businesses and contributes significantly to environmental pollution. The lack of visibility and control over energy usage makes it difficult for business to manage their energy costs and reduce their carbon footprint. Electricity is the basic necessity of a stone sculptural works industry. But the awareness of its utilization and energy saving opportunities are considerably low. This leads to unwanted over-utilization of electricity thereby reducing energy efficiency and increasing electricity consumption cost. An optimal solution to such problems is to create awareness upon the electricity usage through procedural energy auditing in the stone work industry. Energy Audit is carried out in two phases namely pre-audit phase and post-audit phase. During pre-audit phase, data of the machines rating, light load ratings, their working hours are collected. Energy meter readings, respective monthly energy consumption and its cost are noted for NINE months (July 2023 – March 2024). During post-audit phase, all possible energy conservation measures are analyzed and energy efficient machine replacement was suggested. The suggestion was effectively made with adequate proofs on monthly energy consumption and its cost. It is found that the cost calculated with energy efficient machine ratings was found to be very less (30%) than the conventional ones.

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ENERGY AUDIT AT ISAAC NEWTON BLOCK FOR ENERGY CONSERVATION

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Abstract: Regular electricity use at educational institution has led to unintentional and intentional energy wastages. In view of reducing this wastage, energy audit is used as a tool to identify the possibility of energy conservation. The audit procedures are planned to get executed for Sir Isaac Newton Block (Mechanical Engineering, Electrical and Electronics Engineering) at Rohini College of Engineering and Technology, Kanyakumari, Tamilnadu. Audit process is segregated as pre-audit for data collection to carry out optimum cost analysis and post-audit for suggesting improvement [illegible]es/Appliances

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which failed to operate efficiently and effectively are identified and suggestions were made to replace them with energy efficient ones. Avoidance of inappropriate usage of appliance operation was ensured. Also, energy conservation of electrical components was drafted with the usage of Time of Day tariff in comparison with simple rate tariff. Optimality techniques like renewable energy usage for source management is also recommended for smooth functioning of the loads at optimal cost.

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REACTIVE POWER & VOLTAGE CONTROL OF GENERATOR PROTECTION FOR STEAM POWER PLANT

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Abstract: The solar energy generation, utilization and its grid penetration in electrical grid are increasing worldwide. The solar generated power is always fluctuating due to its time varying nature and causing stability problem. The flexible Alternating Current Transmission (FACTS) devices such as UPFC are becoming important in suppressing power system oscillations and improving system damping. A Unified Power Flow Control (UPFC) is an electrical device for providing fast-sensation on high-voltage electricity transmission networks. UPFC uses a pair of three-phase controllable bridges to produce current that is injected into a transmission line using a series transformer. The controller can control active and reactive power flows in transmission line. The UPFC can control the transmission real power, as its series – connected output end, while independently providing reactive power support to the transmission line at its shunt- connected input end. A MATLAB/SIMULINK simulation has been carried out to demonstrate the performance of the UPFC in achieving harmonic mitigation and stability of the solar energy grid connected system.

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FAULT RIDE THROUGH CAPABILITY WITH A PHOTOVOLTAIC ENERGY SOURCE OF GRID CONNECTED INVERTER USING MRAC

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Abstract: The proposed work aims to develop a controller which can dynamically adapt to the variations in the plant still providing the optimum performanc ed on the MRAC

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(Model Reference Adaptive controller) with MR rule based optimization. A first order model of the plant is used as a reference to dynamically tune the parameters of the controller to give satisfactory performance modelling is carried out in MATLAB for the proposed power system plant and is validated through simulations for which results are also presented.

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INTELLIGENT POWER MANAGEMENT OF PV/BATTERY BASED HYBRID WATER PUMPING SYSTEM USING BLDC MOTOR DRIVE

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Abstract: Battery storage is usually employed in photovoltaic (PV) system to mitigate the power fluctuations due to the characteristics of PV panels and solar irradiance. Control schemes for PV-battery systems must be able to stabilize the bus voltage as well as to control the power flows flexibly. This paper proposes a comprehensive control and power management system for PV-battery-based hybrid micro grids with both grid connected and islanded modes. The proposed Intelligent power management of PV/Battery based hybrid micro grid is successful in regulating the DC and AC bus voltages and frequency stably, controlling the voltage and power and balancing the power flows in the systems automatically under different operating circumstances, regardless of disturbances from switching operating modes, fluctuations of irradiance and temperature and change of loads. The proposed system regulates the DC bus voltage by controlling the inverter, such that the power can be provided to feed the load reliably in spite of other changes. The DC bus voltage value is under full control. Additionally, it is more convenient and economical for DC load access, as DC/DC converters can be omitted if the rating voltage of the load meets the DC bus voltage and allows additional loads to access the system without extra converters.

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FAULT DETECTION FOR PHOTOVOLTAIC SYSTEMS BASED ON MPPT FUZZY INFERENCE SYSTEMS

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Abstract: The increasing demand for clean renewable energy resources and particularly to PV desirable characteristics such as high availability, energy independence, environmental compatibility, short installation time, and low cost of maintenance. Here, proposed a nulti resolution

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signal decomposition (MSD) and a fuzzy inference system (FIS) to detect such faults. The inputs are PV array output current and voltage and the solar irradiance. The MSD technique is used to extract four distinctive features based on these three inputs. These features are then fed into an FIS system that, according to carefully designed membership functions and the associated rule base, outputs a scalar quantity that will be the basis for decision making. The magnitude of this output determines whether an LL fault, LG fault, or neither has occurred. The simulation- and experiment-based case studies demonstrate the promising performance of the proposed algorithm. It is, however, concluded that fault detection becomes increasingly difficult as fault impedance increases or mismatch percentage decreases.

