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A New Approach of Multilevel Unsupervised Clustering for Detecting Replication Level in Large Image Set

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Abstract

Replicate and near-replicate images are variants derived from original images that are common among the large number of images on the cloud, desktop and mobile storage areas respectively. The existence of such near-replicate an image in web search indicates the presence of redundancy and lowers the system performance. The detection of replication is challenging due to the multitude of possible variations of images. In this paper, a new system called Multilevel Clustering for Image Replication Identification (MCIRI) is presented. The proposed MCIRI system aims to identify the replication level of images over the large storage area based on multilevel unsupervised clustering techniques. The MCIRI consists of four stages: feature extraction, first level clustering, second level clustering and replication measurement. In the first stage, the MCIRI extract the three features over each individual image in the image set based on standard statistical operations such as mean, standard deviation and variance. Next stage, the MCIRI split the image feature vector of image-set into 'K' dissimilar groups based on K-means clustering technique. In the third stage, the MCIRI partially identifies the dissimilar cluster over each individual cluster in the cluster set of previous level clustering result. In the final stage, the MCIRI estimate the replication level of each individual cluster in the result of second level clustering based on the cluster validation measure. Experimental results show that the proposed MCIRI is better suitable to estimate the replication level in the image set.

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A NEW APPROACH OF RANKING PREVALENT NEWS TOPICS FROM SOCIAL MEDIA USING UNSUPERVISED TECHNIQUES

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Abstract

The precious data from online origin has developed into an extended research. The mass media and news media provides the daily events to the common people. Huge amount of information is been achieved by an online social media such like Twitter, which contains more information about news-associated content. It is necessary to find a way to filter noise, for these resources to be useful and grab the content that is depend on the similarity to news media. Despite after the noise is eliminated the excessive data still remain in the data so it is essential to prioritize it for utilization. We are introducing three factors for prioritization. The unsupervised technique finds the news to pic that are common in the pair of social media and news media, and then ranks them by the applicability factors such as MF, UA and UI. Initially the temporal prevalence of the appropriate topic in news media focus (MF). Secondary the temporal prevalence of the appropriate topic in social media illustrates the user attention (UA). Finally the interconnection among the social media users who specify this topic demonstrates the power of the society who is discussing, it is termed as the user interaction (UI).

Index Terms: Information filtering, social computing, social network analysis, topic identification, topic ranking.

I. INTRODUCTION

In recent years the extraction of useful data through online sources has grown into a

remarkable research field in information technology. The daily fact is provided by the mass media source, especially the news media. The news media sources have eliminated paper copy publishing and replaced to the World Wide Web, and produce both paper copy as well as Internet variant. The news media sources are presented by the experienced journalists and hence they are considered trustworthy. Social media is the attractive aspect for information transaction. The most famous social media outlet is the micro blogs. Twitter is considered as the micro blogging service which is used by millions of people across the world, and provides excessive volume of user generated data. The information obtained from social media are unverified and hence much of the content will be useless. These information to be useful and valuable the information gathered should be filtered and collects only information related to the news media.

The professionally verified events are given by news media whereas the social media provides the unverified content, presents interest of the public in these fields. Social media services such as Twitter serve as an additional data to a specific news media event. Even after eliminating the unwanted content, the information overload still prevail in the news associated data and it requires prioritization for utilization. The news information must be ranked in order of predicted importance to achieve prioritization.

The extensively covered topics from news media sources is referred as MF of the topic. The information gathered from the social media such



Energy-Efficient Architecture for Wireless Sensor Networks in Healthcare Applications

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Abstract- Energy problem remains one of the core barriers preventing an increase in investment in this technology. We propose a new technique resolve the problem due to limited energy sources. Using a quaternary transceiver, instead of a binary one, which will use the amplitude /phase modulator/demodulator units to increase the number of bits transmitted per symbol. The system will reduce the consumption of energy in the transmission phase due to the increased bits transmitted per symbol. Neural network static random access memory implementation in a clustering-based system for energy –constrained wireless sensor network’s is proposed. The scheme reduces the total amount of energy consumption in storage and transmissions during the data dissemination process. NN-SRAM implementation in a clustering based system reduces the energy consumption of the entire system by about to 76.99%.

Index Terms -Wireless Sensor Networks, Mobile Healthcare, Multimedia,Multi Valued Logic, Neural Networks, NN –SRAM.

1. INTRODUCTION

WSN’s are systems that play a significant role in civil (Figure1) and medical applications (Figure2).An example of a medical application is the multimedia for mobile healthcare applications, where the WSN can be used to remotely monitor the patient’s activity in order to direct the emergency units. In healthcare applications, a real-time system is needed to monitor the patient’s activities by placing sensors directly on the patient’s body as shown in Figure 2. In addition ,it is used to identify emergency cases like sudden falls, heart attacks ,low oxygen level, and/or temperature by transmitting secured signals, images and/or videos to the designated trustworthy unit. Few extra seconds might be sufficient to save lives. Therefore , providing real-time monitoring requires an energy source for datacollection, processing, transmission and reception. All devices in WSN’s are operating by batteries; therefore ,power challenge is present in almost every application of wireless sensor networks.

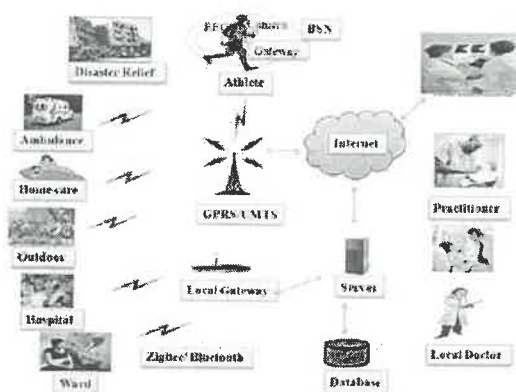


Fig: Typical Applications of WSNs

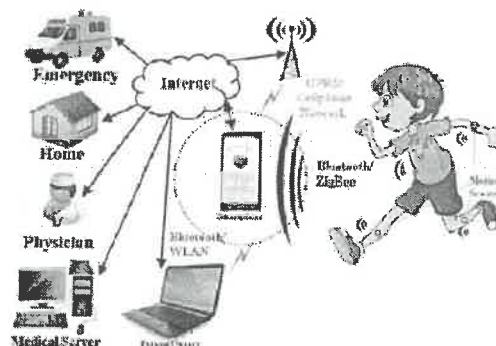


Fig: Mobile Healthcare Applications of WSNs

One common approach to achieve this is called compressive sensing, which compress data(signals, images or video)before transmission and decomposes it upon reception. Another important approach is clustering, where the WSN is divided into a group of clusters with each having a cluster Head (ch).CHs then communicate with each other to transmit the collected data, from the patient sensors, to a Base Station (BS), which in turn communicates with the server . However, all communication protocols presented are based on a binary transmission scheme.

Adopting a quaternary transmission scheme instead of a binary scheme will definitely result in using energy more efficiently. We will be presenting an energy-efficient architecture for a wireless sensor network



CANCER PREDICTION SYSTEM USING DATA MINING TECHNIQUES

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Abstract

Cancer is one of the leading causes of death worldwide. Early detection and prevention of cancer plays a very important role in reducing deaths caused by cancer. Identification of genetic and environmental factors is very important in developing novel methods to detect and prevent cancer. Therefore, a novel multi layered method combining clustering and decision tree techniques to build a cancer risk prediction system is proposed here which predicts lung, breast, oral, stomach and blood cancers and is also user friendly, time and cost saving. This project uses data mining technology such as classification, clustering and prediction to identify potential cancer patients. The gathered data is pre-processed, fed into the database and classified to yield significant patterns using decision tree algorithm. Then the data is clustered using K- means clustering algorithm to separate cancer and non-cancer patient data. Further the cancer cluster is subdivided into six clusters. Finally, a prediction system is developed to analyze risk levels which help in prognosis. This project helps in detection of a person's predisposition for cancer before going for clinical and lab tests which is cost and time consuming.

Keywords: Cancer, Data Mining, Decision Tree, K-Mean, Risk Levels.

I. INTRODUCTION

Cancer has been characterized as a

heterogeneous disease consisting of many different subtypes. The early diagnosis and prognosis of a cancer type have become a necessity in cancer research, as it can facilitate the subsequent clinical management.