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STUDY THE EEFECT OF LABOUR PRODUCTIVITY ON OTHER RESOURCES IN CONSTRUCTION

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Abstract: Productivity remains an intriguing subject and dominant issue in the construction sector, promising cost savings and efficient usage of resources. Productivity is one of the most important issues in both developed and developing countries. The developed countries are aware of the importance of economic growth and social welfare. The developing countries which face unemployment problems, inflation and resource scarcity seek to utilize resources and in such a way as to achieve economic growth and improve citizens lives. The aim of this project work is to identify factors affecting labour productivity and to study causes i.e. labour problems on site and its effects on construction projects. Some of the important factors affecting labour productivity are quality of site management, material shortage, timely payment of wages, labour experience, misunderstandings between labour and superintendent. Here problems faced by the labour on Indian construction sites are dealt in detail. Problems like non-availability of proper accommodation, basic amenities, low wages, safety related problems, security etc., exists in almost all Indian construction sites. This work concentrates on labour productivity ratios that are reducing day by day, which in turn harms organization's profitability. In this study an attempt has been made to relate the ill effects of falling labour productivity with the productivity of other resources such as material, equipment and capital. Analysis of the data collected was done using different statistical methods. This report includes explanations on labour productivity, a case study of residential building construction using Microsoft Project (MSP), productivity improvement using work study, factors affecting labour productivity and the remedies for the same.

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EXPERIMENTAL INVESTIGATION PARTIAL REPLACEMENT OF FINE AGGREGATE BY SEA SAND IN CONCRETE

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Abstract: This research is concerned with the strength, deflection, ductility and durability investigation of a contemporary construction material named as Sea Sand Concrete. Sea sand was extracted from Kanyakumari district, Tamil Nadu, India. Generally, river sand is used as fine aggregate. Due to increase in utilization of concrete in construction, the need for river sand has been increased enormously. Limitations have been laid on the large-scale mining of river sand from river beds. This project aims at the practical study of the compressive strength of the concrete in which sea sand is partially replaced as fine aggregate. Specimens were laid for M20 grade concrete. The fine aggregate proportion from the design mix was replaced partially in percentages of 20%, 30% and 40% by sea sand. The strengths of concrete specimens for respective mix proportions were tested at 7 and 28 days of water curing with the increase in the percentage of sea sand replacement in concrete, the compressive strength of concrete significantly reduced.

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DECISION SUPPORT METHODOLOGY FOR REMEDIATION PLANNING OF CONCRETE BRIDGES

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Abstract: Bridges are critical and valuable components in any road and rail transportation network. Bridges remediation has always been a top priority for asset managers and engineers. Decision support systems (DSS) are widely used to assist decision makers (AHP & SMART). objective of this research is to assess the bridge condition and find the best remediation treatment by using Simple Multi Attribute Rating Technique (SMART). The main aim goal of this research is to develop a decision support methodology for selecting and prioritizing the actions necessary to maintain a bridge network within acceptable limits of safety, functionality and sustainability. The system will assist decision makers and bridges authorities in priority ranking of bridges in terms of budget allocation and the selection of the best remedies plans with in the related agency constrains so that feasible and practical solutions can b

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PERFORMANCE STUDY ON STRENTH OF SELF-COMPACTING CONCRETE USING SILICA FUME AND GGBS AS A PARTIAL REPLACEMENT OF CEMENT

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Abstract: Self-Compacting Concrete (SCC) is a type of concrete that has the capacity to consolidate under its own weight. Since, it is able to flow under its own weight, it completely fills the formwork and hence achieving full compaction into a uniform void free mass, even in the presence of congested reinforcement. The hardened Self-Compacting Concrete is dense, homogeneous and has the same engineering properties and durability as traditional vibrated concrete. The current trend all over the world is to utilize the related and untreated industrial by-products, domestic waste etc. as a raw material in concrete, which gives an eco-friendly edge to the concrete preparation process. This practice not only helps in reuse of the waste material but also creates a cleaner and greener environment. This study aims to focus on the possibility of using industrial by-products like Ground Granulated Blast Furnace Slag (GGBS) and Silica fume (SF) in preparation of SCC. The mix design for SCC was arrived as per the Guidelines European Federation of National Associations Representing for Concrete (EFMARC-2005). In this investigation, SCC was made by usual ingredients such as a cement, fine aggregate, coarse aggregate, water and mineral admixture silica fumed GGBS at various replacement levels. The super plasticizer used was Conplast SP-30. The proportions in which cement replaced are 15% of Ground Granulated Blast Furnace Slag (GGBS) and 5%, 10%, 15% of Silica fumes (SF). The properties reported in this paper are the workability properties and Mechanical properties. The Workability properties were investigated by Slump flow (filling ability), V-Funnel (filling ability) and L-Box test (passing ability). The Mechanical properties were investigated for Compressive strength and Split Tensile strength of 7 days, 14 days, and 28 days. In this investigation we were observed that fine materials and addition of super plasticizer improve the properties of self-compacting concrete at low water binder ratio. Test results shows that the SCC mix with combination of 15% GGBS and 15% silica fume improves compressive strength and properties of the fresh concrete are also within the limits prescribed by the EFNARC.

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HIGH STRENGTH CONCRETE BY HEMP FIBER

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Abstract: Sustainability is a wide accepted concept in modern construction scenario. Even though the construction industry is revolutionizing in a significant manner in terms of both equipment and materials used, the cost of construction has skyrocketed along with the deteriorative impact on environment. This resulted in the adoption of a more balanced approach with the environment as its nerve centre to create a better world to live in. This has led to the adoption of a natural fibre like hemp for the strength enhancement in concrete. Hemp fibre is available in abundance at the test site, which makes it quite viable as a reinforcement material in concrete. Further, it acts as a new source of income for the coconut producer who gets the benefits of the new demand generated by the construction industry. More over the fibres being natural in origin is ecologically sustainable and can bring down the global carbon footprint quite effectively. This study aimed to analyse the compressive strength between normal conventional concrete and concrete with addition of hemp fibre. From this study how much, compressive strength can be obtained between normal conventional concrete and hempcrete.

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EXPERIMENTAL STUDY ON PARTIAL REPLACEMENT OF CEMENT WITH COCONUT SHELL ASH IN CONCRETE

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Abstract: This study focuses on investigating the feasibility of incorporating coconut shell ash (CSA) as a partial replacement for cement in concrete mixtures. The objective is to evaluate the mechanical properties of concrete containing CSA at various replacement levels. The experimental program consists of preparing concrete mixtures with CSA replacing cement by 0%,5%,10%,15% by its weight. M25 grade of concrete was used for the experimental analysis. The cube specimens have in size 150mm x 150mm x 150mm and were used and tested after curing periods of 7 days, 14 days and 28 days respectively. The results obtained from this tests compared with those of conventional concrete mixtures to analyze the effects of CSA

replacement on the performance of concrete. The compressive strength and tensile strength of concrete generally increase with increasing CSA content, up to an optimal replacement level.

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EFFECT OF COAL BOTTOM ASH AS A PARTIAL REPLACEMENT OF FINE AGGREGATE

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Abstract: Concrete is the most widely used material, in which natural river sand plays an important role. In day-to-day life, to meet the scarcity of sand, alternative materials are used. The main objective of the project is to investigate the performance of concrete using coal bottom ash as a replacement of fine aggregate and also investigated whether the concrete is economically feasible. M20 Grade of concrete is chosen for study with 16 specimens. Mould of size 150x150x150 mm for cube and 150x300 mm for cylinder is used to cast specimen. Slump test is conducted to determine workability. Concrete cubes were tested for compressive strength and tensile strength. The fine aggregate was partially replaced with coal bottom ash in different proportions such as 20%, 30% and 50%. The results indicated that there is an increase in the compressive strength for 20%, 30% and 50% are 20.22N/mm²,16.62N/mm², 31.02N/mm² for 28 days and the tensile strength are 3.08N/mm², 2.97N/mm², 2.71N/mm² for 28 days respectively.

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TRAFFIC MANAGEMENT STRATEGIES TO REDUCE POLLUTION DURING PEAK & NON-PEAK HOURS IN NAGERCOIL TOWN

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Abstract: Traffic congestion is a perpetual problem for the sustainability of transportation development. Traffic congestion causes delays, inconvenience, and economic losses to drivers, as well as air pollution. Identification and quantification of traffic congestion are crucial for decision-makers to initiate mitigation strategies to improve the overall transportation system's sustainabi able measures are detailed and compared by implementing them on a d aset.

The results showed each measure showed significant variations in congestion states while indicating a similar congestion trend. The advantages and disadvantages each measure are identified from the data analysis. This study summarizes the current road traffic congestion measures and provides a constructive insight into the development of a sustainable and resilient traffic management system.

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STUDIES OF PARKING FACILITY IN KANAYAKUMARI

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Abstract: In our Previous research we have discussed on Parking Management Systems at the Kanyakumari in which we studied to betterment of the Reduce congestion in the parking area of the Kanyakumari. As there is a need for more Parking at Kanyakumari. The Proposed car parking area has Four-Wheeler which can be experiencing challenges in the recent past. In this Research paper, we will be discussing Data Collection methodology while calculating Parking volume at Peak hours as well as non-peak hours. The aim of implementing a parking management system is to reduce time and increase the efficiency of the current parking management system. We can park our vehicles in our slot because of that there is no towing problem and our vehicles have as been parked in a secure condition.

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AUTOMATED PHARMACEUTICAL DISPENSING SYSTEM

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Abstract: Over decades, there has been a significant increase in the use of Ceramic Insulator Waste in concrete for improving its properties such as Compressive strength. The consumption of ceramic materials in construction industries is increasing day by day in the form of tiles, sanitary fittings, electrical insulators etc. But around 30% of ceramic materials changes into wastage during processing, transporting and fixing due to its brittle nature which is not recycled at present. These ceramic wastes have better mechanical behavior and shows pozzolanic nature. Therefore, by using these wastes in to the c es

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of concrete. The pozzolanic reactivity of ceramic waste insulator collected waste valuated and its suitability as a partial replacement of cement using ordinary Portland cement 43 grade was analysed. Hence, the ceramic waste insulator powdered passing from 90micron sieve were used in concrete as a partial replacement of cement with 10%, 20%, 30%, 40% by weight of cement. Concrete mixtures were produced, tested and compared in terms of compressive strength to the conventional concrete. These tests were carried out to evaluate the mechanical and durability properties for 7, 14 and 28 days.

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PLANNING AND SCHEDULING OF MULTI-STOREY BUILDING

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Abstract: The problems inherent in the detailed design-to-construction process and describe an integrated system that incorporates the technology of computer-based scheduling software. A planning method is presented which needs little detailed information about Productivities and work volumes and may be rapidly produced. The plan brings an overall view of the project by grouping the main activities that are highly interdependent. The concept of the best rhythm for each group of activities focuses on the sequence of work, continuity of labor team working and completeness rather than on pure schedule goals. Many characteristics of this method is to eliminate waste, flexible planning and scheduling sequencing. The cost of the project is reduced by selecting the suitable material, which is less in cost with same character of the standard material. The overall cost of the project is determined in this project. So, it is beneficial for the owner and also the contractor. The owner saves money and the contractor get benefits in time and also in cost. By working in proper schedule, the overhead cost is reduced. The cost saving is achieved by selecting proper material in construction.