The importance of classifying cancer patients into high or low risk groups has led many research teams, from the biomedical and the bioinformatics field, to study the application of machine learning (ML) methods. Therefore, these techniques have been utilized as an aim to model the progression and treatment of cancerous conditions. In addition, the ability of ML tools to detect key features from complex datasets reveals their importance.

A variety of these techniques, including Artificial Neural Networks (ANNs), Bayesian Networks (BNs), Support Vector Machines (SVMs) and Decision Trees (DTs) have been widely applied in cancer research for the development of predictive models, resulting in effective and accurate decision making. Even though it is evident that the use of ML methods can improve our understanding of cancer progression, an appropriate level of validation is needed in order for these methods to be considered in the everyday clinical practice.

Over the past decades, a continuous evolution related to cancer research has been performed. Scientists applied different methods, such as screening in early stage, in order to find types of cancer before they cause symptoms. Moreover, they have developed new strategies for the early prediction of cancer treatment outcome. With



A NEW METHOD OF COLORED IMAGE CLASSIFICATION USING UNSUPERVISED CLUSTERING METHOD

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Abstract

In this paper, we introduce a new method of colored image classification using unsupervised clustering method. The proposed approach aims to train the image and partition into highly relative cluster. Two method are used such as 1) Image processing and 2) Classification stage. In image preprocessing stage the images are trained to limited colored images through the feature extraction and feature selection. In the feature extraction stage, mean, standard deviation and variance is applied to the each individual block and the three features are extracted from the each block in the digital image. In the feature selection stage, the size of the image feature is limited. In the classification stage, images are trained and it is portioned into highly relative clusters through the k mean technique. The experimental result shows the proposed approach is used to classification of colored image using unsupervised clustering method.

INTRODUCTION

Supervised and unsupervised way is used for image classification. Information class on the image can be specified when supervised classification starts. An algorithm is then used to form class signatures which summarize multispectral information from the specified areas on the image. This process is known as supervised training. In case of unsupervised classification, an algorithm is first applied to the image and some spectral classes (also called clusters) are formed. The image analyst tries to assign a spectral class to the desirable

information class an efficient method to identify and classify the exudates as soft and hard exudates was introduced.

Candidate exudates were detected using K-means clustering technique. In this system, classification of multispectral images introduces a hybrid clustering which is combination of k-means and PSO clustering. Here, initially k-means clustering was done and the result was used to see initial swarm. Also proposed a new unsupervised classification approach for automatic analysis of polar metric synthetic aperture radar (SAR) image. Here, an optimization problem was addressed as the classification of multidimensional SAR data space by dynamic clustering. A different approach was proposed, they used supervised features in the context of image classification and retrieval yields to excellent result and demonstrated how these supervised features can be effectively used for unsupervised image categorization that is for grouping semantically similar images.

In this paper, the results of some tests conducted to assess the K-means algorithm performance. The effective K-means method is used in producing good clustering results for many practical applications. K-means method is well known for its relatively simple implementation and proper results. A direct algorithm of k-means method requires time proportional to the product of the number of vectors and number of clusters per iteration. This is computationally very expensive for large datasets. The k-means algorithm is an iterative procedure and requires the number of clusters k to be given a priori.

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EFFICIENT BLOCK-WISE IMAGE COMPARISON AND STORAGE REDUCTION USING DICE PROTOCOL

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Abstract

In this paper we introduce a secure deduplication scheme for near identical (NI) images using the Dual Integrity Convergent Encryption (DICE) protocol. An image is divided into blocks and the DICE protocol is applied on each block separately instead of applying on the entire image. As a result, the blocks that are similar between two or more NI images are deposited only once at the cloud. This paper provides a technique to accomplish secure image deduplication at the block level based on the DICE protocol which exhibits that the greater the resemblance of the images, the smaller the number of blocks deposited at the cloud. Applying secured data deduplication to such data files could remarkably minimize the cost and space required for their storage.

Index Terms: Security; Image Deduplication; Cloud Storage.

I. INTRODUCTION

Cloud computing provides users with the platform to profit cloud services on demand which include primarily storage, database, networking, and software services over the Internet. Whether a user is watching movies, listening to audio, taking pictures, hosting websites or creating new apps, cloud computing is an essential part of all these services. Cloud service providers (CSPs) charge their users a nominal fee for the use of these services. Therefore, it is important for the CSPs to maintain a tradeoff between the cost of the services they provide and the fees that they charge to their users, as maintaining and storing the huge volume of users' data, along with the bandwidth usage incur costs for the CSPs.

Cloud service providers (CSPs) depends on deduplication techniques for eliminating duplicate data and thus minimize bandwidth and storage requirements. However, it is equally important for CSPs to ensure the privacy and security of users' data. To address both these problems, secured data deduplication was established.

Identifying duplicate copies in the encrypted image and video data is a significant challenge. The existing techniques developed for generic data may not be actually suitable for multimedia data.

In this paper, we are using a secure block level image deduplication scheme which removes the near identical images (formally defined in Section 3) in encrypted form, so by protecting the confidentiality of the images. The proposed method make use of the Dual Integrity Convergent.

Encryption (DICE) protocol that the authors proposed in their recent work [3]. Our main idea is to divide the image into blocks and apply the DICE protocol on each block separately. Each block is encrypted using AES with a key that is formed by hashing the image blocks.

This means that identical blocks in any two images will produce the identical cipher text, which allows the CSPs to perform deduplication on the cipher text blocks. The communication and bandwidth requirements are also reduced because only one tag is generated from the cipher text. The security of the scheme has been determined experimentally as well as theoretically.

The rest of the paper is organized as follows: section II discusses the related work in detail. In section III, we describe the proposed method. Next, we present the security and performance



IOT BASED SMART PARKING WITH FLOOD ALERT SYSTEM

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ABSTRACT

Our goal is to implement Vehicle parking monitoring and management. Vehicle parking observation and management has become an enormous challenge for academic establishments with increasing enrolment's, high share of automobile possession and decreasing parking offer that in result triggering blockage of automobile, congestion, wastage of your time and cash. In university campuses notably in Kingdom of Asian nation, vehicle parking monitoring and management problem is getting worse and more frustrating due to the fact that majority of students, faculty and worker's members own cars and drive through them to the university campuses. Here Real- time system able to monitor sudden floods in parking lots, addressing the concern of water damage to vehicles; creating a personal opt-in alert that could reach an end user through their mobile phone. Locating or forgetting their lot location another issue that's typically faced by the scholars, faculty and worker's members. The existing cameras located at the parking lots are only for video surveillance and cannot help in such situations as there is a lack of proper vehicle parking monitoring and management system. To cope with abovementioned problems and to ensure a better parking experience by accommodating increasing number of vehicles in a proper convenient manner, we propose a smart vehicle parking monitoring and management system.

Keywords: Nericell, RFID, Wireless Network Sensor, Arduino, VTrack, Traffic Sense, Mobile Millennium

I. INTRODUCTION

Vehicle parking monitoring and management is challenging problem due to the growing number of vehicles at university campuses and also for catching the responsible persons for damaging the vehicles (like scratches, dents, scraps etc.) of other people's inside a campus who remain anonymous and also result in confusion, annoyance and wastage of time. The problem is getting more severe day by day due to the fact that the number of student enrolments is increasing year by year and a huge percentage of students and faculty own cars with the limited number parking lots. Blocking the other parked vehicles in the parking lots by people while parking their cars improperly is an important issue in vehicle parking. Due to this, finding the responsible persons and remain stuck and frustrated for the blocked vehicle owners until they get the vehicle out of the parking lot. The security guards at the arking heaps square measure unable to assist during this regard thanks to the shortage of any observance and management social control systems and policies. Due to this, it takes much time in pursuing the responsible person which consequently results in the wastage of precious time of students as well as faculty and staff members. Another critical problem (that arises due to the reserved and limited number of vehicle parking lots) is that students (for whom no reserved parking is available) may damage other parked vehicles while improper and wrong vehicle parking. The system can be defined to have two main components, Wireless Network Sensor (WSN) and a central server. The sensor network will monitor flood levels in the area of interest and send the gathered data to the server.