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COST MANAGEMENT ON THE EFFECT OF LANDFILL LEACHATE ON DIFFERENT LOW-COST FILTER MATERIALS

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Abstract: Landfilling has remains as the most common method for the disposal of municipal solid wastes. The main problem that associates with the landfilling is the generation of leachate. There are many different types for the filtration of leachate. Different types of materials are used as filtration medium. The most commonly used filtration materials are geo-synthetic materials and sand. In order to provide better economic filtration method, we used other cheaply available materials like coir pith and tyre chips. By the usage of these materials, the leachate is filtered in such a way that its pH value, hardness and other poisonous factors are reduced. From phase 1, I know found the quality parameters like BOD, TDS, Specific gravity and Permeability for coir pith, sand and tyre chips and in the next phase I will collect the materials like recycled aggregate, brick bats, wood waste and china clay waste, then the same quality parameters will also be find out and compared with all the filter medium.

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BRAIN CONTROLLED SMART HOME AUTOMATION SYSTEM

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Abstract: The main aim of this paper is to control the physical devices like home appliances using Electroencephalogram (EEG) signals. The objective of this paper is to help the paralyzed and physically disabled people to control the home appliances, so they become independent in their daily life. This provides the easiness in operations and also helpful to elder and decibel people. This is useful for people who cannot operate the peripheral devices using our normal muscular body parts. The proposed system aims to control home appliances (like bulb, fan etc.) with the help of Human Attention Level which comes under non-invasive method of brains signal measurement. This attention is being measured by EEG Sensor. Attention level values are ranges from 1 to 100. Attention means user's level of mental focus which occurs during intense concentration and directed (but stable) mental activity. So to get attention values user should observe the object (or focus onto the object). For demonstration purpose here are used one bulb and one fan. The EEG brainwave sensor is used to sense the brain signals. The Arduino microcontroller is used as a main interfacing device. According to the sensor values and the brain attention values the devices will be selected and through relays the switching on and off of the home appliances are done accordingly.

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STUDY OF WASTE MANAGEMENT SYSTEM USING CARBON WASTE

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Abstract: India is the one of the most rapidly developing countries in the world. such rapid development needs energy to progress, which further makes India an energy hungry nation. A population of 1.2 billion is generating 0.5 kg per person every day. This, sums up to a huge pile of waste, which is mostly land filled in the most unhygienic manner possible. This paper aims to do a detailed review of the demolition, construction and waste management processes such as asphalt, brick, concrete, ferrous metals, glass, non-ferrous metals, paper, cardboard, plastic and wood. This paper also aims to reduce the cost and the negative impact of these wastes on the negative impact of these waste on the environment by studying practices that contribute to reducing these impacts by recycling waste and use again. Demolition waste is waste debris from destruction of a construction. Construction industry in India generated about 10-12 million Tons of waste annually While Retrievable items like bricks, wood, metal, titles are recycled in India, Concrete and masonry waste (50% of total waste) are not recycled. Construction Waste Management is an aspect is an aspect of Sustainable Development, which is filled by the growing concern for the effect of man's activities on the environment. The management of Construction processes to reduce reuse, recycle and effectively dispose of wastes has a serious bearing on the final cost, quality, time and impact of the project on the environment.

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REAL TIME HAZARD DETECTION USING SMART HELMET

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Abstract: This paper presents the development of a state-of-the-art real-time hazard detection system integrated into a smart helmet, designed to bolster user safety, particularly in environments prone to hazards. The system integrates a suite of sensors, including the NodeMCU, alcohol sensor, smoke sensor, vibration sensor, key, driver, motor, LCD display, and GPS module. Upon donning

sensor swiftly identifies alcohol levels nearby. If alcohol is detected and the wearer attempts vehicle ignition, the system prevents ignition, curbing drunk driving incidents. Concurrently, the smoke sensor continuously monitors air quality, promptly alerting the user to harmful gases or pollutants via the integrated LCD display, ensuring awareness of health risks in polluted areas. The vibration sensor plays a pivotal role in accident detection; upon impact, it triggers an alert, notifying the user and transmitting pertinent data to a mobile application. Additionally, the GPS module relays the user's location to the mobile application, facilitating swift emergency response and potentially minimizing accident severity. Importantly, all gathered data, spanning alcohol levels, pollution status, and accident alerts, is seamlessly transmitted to the user's mobile device in real-time, empowering users to stay abreast of their surroundings and take proactive safety measures. This comprehensive hazard detection system heralds a paradigm shift in personal safety, offering users unparalleled protection while on the move in hazardous environments.

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AC TIMER CIRCUIT

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Abstract: This abstract outlines the design and functionality of an AC timer circuit aimed at providing efficient timing control for various electrical appliances. The circuit utilizes a Combination of electronic components to achieve precise Timing intervals for switching AC loads on and off. It Employs a microcontroller or an integrated timing IC to Regulate the timing sequence. The circuit incorporates Safety features such as isolation transformers and Op to couplers to ensure reliable operation. Additionally, it Includes provisions for user interface elements like Buttons or switches for setting the desired time intervals The design takes into consideration factors such as power Consumption, heat dissipation, and component reliability to ensure optimal performance. The abstract highlights the Potential applications of the AC timer circuit in scenarios Requiring automated switching of AC devices based on Time schedules. The circuit can find utility in areas such as Home automation, industrial control systems, and energy Management solutions. Furthermore, the abstract discusses the feasibility of incorporating wireless Connectivity options for remote control and monitoring capabilities. Overall, the abstract serves as a concise Overview of the AC timer circuit's design, features, and Potential applications, laying the groundwork for further detailed exploration and implementation.

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RELAY BASED WATER LEVEL CONTROLLER USING ARDUINO

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Abstract: Water is very precious for the living beings and Scarcity is also gradually increasing day by day. Many of the cities in India are facing this problem. This is one of the proposed work in order to save water. This is a water level indicating and controlling system proposed work. This proposed work is based on the daily life problems we face during switching on the motor and switching off the motor. This device will help to get rid of the problem. The main theme of this proposed work is the water tank has three levels higher level, medium level, and lower level. The device acts according to the water level present in the tank. By this there will be no need of checking the water level always in the tank and switching on the motor and if tank is full switching off the motor. There will be no external work required for this device. It will take care of function. Due to some personal work we may forget to turn off the motor but in the case of this proposed work there is no need of any person for maintaining particularly. By the help of the sensors used and with the help of the Arduino this proposed work runs and functions according to that. Arduino plays a major role in this proposed work as the circuit connections are done on this component. relay is also used in this which acts as switch. In future this proposed work will make a major change in every house.

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DEVELOPMENT OF A TRIP CIRCUIT UTILIZING SPDT RELAY AND ACS712 SENSOR INTERFACING WITH ARDUINO FOR ELECTRICAL SAFETY ENHANCEMENT

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Abstract: Electrical safety is paramount in various industrial and domestic settings. Monitoring electrical parameters such as current is crucial for preventing hazardous situations. This paper proposes a trip circuit design employing a Single Pole Double Throw (SPDT) relay and ACS712 [illegible] Arduino microcontroller. The ACS712 sensor facilitates non-invasive current [illegible] readings of alternating current (AC) loads. The SPDT relay acts as a switch [illegible] disconnect power in case of abnormal current levels, thus ensuring safety. The p[illegible]

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time monitoring and timely response to potential hazards. Experimental results demonstrate the effectiveness and reliability of the proposed trip circuit for safeguarding electrical systems. This research contributes to the advancement of safety measures in electrical engineering applications. References to relevant international journal publications support the theoretical framework and validate the efficacy of the proposed design. In modern electrical systems, ensuring safety and preventing hazardous situations is paramount. This paper presents a novel approach to enhancing electrical safety through the development of a trip circuit employing a Single Pole Double Throw (SPDT) relay and an ACS712 current sensor interfaced with an Arduino microcontroller. The proposed system aims to detect abnormal electrical currents, potentially indicative of faults or overloads, and trigger protective measures to mitigate risks promptly. The design incorporates an ACS712 sensor, renowned for its accuracy in measuring AC and DC currents, providing real-time feedback to the Arduino microcontroller. Through programmed algorithms, the Arduino analyzes the incoming current data, comparing it to predefined thresholds. Upon detecting an abnormal current level beyond the safety threshold, the Arduino triggers the SPDT relay, initiating a trip action to disconnect the circuit from the power source.

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TOUCH SWITCH ACTIVATED RELAY A HANDS-FREE CONTROL SOLUTION

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Abstract: This paper presents a touch switch activated relay system designed for hands-free control applications. The system utilizes capacitive touch sensing technology to detect human touch, triggering a relay to control various electronic devices. The proposed design offers a user-friendly interface, eliminating the need for physical buttons or switches. The hardware implementation involves minimal components, making it cost-effective and easy to integrate into existing systems. Additionally, the software algorithm ensures reliable touch detection and robust performance in diverse environmental conditions. Experimental results demonstrate the effectiveness and practicality of the proposed touch switch activated relay system, showcasing its potential for applications in home automation, industrial automation, and beyond.

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IOT-BASED FAULT DETECTION AND DIAGNOSIS IN SOLAR PV PANELS

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Abstract: This abstract describes an IoT-based fault detection and diagnosis in solar PV panels. The proposed Fuzzy logic-based fault detection algorithms aim to improve the performance and reliability of solar PV panels, which can be affected by various faults such as shading, soiling, degradation, and electrical faults. The system includes wireless sensor nodes that are deployed on the panels to collect data on their electrical parameters and environmental conditions, such as temperature, irradiance, and humidity. The collected data is then transmitted to a central server for processing and analysis using machine learning algorithms. The system can detect and diagnose faults in real-time and provide alerts and recommendations to maintenance personnel to take appropriate actions to prevent further damage or downtime. The system has several advantages over traditional manual inspection and maintenance methods, including reduced downtime, lower maintenance costs, and improved energy efficiency. The proposed system has been validated through experimental tests, and the results show that it can accurately detect and diagnose faults in solar PV panels with high reliability and efficiency.

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REALITY HEADSETS

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Abstract: Reality Headsets, also known as Virtual Reality (VR) and Augmented Reality (AR) headsets, offer users immersive experiences by combining high-definition displays, motion tracking sensors, and advanced computing capabilities. VR headsets transport users to entirely virtual worlds, enabling them to explore, interact, and engage with digital content in a three-dimensional space. On the other hand, AR headsets overlay digital information and virtual objects onto the real world, enhancing the user's perception of their surroundings. The abstract explores the evolution of Reality Headsets, fr consumer-ready devices, and discusses their applications across various industri education, healthcare, and enterprise. Furthermore, it examines the potential impact

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entertainment, training, communication, and productivity. As technology continues to advance, Reality Headsets promise to redefine human-computer interaction and unlock new possibilities for immersive experiences and innovative applications.

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DESIGN AND IMPLEMENTATION OF A ROBUST MOTOR CONTROL DRIVER CIRCUIT FOR AUTONOMOUS ROBOTS

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Abstract: In current robotics technology, autonomous robots become the most favorable robot in order to perform the dangerous, risky and continuous tasks due to its capable in interpreting and controlling the situation by itself without any human guidance. This project revolves around the design and implementation of a robust motor control driver circuit specifically tailored for servo motors utilized in autonomous robots. In many robotic applications, precise and controlled movement is made possible by servo motors. The main goals are to design a circuit that can control servo motor requirements, use reliable parts to guarantee stability and longevity, and carry out extensive testing to evaluate resilience, functionality, and efficiency. The process entails careful component selection, careful circuit design, careful implementation, and careful testing. The outcomes highlight the attainment of accurate motor control, dependability, and security in various operational situations. This study makes a substantial contribution to the evolution of autonomous robot technology, namely in the area of motion control capabilities, by offering a dependable motor control solution. The goal of this project is to provide a complete motor control system for autonomous robots. It does this by combining an ATmega328P for manual control processing, BTS7960 motor drivers for each motor, and an ESP32 for the main controller. The ESP32 functions as the robot's central processing unit, coordinating all its operations. The motors are effectively driven by the BTS7960 motor drivers, which guarantees accurate and seamless movement. The ATmega328P microcontroller is also used to process manual control inputs, which makes it easier for people to engage with the robot.