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PRINCIPAL

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SECURE ATM USING NFC AND ADAPTIVE AUTHENTICATION

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Abstract

ATM has become a most used means for people to withdraw money from their bank accounts, but ATM Cards are no longer secure because a skimmer can be fixed on ATM machine and the account details can be easily hacked. The thesis provides the development of Multi-Factor authentication along with Near Field communication, where Multi-factor authentication includes the design of risk engine proportion with the system to check the users past login records and generate suitable pattern using machine learning algorithm and calculate the risk score, based on the user risk profile it provides different means of authentication. Thus the adaptive authentication helps in providing high-security to its users.

Keywords: Near Field Communication (NFC), Risk based authentication, Adaptive authentication

I. INTRODUCTION

ATM is an electronic telecommunications device. It enables customers to perform several operations, such as cash withdrawals, deposits, Transfer funds, or obtaining account information, at any time without direct interaction with bank staff. By using an ATM, customers can access their bank deposit or credit accounts in order to make a variety of financial transactions. Moreover, passwords/PIN are simply knowledge based information that can be shared amongst users that led to a major drawback of Single-Factor authentication. Thus, two factor authentication or Muti-Factor authentication is preferable due to its

improved security levels. Multifactor authentication includes Risk based authentication which modify itself according to the risk profile of the user. Risk profile is formed by comparing the users behavior such as login time, location, Device type, Number of failed attempts, the amount tin the user account, Risk level/score will be generated by using Risk engine that is integrated with the risk based authentication system. And the proposed system works based on the Machine learning Algorithms and Adaptive authentication. Machine learning algorithms are trained to learn patterns from existing data and predict the unknown value when provided with the new set of data. And Adaptive authentication is a method for selecting the right authentication factors depending on a users risk profile. By considering the Risk profile of the user, he/she is been challenged with different authentication methods. Any how the actual user need not required to pass multiple factors of authentications to prove his identity, while a suspicious user needs to pass all authentication methods he is required with, this ensures high security to its users. The remaining paper is arranged in the following manner- Section 2 briefly tells about the research works, enlancing their advantages and disadvantages. Section 3 elaborated the detailed structure of proposed method. Experimental results are depicted in Section 4 and Section 5 presents the conclusion.

II. LITERATURE SURVEY

Different studies have been done on secure ATM using NFC and machine learning based adaptive authentication having its own advantages and



A WEIGHTED ENSEMBLE OF AUTOMATIC ALGORITHMS FOR VIRTUAL MACHINE PERFORMANCE PREDICTION IN CLOUD

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Abstract

In cloud computing virtual machines are hosted on a shared computing platform, which compete for resources such as CPU, I/O and Network Storage. Predicting resources usage in cloud environment is a challenging problem due to varying characteristics of workloads running on cloud. Each virtual machine resource usage can be characterized as steady, trend, seasonal, cyclic or bursty pattern. Manually it is not feasible to fit the Predicting models for each of thousands of VMs running on cloud. Further different Predicting models are suitable for different type of workload. Manual selection of best model is will take too much time and complicated. In this manuscript we propose, implement and evaluate an automated technique of combining the Predictions from multiple non-overlapping time series Predicting methods. The objective is to improve accuracy and robustness of the predicting algorithm. The results show that proposed technique is successful in Predicting with better accuracy, irrespective of workload type and without any manual intervention. **Keywords:** Cloud computing, Ensemble Forecasting Time series forecasting.

[1] I. INTRODUCTION

Cloud computing is amalgamation of service oriented computing and utility computing paradigms where both hardware and software are provided as-a-service model [1]. In cloud a subscriber can rent a service, increase or

decrease resources allocated and are billed according to pay-per-use model. This dynamic, shared and elasticity characteristics of cloud makes cloud service performance unpredictable and vary over time which may result in poor subscriber experience and bad reputation of the cloud service provider(CSP). The CSPs are facing the biggest challenge of meeting the negotiated Service Level Agreements (SLAs) to the subscriber.

A self-adaptive prediction method using ensemble model and subtractive-fuzzy clustering based fuzzy neural network (ESFCFNN) is proposed for performance prediction in cloud [5]. In this work an ensemble model is created using base predictors such as Auto Regressive (AR), Trend Seasonality Model (TSM), and Moving Average (MA). The combined results are sent to fuzzy neural network with self-adjusting learning rate and momentum weight. To further optimize convergence, fuzzy subtractive clustering algorithm is proposed. The effort in select few models that work well with uni-variate and multivariate time series concurrently. In common random variables are uncorrelated and extremely dependent. And in case of random vector, a multivariate normal distribution, two or more of its constituents which are couple wise independent are independent and it is to be noted that, it is not true that two random variables which are generally distributed and uncorrelated are independent. Strictly, dependence denotes to any condition with which random variables cannot fulfil a mathematical condition of independence. Correlation could be reflected as any parting of



OPTIMIZATION OF LOAD BALANCING IN CLOUD USING SWARM INTELLIGENCE: A SURVEY

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Abstract

Cloud computing is a process which provides on-demand and paid access to distributed resource. This cloud services is used by everybody to reduce the cost of infrastructure and maintenance, this leads to increase in load on cloud day by day. Thus balancing the load on cloud is one of the serious problems in the cloud computing. Therefore the research was carried to balance the load and the proper load balancing can reduce the energy consumption and carbon emission. Load balancing can be achieved by task scheduling, also it facilitate the efficiency on cloud. This task scheduling results in suitable allocation of best resources to the task in execution. Load balancing can be done by using Genetic Algorithm (GA) but there was a problem of complexity and convergence leads to increase in response time. Thus a new algorithm called Particle Swarm Optimization (PSO) resolves these problems. The objective of this paper is to compare a particle swarm optimization technique with round robin, Ant colony and honeybee foraging load balancing algorithm. Comparatively PSO shows a better result.

Keywords: Cloud Computing, Load balancing, Swarm Intelligence, Virtual Machine Migration.

1. Introduction

1.1 Cloud Computing and Virtualization:

Cloud computing is a recent technology that concern with online distribution of computing resources and services. In cloud computing, end-user knowledge about the configuration of service delivering system may not be required

because client just use services on pay per model where all system configuration and resource management is taken care by cloud system automatically. The most important issue associated in cloud computing is dynamic load balancing or task scheduling [1]. The main objective in cloud computing is to efficiently assign the tasks to the Cloud nodes, which will reduce the effort in processing the request processing and to make it efficient as possible. Even though the cloud computing process is an efficient and scalable it faces a very complex problem in balancing the user load. Cloud computing provides a distributed computing, parallel processing and grid computing. Cloud system is an interconnection of number of servers, virtual machines, data centers, storage devices etc. Nowadays, virtualization is the most important technology in cloud to make the servers feasible for independent applications. Virtualization provides power efficiency over the data centers. Also, virtualization provides online sharing of computing resources. Virtualization support in cloud allows better flexibility and customization to specific application, software, and programming environment.

1.2 Load Balancing:

Load balancing in cloud is the process to improve the performance of a both parallel and distributed computing system by distributing the load among the processors [2]. Load balancing results in effective resource sharing and utilization. Load balancing algorithm has two meanings: firstly, allocates a huge number of data traffic on multiple nodes respectively in order to reduce the waiting time of users; second, it reschedule the load from a single heavily loaded node to the multiple nodes to

PRINCIPAL



ATTENDANCE AND TIME MANAGEMENT SYSTEM USING CLOUD FOR CORPORATE COMPANIES

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Abstract

Most probably the web applications are developed from the sides of web systems and these objects are extensible and high acquirable. Therefore the cloud offers the creativity of approaching boundless pool of storage with computing the network methods and their practices can be ascendible in position where as cloud computing creates computer system methods mainly in storage and computing the power in obtainable, accessible demand without direct active control by the user. Effective employee attendance management system provides any organization to enlarge over all corporate performance and to execute the specific goals for the organization. Physical attendance time checking makes more expensive of time consuming and the paper work of the companies. Human activities may result in faults so, this affects the productivity of the organization, although some existing systems will have some failures in real time attendance monitoring like flexibility and data base storage size. Further organizing the new techniques for the employee attendance cloud based systems that are integrated with NFC technology called as time attendance management system (TAMS). In this system the applications offers multiple company accounts in which each of the user can have his/her own account and containing the application with several important performances such as entering and leaving hours, real time upgrading information, and access to produce the reports. It also provides online portal service for many companies users

without any special software to install and it always allocates more adaptable data storage.