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REDUCING COMMUTATION TOQUE RIPPLE FOR BRUSHLESS DC MOTOR BASED ON PFC BRIDGELESS CUK CONVERTER

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Abstract: Based on Cuk converter, a novel commutation torque ripple reduction strategy is proposed for brushless DC motor (BLDCM) in this project. By designing a mode selection circuit Output modes (buck-boost mode and boost mode) of the Cuk converter during commutation period and normal conduction period are altered. which can reduce commutation torque ripple over the entire speed range. During the commutation period, Cuk converter operates in the boost mode to step up the input voltage of three-phase bridge inverter and then meet the voltage demand of commutation period, such that the commutation torque ripple can be reduced by keeping the non-commutated current steady. To improve the utilization rate of the converter, during the normal conduction period, Cuk converter operates in the buck-boost mode. The input voltage of three-phase bridge inverter is regulated by adopting Pulse Amplitude Modulation (PAM) method without the inverter Pulse Width Modulation (PWM) chopping, which can reduce the voltage spike damage to the motor windings caused by turn-on/off of MOSFET in the inverter. The experimental results verified the effectiveness of the proposed approach by MATLAB simulation.

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AGING MITIGATION OF BATTERY MANAGEMENT SYSTEM IN ELECTRIC VEHICLE USING MATLAB

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Abstract: In multi-cell battery packs, individual cells may have different charge and discharge characteristics due to manufacturing variations, aging, or other factors which can lead to imbalances in charging that reduces lifespan of the battery pack. In this project proposes a novel approach for battery cell balancing in electric vehicles through the implementation of a CTO (class topper algorithm) tuned PI controller. The State of Charge (SOC) estimation of the battery is utilized to assess its operating conditions, enabling informed charging/discharging decisions to alleviate range anxiety The key advantage of the proposed method lies in its ability to achieve the fastest equalization time, facilitated by maintaining a constant inductor current regulated by a Proportional Integral (PI) controller. Fur

is optimized using the CTO algorithm, leading to enhanced SOC across all battery cells and ensuring a stable balancing system. The robustness of the proposed algorithm is validated under static load conditions and dynamic electric vehicle profiles. Numerical simulations conducted using MATLAB 2021a / Simulink software validate the efficiency of the proposed controls.

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IOT BASED RAILWAY CRACK DETECTION AND ALERTING SYSTEM

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Abstract: To building a robot that can detect and analyze any kind of crack on the railway line and send the coordinates of that faulty line to the concerned authority. This robot includes two ultrasonic sensors, GPS, GSM modules, and Arduino Mega based crack detection assembly which is cost effective and robust to facilitate better safety standards in railways. As soon as the robot passed through a crack that might cause the derailment of a train, the ultrasonic sensors sense that and generate a signal. Then this signal is fed into the Arduino Mega. At that point, with the assistance of GSM and GPS modules, an alert SMS consist of the geographic coordinate of that damaged track is sent to the nearby railway authority who can easily take necessary steps to resolve the problem before any major accident occurs.

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SOLAR UNINTERRUPTIBLE POWER SUPPLY

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Abstract: The Solar Uninterruptible Power Supply (UPS) project represents a modern approach to addressing the challenges of power backup systems by leveraging renewable energy sources. Traditional UPS systems often rely on fossil fuel-powered generators or grid electricity, which can be costly and environmentally unsustainable. In contrast, this project integrates solar panels as the primary power source, harnessing the abundant and renewable energy from the sun. Overall, the Solar Uninterruptible Power Supply project represents a sustainable and innovative approach to power backup systems, offering a reliable, cost-effective, and environmentally friendly solution for various applicat

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EFFICIENT SENSOR INTEGRATION FOR ENHANCING PERCEPTION AND CONNECTIVITY IN SMART SYSTEM

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Abstract: The concept of sensor integration is close to the sensor fusion term, "the art of processing data from multiple sensors with an aim to replicate a physical environment or induce intelligence to control a phenomenon with increased precision and reliability." It reduces hyperactivity and improve attention span. Sensor integration involves the seamless incorporation of various sensor into a unified system to gather, process, and analyze the data. In interconnected world, sensor integration plays a pivotal role in diverse field such as healthcare, automotive, and manufacturing. Sensor integration will be maximizing data relevance. In this work, YOLO v8 is used which is the latest version of YOLO by Ultra lytics. As a cutting-edge, state-of-the-art (SOTA) model, YOLOv8 builds on the success of previous versions, introducing new features and improvements for enhanced performance, flexibility, and efficiency. YOLOv8 supports a full range of vision AI tasks, including detection, segmentation, pose estimation, tracking and classification. This versatility allows users to leverage YOLOv8's capabilities across diverse applications and domains.

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AUTOMATED ATTENDANCE TRACKING SYSTEM UTILIZING IMAGE RECOGNITION TECHNOLOGY

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Abstract: Traditional methods of attendance tracking often involve manual processes. which can be time-consuming, error-prone and inefficient. Introducing automated systems can streamline this process saving time and resources for both educational institutions and businesses. Paving the way for innovative applications such as automated attendance tracking. In this work, the Automated Attendance Tracking System uses image recognition to quickly and accurately record attendance, streamlining administrative tasks and enhancing efficiency. An Automated Attendance Tracking System leveraging Image Recognition Technology offers streamlined attendance management and eliminates manual tracking errors, enhancing efficiency and accuracy in diverse settings.