Keywords: employee attendance; time attendance management system; NFC; cloud computing

I INTRODUCTION

Freshly, most of the companies or organizations want a system to record the employee attendance data. The detailed and correct employee attendance data is very important for managing employees administration and development. Generally, the employee attendance is using manually by the paper based attendance sheet system. In the manual attendance system the company manager barely maintains the employees updated information and calculates their working hours and performance. In commonly, the supervisor adds the working hours by using the employees attendance time card and fills in the time sheet by indicating number of employees working hours for every week or each period of the time. This process takes inefficient time consuming in attendance records calculation, employee time shifts management, every in/out time tracking, and high cost of the paper sheet [1], [2].

To improve the employees attendance tracking and time management system using current technologies for person identification that is radio frequency identification (RFID) and bio metric technologies such as finger print identification. The biometric system is employed to validate the person approval or



AN AUTOMATIC ANSWER RETRIEVING SYSTEM FOR RECURRENT QUESTIONS IN SOCIAL Q&A USING UNSUPERVISED TECHNIQUES

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Abstract

Question and Answering (Q&A) systems have become major part in today's world for gaining and sharing knowledge and information. In general Q&A systems users post questions to get answers and pick the questions to answer in the system. As the user population is growing enormously, these systems are getting flooded with more number of questions. And some disinterested users will post irrelevant answers to posted questions. Hence we are proposing to develop a system which will improve the performance of Q&A systems by actively forwarding questions to experts who are capable and willing to answer the questions. Also, automatically retrieve's answers for recurrent questions. Thus, this system reduces the chances of user getting fake answer and provides satisfactory answers for the posted questions.

Index Terms: Question and answer systems, Social networks, Information search.

I. INTRODUCTION

The internet is an important source through which an individual can easily get information, where the amount of data is vast and its a valuable tool for communication and to gain information. Users rely on search engines such as Google, yahoo, Bing that allows internet users to search for content through world wide web(WWW). As research indicated , search engines performs well indexing with web pages and provides the related content information to the users who rely on search engines. To address the particular information, many Question and answering system such as Yahoo!, Baidu, Quora, Stack Exchange systems have been developed. Question and Answering system is fairly a

information retrieval system in which a query is stated to the system and it relocates the correct or closest answer to the specific question. Q&A system is used by a large number of internet users, most of the search engines rely on Q&A system. This Q&A system stores the questions that are recently asked, thus it acts as a repository for information retrieval.

As the user population increases in social Q&A system, a large no of questions are posted every day. When a user wants to answer a question, he may be overwhelmed by the excess of questions. However depending on disinterested users to provide answers cannot encourage the users to answers quickly To illustrate approximate answer providers, current Q&A systems allows users to choose tags for their questions. Current Q&A system does not overcome the requirement of providing high quality answers in a given period of time in which the users wanted the correct answers rapidly. This lead to propose an advanced Q&A system that reduces the number of unanswered questions, and also boost the answer quality and reduces the waiting time.

It's a common human tendency to get similar kind of doubts so when the users want to know the answer for their questions they tend to take help of these Q&A systems, therefore instead of allowing the users to post same kind of questions we can simply suggest the answers of already answered questions when similar kind of questions are typed. Which reduces the waiting time of user to get an answer.

Also, here only an admin authorized expert can answer any of the question posted by the registered user in the system thus reducing the chances of users getting fake answers and low quality answers which directly means that the users gets answers which are of high quality



A NEW LIGHTWEIGHT CRYPTOGRAPHIC ALGORITHM

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ABSTRACT

In this present world there is lot of importance in transferring and securing the digital data. But there is problem in securing the data, to avoid that we are going to use a combined algorithm. In this paper, we discuss about a hybrid algorithm using Hummingbird algorithm[1] this algorithm is implemented in vivado software, using verilog hardware description language.

Hummingbird algorithm is a latest ultra-lightweight cryptographic algorithm targeted for low cost smart devices. In this paper we are aiming to design an algorithm of low power and high speed, lightweight algorithm for securing data.

Keywords: encryption, lightweight cryptograph

1. INTRODUCTION

Cryptography is a method of securing information and it is used for encrypting and decrypting the information. Encryption is converting plain text to cipher text, where the translation of cipher text to the plain text is known as decryption. Cryptography is divided into secret key cryptography and public key cryptography and hash functions. In secret key cryptography[2] the same key will be used by the both sender and receiver for encryption and decryption. In public key cryptography the sender and receiver will be using dissimilar keys at both the sides Hummingbird algorithm is one of the recently proposed light weight cryptographic algorithms targeted for resource constrained devices like smart cards. The Hummingbird algorithm is the one of the recently presented ultra-light weight cryptographic algorithm. The size of the key and the internal state of Hummingbird provides

adequate security level for many embedded applications.

2. Overview of Hummingbird

The design of hummingbird consists of 16-bit block size, 256-bit key size, and 80-bit internal state. The hummingbird algorithm[5] has good efficiency compared to all other algorithms and also it has smallest block size compared to all other algorithms. The the design of hummingbird algorithm includes initialization, encryption and decryption process.

Hummingbird Algorithm is as follows.

Input: A 16-bit data block $m=(m_0, m_1 \dots m_{15})$ and a 64-bit subkey $k(i)$ such that $k(i)=k_1||k_2||k_3||k_4$

Output: A 16-bit data block $m'=(m'_0, m'_1 \dots m'_{15})$

1. for $j=1$ to 4 do
2. $m \leftarrow m \oplus k_j$
3. $A=m_0||m_1||m_2||m_3$, $B=m_4||m_5||m_6||m_7$,
 $C=m_8||m_9||m_{10}||m_{11}$ and
 $D=m_{12}||m_{13}||m_{14}||m_{15}$
4. $m \leftarrow S_1(A)||S_2(B)||S_3(C)||S_4(D)$
5. $m \leftarrow m \oplus (m \ll 6) \oplus (m \ll 10)$
6. end for
7. $m \leftarrow m \oplus k_1 \oplus k_3$
8. $A=m_0||m_1||m_2||m_3$, $B=m_4||m_5||m_6||m_7$,
 $C=m_8||m_9||m_{10}||m_{11}$ and
 $D=m_{12}||m_{13}||m_{14}||m_{15}$
9. $m \leftarrow S_1(A)||S_2(B)||S_3(C)||S_4(D)$
10. $m' \leftarrow m \oplus k_2 \oplus k_4$
11. return $m'=(m'_0, m'_1 \dots m'_{15})$

3. Processing of the message

The algorithm which is used for processing of the padded message is described next. First, the padded message needs to be divided into 512-bit blocks, denoted here as M_j where $j \geq 0$ is the index of the block. The algorithm processes one M_j at once, starting from M_0 , until all M_j have been processed. Five



AN AUTOMATIC DROWSINESS AND ALCOHOL DETECTION SYSTEM USING IOT

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Abstract

Drowsy is the reason for most of the road accidents. Manually tracing the drowsy driver is not an easy task. So a system that must be developed in every car and it detects the drowsy driver, detects the alcohol consumption of the driver and also detects whether the person uses mobile while driving. Driver fatigue, alcohol consumption and using mobile while driving often becomes a direct cause of many traffic accidents. Therefore, there is a need to develop the systems that will detect and caution a driver of her/him condition, which could significantly reduce the number of car accidents caused related to these aspects. However, the development of such systems encounters many difficulties related to fast and proper recognition of a driver's symptoms.

Index Terms: Atmel, Buffer, Driver, LCD, Eye Blink sensor, Mobile Sensor, MQ3 sensor, Relay, RF Transmitter and Receiver, Power Supply.

I. INTRODUCTION

Driver drowsiness detection is a car safety technology which helps prevent accidents caused by the driver getting drowsy. Various studies have suggested that around 20% of all road accidents are fatigue-related, up to 50% on certain roads. Some of the current systems learn driver patterns and can detect when a driver is becoming drowsy. And the accidents is also caused due to alcohol consumption and when the driver is speaking in the phone while driving. The development of technologies for detecting or preventing drowsiness, alcohol consumption detection and mobile phone

detection at the wheel is a major challenge in the field of accident avoidance systems. Because of the hazard that presents on the road, methods need to be developed for counteracting its affects [2].

The aim of this project is to develop a prototype drowsiness detection, alcohol consumption detection and mobile phone detection system. The focus will be placed on designing a system that will accurately monitor the eye blink rate, alcohol consumption level and mobile phone usage. In this project we use sensors to measure all these factors. The values measured will be sent to the microcontroller where the measured values will be compared with the reference values. If the values measured do not match with the reference values then the microcontroller will send a warning signal in the LCD display thereby preventing accidents.

II PROPOSED ALERT UNIT SYSTEM

This is a small system, so we can easily embed it on any vehicle. The Eye blink sensor is fixed to the driver. The eye blink sensor senses the movement of the eyeball. The sensor output is connected to a aurdino. The car engine starting system is directly controlled by the aurdino. If the sensor detects the no output from the sensor because there no movement in the eyeball, it sends the signal to the aurdino. The aurdino immediately buzzes the buzzer, also give warning signal and display the reason in a LCD[5].

The system is developed by interfacing a alcohol sensor, eye blink sensor and a mobile sensor with an ADC which converts the analog

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REDUCTION OF TRAFFIC AT TOLL PLAZA BY AUTOMATIC TOLL COLLECTION USING RFID AND GSM TECHNOLOGY

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Abstract

Internet of things is an integral part in today's development of smart city, now without internet is became like nothing is possible in the world especially for corporate systems where they use internet for communication purpose. Internet communicates through radio waves, line of sight not required. Internet of things (IoT) is expanding it's outreach to every aspect of our daily life and our needs. The IoT energy consumption can also be reduced by utilizing network coding in Internet of things in day-to-day life. In Automatic Toll collection system uses RFID technology where they help to reduce the Toll gate traffic and avoid other illegal passage of vehicles through a Toll gate. This paper shows, for the first time, that Toll booth can be completely managed using the 'Internet of Things' concept based on the RFID technology.

Keywords: RFID Reader, GSM, RFID Tag, Aurdino Uno, LCD display.

I. INTRODUCTION

Transportation is the major contributor to the nation's economy. Improvements in the field of transportation enabled us to have a fast pace lifestyle characterized by exceptional independence of movement, huge trades in manufactured goods and services, high jobs and social movements. The nation's economic treasure can be said to be directly proportional to the productive transportation methods. As we know numbers of vehicles on the road are increasing day by day, problems such as congestion, accidents, air pollution have become

a major factor of concern.

Because of the major development in Roadways, there is an increase in the number of toll plazas and leading to have long queues in toll plazas and causing money leakage which leads to more delay. We have designed an IOT based Toll booth Manager System in which a person can use an RFID to pay the Toll charge. When the RFID is swiped, the system would check if it has sufficient balance and then deduct the toll charge and update the balance through IOT. Internet of Things (IoT) is basically the 'things' which are connected to networks and can exchange data with the help of sensors, electronics, software and connectivity. These systems do not require any human interaction. A trend of IoT Technology is found in many industries like healthcare, Energy, Transportation etc. Here the data of the RFID card is sent to the website, through network interconnected with IOT.

II. EXISTING SYSTEM

Designed a programming board to program the PIC controller microcontroller. This consists of JTAG in Spy-Bi-Wire mode. When the power supply is connected with fuse blow protection, additionally, the port pins were attached with a single pole single thrown (SPST) switch and LED for testing the code visually. The IR transmitter/LED is a device that used to emit infrared light outside the visible spectrum. The device that is used to detect or receive the IR light is called infrared sensor which sense aspects of its surroundings. In our example, the IR sensor is used to detect arriving vehicles. The SE555P Timer by Texas Instruments is used in



NONEL INITIATION FOR ECO-FRIENDLY BLASTING

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ABSTRACT

Blasting is an essential component in mining and one of the most economical method of rock excavation applicable to both surface and underground mines. The effect of blasting arising from the mining operation is one of the fundamental problems in the mining industry. Rock fragmentation also plays a pivotal role in large scale mining because of its direct effect on cost of drilling, blasting, secondary blasting, crushing and there-by affecting the overall cost of production. The research investigates the effect of initiation device on environment and the production cost. The objectives of the research were achieved through field measurement and data collection. Various informations pertaining to blasting agents and accessories used for blasting operations were also collected. The results revealed that the flyrock, noise and vibration generated during blasting with NONEL are found to be minimal as compared to the safety fuse and the electrical methods. It is also observed that NONEL initiation increases blasting efficiency and also optimize the cost of blasting.

Keywords: NONEL, Booster, Blast Hole Drilling, Mine – PNR Mines, ANFO, Detonators

INTRODUCTION

Blasting is the process of breaking of bulk rock masses into loose forms, using explosive compounds. Here, the primary role is played by the explosives. The explosives are the substances or devices used in blasting. The explosives are used to produce a volume of rapidly expanding gas that exerts sudden

pressure on its surroundings and break the mass into pieces. There are three common types of explosives used for blasting as chemical, mechanical, and nuclear explosives. The first chemical explosive was gunpowder. Germans manufactured gunpowder in the early 1300s. A detonator is a device used to trigger this explosive device. Detonators can be chemically, mechanically, or electrically initiated. Different explosives require different amounts of energy to detonate. Detonation is a necessity for the explosive to get triggered for blasting.

1.1) NONEL INITIATION:

Non electric initiation system, NONEL, invented by Per Anders Persson (Nitro Nobel, later Dyno Nobel); introduced to market in 1972. NONEL products can be used with all cast boosters, dynamites and cap-sensitive explosives. Nonel is a shock tube detonator designed to initiate explosions, generally for the purpose of demolition of buildings and for use in the blasting of rock in mines and quarries. Instead of electric wires, a hollow plastic tube delivers the firing impulse to the detonator, making it immune to most of the hazards associated with stray electric current. To meet the ever increasing demand for many minerals, large opencast mines are being planned with high production capacities. To achieve these high production targets, huge explosive quantities are being initiated in a round. As the initiation system influences the blast results, it is necessary to select proper initiation system. Increasing economic pressures environmental constraints and safety mandates in recent years have called for precise focus on drilling and blasting operations in the mining industry. It is generally claimed by the manufacturers that non-electric shock tube system (NONEL)



STUDY OF UTILIZATION OF FLY ASH AS A PARTIAL REPLACEMENT FOR CEMENT IN CONCRETE

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ABSTRACT

Mining industry produces a large quantity of waste every year resulting in severe damage to the environment. The wastes that are produced during mining should be efficiently disposed or effectively reused for any other productive purposes. Coal and lignite mining results in considerable dust pollutions very specifically the coal beneficiation process produces extensive amount of ashes. These ashes can be utilized in construction materials rather than dumping as landfill. When dumped as landfills, these ashes have the tendency to be carried away by the wind resulting in massive damage to the surrounding environment. This study is made to investigate whether this fly ash can be used as an ingredient in concrete preparation as a partial replacement for cement by studying the strength properties of fly ash mixed concrete. The strength properties of concrete when certain percentage of cement in the concrete is replaced with fly ash are studied. The replacement percentage of cement is maintained at 10%, 20%, 30%, 40% and 50% and the samples are tested in the laboratory after the curing period of 21 days. The workability, tensile strength, compressive strength and shear strength of the fly ash mixed concrete sample are determined. Similar tests are conducted on concrete with no fly ash content and both results are compared to find the optimum amount of fly ash that can be replaced without compromising the quality of the concrete. By utilizing fly ash as partial replacement to cement the percentage of

CO₂ emitted due to cement manufacturing can also be considerable reduced.

Keywords: Opencast, Tailing, Waste Rock, Fly Ash, Concrete, Tensile Strength, Workability Test

INTRODUCTION

1.1 Mine Wastes:

The wastes are generated by the mining industry which is mainly during the process of extraction, beneficiation and processing of minerals. Extraction which is the first phase that consists of initial removal of ore from the earth crust and it is done by the process of blasting which results in generation of large volume of waste. That is useless for the industry and is just stored in big piles within the mine lease area, and sometimes, on public land. In this way a large amount of waste is generated by the process.

The big scale of the mine, greater is the quantum of waste generated. Out of the two major types of mining methods (opencast and underground). The Opencast mining methods have more pollution intensive as they generate 8 to 10 times more quantities of waste compared to the underground mines.