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ENHANCING MOBILITY - A COMPREHENSIVE STUDY ON LOCOMOTION FOR MOBILE ROBOT PLATFORMS

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Abstract: Enhancing mobility on a mobile robot platform involves improving its ability to move efficiently and effectively in various environments. This could include advancements in navigation, obstacle avoidance, terrain adaptation, and overall maneuverability. Sensors, machine learning algorithms, and advanced control systems are often employed to achieve these enhancements. The project aims to design, build, and program a mobile robot platform with enhanced mobility, control capabilities, and autonomy for various applications such as education, research, prototyping, or practical deployment in real-world scenarios. In this proposed system, the RMCS-2253 DC servo motors are used for the Locomotion of the robot, GB37 DC servo motors are used for Hand Movements of the Robot and the ESP32 microcontroller is used as the central control unit for the robot. The AtMega328P is used for manual control processing, which processes the commands from manual input devices and drives the DC servomotors accordingly. The Robot Arm can hold the weight of about 30 kg by using this Servo motor, which is a drawback of the existing stepper motor model.

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IoT-BASED ELECTRICITY THEFT DETECTION

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Abstract: Power theft includes “Direct hooking from line bypassing the energy meter by injecting foreign element into energy meter with physical obstruction.” Aiming the reduction of energy wastage than saving energy, a power theft identification system is proposed. The proposed design is for single phase electricity distribution system. Internet of Things (IoT) technologies are used to detect and prevent unauthorized consumption of electricity in real-time, thereby enhancing energy management. It enables instant identification of electricity theft, minimizing revenue loss and ensuring grid integrity through immediate action upon unauthorized consumption. The proposed system utilizes currer in the electrical grid to monitor electricity flow, enabling real-time detectio

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Upon detecting anomalous current flow indicative of theft, the current sensor triggers the NodeMCU microcontroller to initiate further action. The NodeMCU activates an LCD display to provide local notification of the detected theft, ensuring immediate awareness for on-site personnel. Equipped with Wi-Fi connectivity, the NodeMCU transmits real-time notifications to a dedicated mobile application, enabling remote monitoring by authorized personnel. The mobile application delivers detailed information about the theft, including location and timestamp, facilitating swift response and action to mitigate losses and ensure grid integrity.

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SMART E PETROL BUNK

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Abstract: In current days fuel stations are worked physically. These fuel siphons are tedious and require more labour. To put fuel stations in far off region, it is exorbitant to give fantastic office to the customers every one of these issues are figured out by the utilization of automated petroleum. The basic and legitimate utilization of microcontroller innovation gives an all-out security and robotized framework in conveyance of fuel. It is interface with high velocity fuel gadget. A Petro card peruse is introduced at the bunk. Which helps to get the needed level of fuel and for bill payment. The objective of this project is when the manual intervention is eliminated, all issues faced by bunk attendants is resolved. The automated process is programmed internally to calculate the exact amount of fuel to be filled, which will be equivalent to the amount paid.

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EYE BALL CONTROLLED WHEELCHAIR USING ARDUINO AND OPENCV FOR PARALYZED PATIENTS

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Abstract: Wheelchair controlled systems are an important point in recent resea
is to achieve a wheelchair control system that depends mainly on eye movemer

and Arduino, so that the user faces the camera, and the OpenCV library processes images and analyzes them to extract the eye movement data and send it to the Arduino. According to the position of the eye, motor will be directed to move (Left, right, and forward). The use of the eye is mainly aimed at persons with disabilities who are completely paralysed. This paper is an attempt to make lives of the people suffering from this phenomenon simple and by simpler we mean self-reliant, which will thereby reinstate their confidence and their happiness. The idea is to create an Eye Monitored System which allows movement of the patient's wheelchair depending on the eye movements. The person suffering from quadriplegia can partially move his eyes and tilt his head, thus presenting an opportunity for detecting those movements. A device is created where a patient sitting on the Wheel Chair assembly looking directly at the camera, is able to move in a direction just by looking in that direction. which will then guide the motors wired to the Arduino UNO Microcontroller over the Serial Interface to move in a particular direction. The system is cost effective and thus can be used by patients spread over a large economy range. complexity. Primary goal was to detect eyes in real-time and also to keep track on it. The idea is to create an Eye Monitored System which allows movement of the patient 's wheelchair depending on the eye movements. A patient looks directly at the camera mounted on a head gear and is able to move in a direction just by looking in that direction.

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This is to certify that Dr/Mr/Ms/Mrs Dr.I.Vallirathi of Rohini College of Engineering and Technology has presented the paper entitled Social Media Sentiment Analysis using Advanced Particle Swarm Optimization

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs Dr.Rajeswari of Rohini College of Engineering and Technology has presented the paper entitled Revolutionizing Education Navigating virtual Realms for enhanced learning experiences

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs Mr.Shaji of Rohini College of Engineering and Technology has presented the paper entitled Gas Level Detection and Automatic Booking Using IOT

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs Mr.Vijaya Karthikeyan of Rohini College of Engineering and Technology has presented the paper entitled Drowsiness Detection System for Drivers using Deep Learning

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This is to certify that Dr/Mr/Ms/Mrs Mrs.G.Devivisalakshi of Rohini College of Engineering and Technology has presented the paper entitled Cyclone Prediction using Deep Learning

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs Mrs.Haseena Beevi of Rohini College of Engineering and Technology has presented the paper entitled Mobile Application for Fake news detection using deep learning techniques

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs Mrs.Jancy Vinu of Rohini College of Engineering and Technology has presented the paper entitled Traffic Sign Recognition system for urban environment using Deep Learning