1.1.1 Some major types of waste generated:

1) Waste rock:

Mine generates two types of waste rock overburden and mine development rock in Mining operations.

Surface mines that are developed results to Overburden while mine development rock is a byproduct of mineral extraction in underground mines.



RATIONAL DESIGN METHODOLOGY FOR DESIGN OF UNDERGROUND CAVERNS, A CASE STUDY

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ABSTRACT

Discontinuum modeling Universal Discrete Element Code (UDEC) to study the rock mass response due to excavation and its long term stability analysis is used world wide. It is important to calibrate and ascertain the computed values by modeling with the monitoring of the excavations using instrumentations. The instrumentation using Magnetic ring multi point bore hole extensometers (MRMPBX) is used for monitoring the deformation of walls of the Sardar Sarovar Powerhouse.

To calibrate the numerical model and to assess the long term stability of the excavations, extensometers were installed in the upstream and downstream walls of the powerhouse cavern. The locations of the instruments were selected based on the results of numerical modeling, where the maximum deformations are expected. The results of instrumentation and numerical modeling are compared. The computed displacements compare well with those observed through instrumentation.

Keywords: Stress Analysis, Extensometers, Micrometer, End Anchor, Zero Position

1. INTRODUCTION

Stress analysis is being carried out using discontinuum modeling to study the rock mass response due to excavation of the powerhouse. In order to calibrate the numerical model, it was proposed to investigate the rock mass behavior through instrumentation. The present instrumentation was installed after the powerhouse was excavated.

2. OBJECTIVE

The objective of this investigation is to install instruments to study,

1. The deformations of the walls and,
2. Assess the long term stability of the powerhouse
3. Compare the results with those of numerical modeling.

3. INSTALLATION OF THE INSTRUMENTS

The locations for installation of the instruments were selected based on the results of numerical modeling, where the maximum deformations are expected. Out of these twelve instruments, six of them were installed during first week of February and two of them were installed during June 12 – 14. Rests of the extensometers were installed during November 2000. Six to nine anchors were installed in each of the boreholes depending on the availability of depth of drill holes.

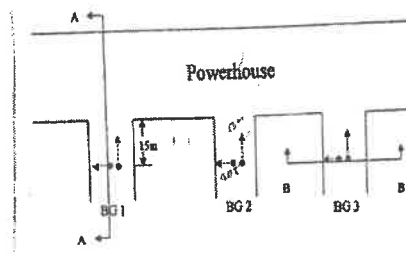


Fig1 Schematic diagram of the power house showing location of extensometer in bus-gallery plan view

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Assessment and Prediction of Specific Energy Using Rock Brittleness in Rock Cutting

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Conference paper

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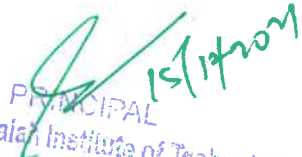
Part of the Learning and Analytics in Intelligent Systems book series (LAIS, volume 2)

Abstract

In this study, we used picks with point attack angles of 45°, 50°, 55°, and 65° and 45°, 55°, and 65° attack angles in rock cutting experiments. The main objective is to estimate specific energy during the cutting process based on rock brittleness and study the influence of attack angle on specific energy. From the experimental data, we compared the obtained results using multiple linear regressions and ANOVA to predict the specific energy and found that the model developed were statistically significant. R^2 of the brittleness B_4 is 0.79 in comparison with R^2 of density, UCS, BTS and abrasivity as 0.74, 0.83, 0.84 and 0.73. Specific energy not only be predicted from density, UCS, BTS, abrasivity, it can also be predicted using rock brittleness.

Keywords

Rock cutting Mechanical properties Brittleness Regression ANOVA Students t test


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CERTIFICATE OF PARTICIPANTS

This is to certify that Dr./Prof./Mr/Ms J.NBALATHA.K..... from Dr.T.T.I.T..... has presented a paper T.RAFFIC.....CONTROL.....SYSTEM.FOR.SMART.AMBULANCE.. in the "International Conference on Recent Trends in Technology, Engineering and Applied Science (ICRTTEAS-2019)" held during 12th & 13th April 2019 at Dr.T. Thimmaiah Institute of Technology Kolar Gold Fields, Karnataka.


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IMPLEMENTATION AND VERIFICATION OF RISC PROCESSOR ON FPGA USING CHIPSCOPE PRO TOOL

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Abstract

The advanced microprocessors are widely used for most of the complex systems. A silicon chip of fingernail-size may exhibit entire high performance guaranteed processor, higher cache memory and logic needed for interfacing with external devices. Reduced Instruction Set Computing (RISC) is a CPU (Central Processing Unit) design mechanism based on the vision in which exhibits basic instruction set and yields better performance after comparison with microprocessor architecture and it has the capacity to perform the instructions through microprocessor cycles per instruction. In this paper, the Cost-effective and efficient RISC Processor is designed. The RISC Processor design includes Fetching, decoding, Data and instruction memory, and Execution units. The Execution unit contains ALU (Arithmetic and Logical Unit) Operations. The RISC Processor design is synthesized and implemented using Xilinx ISE Tool and simulated using Modelsim6.5f. The implementation is done by Artix-7 FPGA device and the physically debugging of the RISC Processor, and ALU Units are verified using Chipscope pro tool. The performance results are analyzed in terms of the Area (Slices, LUT's), Timing period, and Maximum operating frequency. The comparison of the RISC Processor is made

concerning previous similar architecture with improvements.

Key words: RISC Processor, ALU Unit, Execution, Fetching, decoding, Verification, FPGA

I. INTRODUCTION

The earlier days of the processor design has witnessed a quest for higher performance in computer models and architectures. To achieve significant performance, technology advantages, better architecture and optimization in the compiler technology. As per this technology, the machine performance can be increased in proportion with the technology enhancement which can be available for everyone.

The design of the processor is manufactures using semiconductor devices, the printed circuit board (PCB), etc. The operation of any processor depends on the instructions used in it. These instructions include the computation/manipulation of the data values by using the registers, changing/retrieve the values of the read/write memory, performing the relational test among the data values and to have the control over the program flow.

The design of a processor considers the areas like: (i) data paths like 'Arithmetic Logic-Unit (ALU) and pipelines', (ii) a control unit which helps in controlling the data paths, (iii) considers the register files (memory components), (iv) clock circuits, (v) library of



A MULTISCALE APPROACH BASED AUTOMATIC SHIP DETECTION

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Abstract

This paper presents a new method for ship detection. It uses SAR image obtained by passing pulses of microwave signal and recording the reflected signal. SAR image is used for ship detection because it functions irrespective of weather conditions even at day and night. Speckle noise is inbuilt in SAR images are formed by recording the radar echo signals of EM signal multiplicative with granular noise; this noise degrades the quality of SAR images. Pre-processing is done using Lee filter to remove the speckle noise. Quality measurement like SNR, PSNR, SSIM and ENL is done. Image profile is verified to find effective noise suppression. After pre-processing the SAR image is enhanced using DWT (discrete wavelet transform) this wavelet transform preserves high frequency information and reduces artifacts. Enhanced image consists of many information from which the relevant image has to be extracted this process is called as feature extraction, feature extraction is done using k-means Clustering algorithm were the given data is grouped into k number of clusters. Finally, the ship detection image is obtained and it is compared with the ground truth image, quantitatively the ship Detection image is evaluated using confusion matrix. The Outcomes obtained from confusion matrix are True Positive, True Negative, False Positive, False Negative, Sensitivity, Specificity, Precision, False positive rate, Error rate, Accuracy, False alarm rate.

Keyword: SAR image, Lee filter, discrete wavelet transform(DWT), k-means clustering algorithm and performance measures.

I.INTRODUCTION

Ship detection plays an important role in maritime piracy, Border control, defence and maritime security, maritime spatial Planning etc. Ship can be easily identified in image taken from Space, These two or three dimensional images are formed by sending Pulses of electromagnetic radiations in the microwave wavelength region from the radar which is on board, these pulses are received and recorded to form the high resolution Synthetic Aperture Radar (SAR) image are – RADARSAT-1, RADARSAT-2, TerraSAR-X, Tandem-X, COSMO SKYMed 1, 2, 3 and 4 sentinel-1A and sentinel-1B. SAR image are less influenced by the time and weather conditions than the optical images, SAR sensors carries effectiveness at any time of the day and night. Hence, SAR image promote the development of new automatic ship detection. We propose a system to detect the ships using synthetic aperture radar images. The SAR images are pre-processed using enhanced Lee filter to remove the speckle noise. The output of the lee filter is enhanced by DWT and further feature extraction is done using k-means clustering algorithm to extract the ship from the complex background.