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This is to certify that Dr/Mr/Ms/Mrs Mrs.Jemila of Rohini College of Engineering and Technology has presented the paper entitled Soil moisture and PH level detector using IOT

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This is to certify that Dr/Mr/Ms/Mrs Mrs.P.Saranya of Rohini College of Engineering and Technology has presented the paper entitled E-commerce website for rural development

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This is to certify that Dr/Mr/Ms/Mrs Mrs.R.Anuja of Rohini College of Engineering and Technology has presented the paper entitled Federated Learning - aided Prognostics in the shipping

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This is to certify that Dr/Mr/Ms/Mrs Mrs.R.Meeankashiammal of Rohini College of Engineering and Technology has presented the paper entitled Designing machine learning system for stroke prediction using explainable AI

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This is to certify that Dr/Mr/Ms/Mrs Mrs.R.Sahila Devi of Rohini College of Engineering and Technology has presented the paper entitled Plant Leaf disease detection using Machine Learning

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This is to certify that Dr/Mr/Ms/Mrs Mrs.Shyamala Gowri of Rohini College of Engineering and Technology has presented the paper entitled NutriCare Quest - Ensuring Healthy Eating through Food Health Check using IoT

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This Certificate is awarded to Dr/Mr/Mrs .....A. SAGAYA FRANCIS BRITTO... of .....ROHINI.....COLLEGE.....OF.....ENGINEERING.....AND.....TECHNOLOGY.....for presenting a paper entitled .EXPERIMENTAL...INVESTIGATION OF...Mg-6Si-Zn-xY USING STIR...CASTING....TECHNIQUE..... in **International Conference on Design, Materials Metaheuristic Algorithm for Engineering (ICDMME – 2024)** Organized by the Research and Development Cell on 24th April 2024.

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...awarded to Dr/Mr/Mrs ...A...SAGAI...FRANCIS...BRITTO. of ROHINI...COLLEGE...OF...ENGINEERING...AND...TECHNOLOGY.....for presenting a paper entitled FABRICATION AND...CHARACTERIZATION OF DISCARDED AGRO-WASTE FIBRE...REINFORCED...POLYMER ... in **International Conference on Design, Materials** COMPOSITES.
Metaheuristic Algorithm for Engineering (ICDMME – 2024) Organized by the Research and Development Cell on 24th April 2024.

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This Certificate is awarded to Dr/Mr/Mrs ..SAGHI.. FRANCIS.... BRITTO.......... of ..........ROHINI.......COLLEGE.....OF.....ENGINEERING.....AND.....TECHNOLOGY........................for presenting a paper entitled DEVELOPMENT..OF...GREEN....COMPOSITE....FOR ECOFRIENDLY AND SUSTAINABLE LIGHT WEIGHT STRUCTURES in International Conference on Design, Materials Metaheuristic Algorithm for Engineering APPLICATIONS (ICDMME – 2024) Organized by the Research and Development Cell on 24th April 2024.

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This is to certify that Dr/Mr/Ms/Mrs **Mr. V.Abilesh** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Fiber Glass Fabrication Innovative Techniques For Lightweight And Durable Robot Bodies**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **MR.ABILESH V** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Iot Based Sand Quality Testing Robot**

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This is to certify that Dr/Mr/Ms/Mrs **Mr.Benny John J** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Fabrication Of Low Rpm Axial Flux Alternator For Savonius Wind Turbine**

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This is to certify that Dr/Mr/Ms/Mrs **Dr.AJITH KUMAR K K** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Innovative 3d Design For Optimized Functionality In Robotics Applications**

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This is to certify that Dr/Mr/Ms/Mrs **Dr. A. Sagai Francis Britto** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Review Of Chemical Treatment, Manufacturing Methods & Potential Application For Hybrid Composite Fiber**

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This is to certify that Dr/Mr/Ms/Mrs **DR.KAILAINATHAN S** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Borewell Rescue Robot**

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This is to certify that Dr/Mr/Ms/Mrs **DR.EZHILAN M** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Experimental Analysis Of Wankel Engine Based Air Compressor**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **Dr.PARANITHARAN K P** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Material Selection Strategies For Optimal Performance In Robotics Applications**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **DR.D.PRINCE SAHAYA SUDHERSON** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Iot-Based Monitoring And Control System For Vertical Axis Wind Turbine**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **Ms.K.Krishnaveni** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Optimization Of Abrasive Water Jet Machining Process Parameters On Aluminium-6061 Alloy**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **MR.M.RAJAKUMAR** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Design And Fabrication Of Long Range Spy Robot With Metal Detection On Iot Method**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **MR.PRADEESH G** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Towards A Greener Future Investigating The Feability Of Musa Acumulate Peduncles Fiber And Bamboo Leaf**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **MR.RAJASUTHAN.K** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Pedal Powered Electricity Generator**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **MR.S.T.ARJUN** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Numerical Analysis Of 3d Printed Pla-Caco3 Composite Splint For Bone Fracture Management**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **Mr. P.Navin Jass** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Thermal Performance Of Concrete Ceiling Using Phase Changing Materials**

in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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in the International Conference on Trends in Computing, Automation, Management, Economics & Applied Social Science (ICCAMEASS-2023) held on 28 October 2023 organized by Rohini College of Engineering & Technology, Kanyakumari, India and in association with Srinivas University, Mangaluru, India and Azteca University, Mexico

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This is to certify that Dr/Mr/Ms/Mrs **Mr.S.Wesley Jacob** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Integrated Solar Tracking With Vertical Windmill For Enhancing Renewable Energy Harvesting**

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This is to certify that Dr/Mr/Ms/Mrs **MR.V.P PRAWN JEBA** of **ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY** has presented the paper entitled **Automatic Waste Segregation System**

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