AN EMG BASED HAND GESTURE RECOGNITION SYSTEM USING SVM

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Abstract

Hand gestures is one of the most powerful, immediate and natural means of communication. Electromyography (EMG) is the measure of electrical activity produced by the muscles which is usually represented as a function of time. EMG can be used in various applications including identifying neuromuscular diseases, sign language recognition, virtual reality, gesture to speech, robotics, and television control. The EMG based hand gesture recognition can help to develop good computer interface that increases the quality of life of the disable or aged people. The main purpose of this work is to identify the hand gestures that is classified and predefined using support vector machine (SVM). The raw EMG data is preprocessed and the statistical features are extracted, the extracted features are given to the support vector machine for training and classification and performance are evaluated using confusion matrix to determine the average classification accuracy as high as possible.

Keywords: hand gestures, EMG, support vector machine.

I. INTRODUCTION

Hand gestures are an integral part of human-human communication and can be leveraged for more natural human-machine interaction (HMI). They are a fast and effective physical medium for communicating with and controlling intelligent devices. Surface EMG is a non-invasive method of acquiring these signals by placing recording electrodes directly on the surface of the skin. The EMG signal is a biomedical signal that measures electrical currents generated in muscles during its

contraction representing neuromuscular activities. The nervous system always controls the muscle activity (contraction/relaxation). Hence, the EMG signal is a complicated signal, which is controlled by the nervous system and is dependent on the anatomical and physiological properties of muscles.

II. RELATED WORKS

EMG-based gesture classification is a combination of flexible high density electrode array, and a dedicated biopotential acquisition device. Rachel Martina Edith and Bhargavi Haripriya [5] has demonstrated the study of surface EMG signal which is operating a power point. But, the signal which appears like properly acquired SEMG can be obtained by placing two electrodes on two different muscle. In the year 2016, Wahyu Caesarendra [6] made a case study in which Classification accuracy is an important issue in EMG classification for hand gesture identification. This study has shown an improvement of hand common gestures classification based on PCA and ANFIS. Which made the classification accuracy increased to 89.47%. Tacar [7] proposed a work of surface EMG signals to control robotic hand movements which was also useful in the rehabilitation field.


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ECG MONITORING AND ANALYSIS SYSTEM FOR RURAL/REMOTE AREAS

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Abstract

Ubiquitous vital signs sensing using wireless medical sensors are promising alternatives to conventional, in-hospital healthcare systems. The advent of modern age has shown a drastic shift in the way humans have worked leading into sedentary lifestyles. Change in dietary pattern where fresh food is replaced by processed and fast food along with the increase of stress has led to rise of cardio-vascular disease which is glaringly evident in developing countries. Especially, Asians are more prone to cardio-vascular diseases genetically. The ECG device is a diagnostic medical instrument which determines the electrical activity of the heart. The conventional ECG devices are powered by mains electricity, thus are not energy efficient. Transformers used make the device bulky and expensive. Optimum isolation amplifiers have to be incorporated in these devices for patient safety, adding to the cost and complex circuit. In this work, a wireless ECG sensor for rural/remote areas is proposed.

Keywords: Electrodes, Arduino UNO, AD8232 Heart monitor module, RF module, LabVIEW.

I INTRODUCTION

The Electrocardiogram (ECG) [1] is a measurement of the electrical activity of the heart over time, captured and externally recorded as measured by skin electrodes. The

signals indicate the overall rhythm of the heart and weaknesses in different parts of the heart muscle. This technique is the best way to measure and diagnose abnormal rhythms of the heart [1], and is commonly used in hospitals all over the world. It is also used in sports and military environments for advanced diagnostics of healthy individuals. In recent years, the research community has been active in pursuit of technologies for a “Wireless ECG” where patients are no longer required to be attached to a large stationary device while their ECG signals are monitored. A major motivator behind this trend is the reduced healthcare costs of remote monitoring, where patients can reside in their homes rather than occupy a hospital bed. Many systems have been proposed to accomplish this feat, with varying goals and approaches [2].

Wireless ECG monitoring can be done using 3, 4, 5 or 10 sensors, providing increasingly detailed information to cardiologists. The data is captured and monitored by wearable circuitry, and is then wirelessly transmitted to a nearby listening device. The nearby listener can be as simple as a basic logging or analysis device, or as complex as a large hospital information system that actively collects wireless data in real-time from multiple patients. Wireless ECG systems may be loosely grouped into two categories: those with wired sensors and those with wireless sensors. The first group of systems[2] use physical wires to

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EVALUATION OF SOIL FERTILITY USING IMAGE PROCESSING

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Abstract

Agriculture is the backbone of India. Soil pH plays a very important role in finding the fertility status of the soil. The paper tells whether the soil is acidic, neutral or alkaline and its nutrients values like nitrogen, potassium, and calcium by using the database set in image processing. The obtained output is received through an SMS by using the GSM model (SIM800C).

Keywords: pH, color quantization, SVM Classifier, GSM

Introduction

India is known as a famous agricultural country. Most of the farmers do not perform soil testing because existing methods consumes time and money. Very few farmers rely on soil testing done by government labs which are not available near them. Soil testing is the way to know the quality of fertilizer to meet the necessity of the crop by taking advantage of nutrients already present in the soil. It will also help to know the solution for soil problems. The soil pH value plays an important role in soil analysis [1]. Soil pH tells us the acidity as well as basicity present in the soil because if the soil is very acidic then it will affect the growth of the plants. A pH value ranges from 1 to 14, pH value below 7 is acidic whereas above 7 is alkaline. Soil pH is called as the main variable in the soil as it will control many chemical and biological processes that take place in the soil. The most suitable range for many plants is between 5.5 to 7.0. The importance of Soil testing plays an important role in the farmer's life. The acidity, neutrality or alkalinity of a soil is measured in terms of hydrogen ion. The main

aim of finding the soil pH is that which crop is suitable for the soil.

I. RELATED WORKS

Amara denis M.K et al., have undertaken a detail soil survey with the aim of evaluating fertility states of the soil using nutrients index approach [2]. Based on the nutrients indices, soil reaction and Fe were observed as the most important soil fertility constraints that could affect sustainability crop production. Halimater sadiyah, Abduhali et al., proposed deep convolution neural network used to determine soil nutrients peculiarities. For example, the head . required in a plantation to optimize production[3]. They used maize plantation which was within average accuracy of 96%.

Makara M Aziz et al., determine the pH of the soil by using a neural network based on soils colour [4]. The database suggested for this neural network stores the value of soil colour (RGB) and the pH value of each sample, this model showed good performance and it can be used to estimate the pH value.

Prof.Sangeetha et al., proposed the method for estimation, detection and comparison of soil nutrients analysis quantitatively by following the principle of chromatography techniques, at a different layer from the soil sample image processing of soil chromatogram, they found the soil nutrients and suggested the perfect fertilizer and suitable crop[5].

Umesh Kamble et al., proposed the number of fertilizers and pH of the soil that must be applied, soil samples were collected and their pH was tested in Govt testing lab[6]. On the basis of the RGB values, pixel properties, and digital correlation, the results of their pH values were matching with results of the testing lab.



HIGH SPEED AND LOW AREA FIR FILTER IMPLEMENTATION BASED ON SHIFT AND ADD MULTIPLIER DESIGN FOR MACHINE LEARNING APPLICATIONS

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Abstract

Today every circuit has to face the power consumption issue for both portable device aiming at large battery life and high end circuits avoiding cooling packages and reliability issues that are too complex. It is generally accepted that during logic synthesis power tracks which works well with area. This means that a larger design will generally consume more power. The multiplier is an important kernel of digital signal processors. Because of the circuit complexity, the power consumption and area are the two important design considerations of the multiplier. In this paper a High Speed & low area architecture for the shift and add multiplier is proposed. The simulation result for 8 bit multipliers & four tap Filters shows that the proposed Low Area & Delay architecture lowers the total Area & Delay when compared to the Array Multiplier and Booth Multiplier architecture based Filter. To develop the system blocks in Modelsim 6.4a and Xilinx ISE9.1i, the Spartan3 FPGA tool is used which achieves the simulation and the synthesis of the proposed multiplier. Verilog HDL is the language used for designing the proposed multiplier.

Index Terms: Finite Impulse Response(FIR), Shift and Add Multiplier

I. INTRODUCTION

Shift-and-add multiplication is similar to the multiplication performed manually. The method adds the multiplicand 'A' to itself 'B' times where 'B' denotes the multiplier. To perform the entire multiplication for getting the final product, the conventional architecture that was used for shift and add multipliers required many switching activities. So the power dissipation was more in that. By removing the sources switching activity in the older multiplier, low power architecture of multiplier can be achieved.

This also reduces the energy consumption of the accelerator which satisfies the requirements compared to the previous multipliers. Various different fixed-coefficient multipliers were proposed in the DSP domain[5], it used lookup table but in this proposed multiplier lookup table is not used

NEURAL NETWORK:

Recent study on Neural Network (NN) was showing good advancement over the previous algorithms in machine learning. Different network models, like recurrent neural network (RNN), and convolutional neural network (CNN), have been proposed for video, image & speech process. Artificial Neural Network. ANNs were usually presented as the systems shown in the below Figure1 is of interconnected nodes called neurons. There are a many articles on architecture for neural acceleration.[1],[2],[3][4]. Each and every neuron generates the single



IOT BASED SMART FOOD MONITORING SYSTEM

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Abstract

In the era of technology advancement, everything requires monitoring and controlling. This paper proposes an IoT framework for facilitating food monitoring for protection of the food, so that it would not get contaminated due to surrounding conditions during storage and transportation. In present scenario, the work done is in terms of the sensed value that have been recorded and a detailed analysis has been performed but automated controlled alternatives are not present. The proposed solution analyzes temperature, moisture, light as these parameters affect nutritional values of food items such as fruits and vegetables, and makes the analysis results accessible to the user via a mobile application(sms).

A web server is used for storage of data values sensed in real time and also for analysis of results. User is alerted via messages along with locations of the shipment whenever an emergency occurs in this solutions, heterogeneous sensors for various domains are employed for sensing the condition of food.

Key words: Food monitoring, IoT, Sensor.

I. INTRODUCTION

Food is the main energy source for the living being; as such food quality and safety have been in the highest demand throughout the human history. Internet of things (IoT) is a technology vision to connect anything at any time and anywhere. Utilizing IoT in the food supply chain (FSC) enhances the quality of life by

tracing and tracking the food condition and live sharing the obtained data with the consumers or the FSC supervisors. Currently, full application of IoT in the FSC is still in the developing stage and there is a

big gap for improvements. Food safety and hygiene is a major concern in order to prevent food wastage. The quality of food needs to be monitored and it must be prevented from routing and decaying atmospheric factors like temperature, humidity and darkness. Therefore, it is useful to deploy quality monitoring devices at food stores. These quality monitoring devices keep a watch on the environmental factors that cause or pace up decay of the food. Later, the environmental factors can be controlled like by refrigeration, vaccum storage etc.,

A food contamination can occur in the production process, but also a large part caused by the inefficient food handling because of inappropriate ambient conditions when the food is being transported and stored. There are many factors leading to food poisoning, typically changes in temperature and humidity are important factors. So the monitoring system capable of measuring temperature and humidity variability during transport and storage is of prime importance. Today almost everybody is getting effected by the food they consume, it's not only about the junk food, but all the packed foods, vegetables, products consumed and used in daily life, as all of them do not offer quality since their temperature, moisture, oxygen content vary from time to time. Majority of consumers only pay attention to the information provided on the packaging, i.e., the amount of ingredients used and their nutritional value, but



SMART GREEN HOUSE MONITORING AND CONTROLLING SYSTEM USING IOT

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ABSTRACT

The greenhouse industry is the fastest growing sector worldwide. The smart greenhouse separates the crop from the environment, thus the greenhouse providing some way of shelter from the direct sunlight of the external weather conditions. This system propose a contribution to the development of smart greenhouse monitoring which presents the design and development of an electronic system based on a 32-bit ARM microcontroller that integrates remote sensing functions rooted in the cloud computing using Internet of Things (IoT). This system acquires the data from soil moisture sensor, humidity sensor, temperature sensor, and light sensor 24x7, if the soil moisture is found to be low it turns on the water pump to sprinkle water until the soil is moist, if the temperature in the greenhouse is found to be high a fan is turned on, if temperature is low room heater is switched On, similarly if the light intensity is low LED lamp is turned ON. If the humidity is low then a humidifier is turned on. In addition to this the system also sends all four sensor values over internet for remote monitoring and control of LED lamp, room heater, humidifier, or fan can be done manually if needed through internet. we have also proposed live video streaming on internet with the help of Raspberry pi 3 and camera.

Keywords: greenhouse, microcontroller, Internet of Things (IoT), Raspberry pi 3.

I. INTRODUCTION

The smart greenhouse industry is the fastest

growing sector worldwide. This smart greenhouse separates the crop from the environment, thus the greenhouse system providing some way of shelter from the direct sunlight of the external weather conditions. By using this method it enables us in the production of crops which can be produced to a specific location. The smart greenhouse helps us in the manipulation of the crop environment. By allowing this method the farmer can improve the cultivation in such a way that the plants need. By using this method it leads to higher crop yield, prolonged production period, better quality, and less use of protective chemicals. In smart greenhouse the crops added value per unit area like fertilizers, urea etc., is much higher than that in open-field cultivation. By looking in climate condition, the energy is required more in moderate climate zones, whereas in grid zones, the cooling and availability of water, temperature, light is of major concern.

The use of materials and energy as well as crop yield and quality can be controlled by operating the adjustable components of greenhouse, such as heating and cooling inputs, window opening, drip irrigation, screening and CO₂ dosage. Hence, it can be expected that the way these controls are operated by using a 32-bit ARM microcontroller and the final economic result. If the user is in abroad the conditions of the crops and resource management in smart greenhouse is difficult to know the control variables with a remote sensing system using the IoT. This is because it is almost difficult for the farmerto manipulate and be present every day near the system. Indeed, remote communication systems are a

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Eco-Friendly and Self Powered IOT Using Piezoelectric Energy Harvesting

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ABSTRACT: The Internet of Things (IoT) is a revolutionizing technology which aims to create an ecosystem of connected objects and embedded devices and provide ubiquitous connectivity between trillions of not only smart devices but also simple sensors and actuators. Although recent advancements in miniaturization of devices with higher computational capabilities and ultra-low power communication technologies have enabled the vast deployment of sensors and actuators everywhere, such an evolution calls for fundamental changes in hardware design, software, network architecture, data analytics, data storage, and power sources.

A large portion of the IoT devices cannot be powered by batteries only anymore, as they will be installed in hard to reach areas and regular battery replacement and maintenance are infeasible. A viable solution is to scavenge and harvest energy from the environment and then provide enough energy to the devices to perform their operations. This will significantly increase the device life time and eliminate the need for the battery as an energy source.

This project presents the main design challenges of the IoT devices in terms of energy and power and provide design considerations for a successful implementation of self-powered IoT devices. We then specifically focus on piezoelectric energy harvesting as one of the most promising solutions to power the IoT devices and present the main challenges and research directions.

I. INTRODUCTION

Recent advancements in miniaturization of devices with higher computational capabilities and ultra-low power communication technologies are driving forces for the ever-growing deployment of embedded devices in our world. This will transform any physical object, into an Information source with the potential to communicate with every other thing in the network. This ecosystem of connected things is called the *Internet of things (IoT)*.

IoT applications and services cover almost any sector where embedded devices replace humans in

performing tasks. IoT provides a network of connected devices that real time information can be shared and used in order to enhance life quality, improve industry processes, energy efficiency, and level of services. IoT also significantly improves supply chain efficiencies and develop new services for retailers. Such a network of inter-connected devices enables the factories to get humans and enterprise systems more involved with the whole supply chain system.

Energy harvesting from environment is usually uncontrolled, unpredictable and in most cases the conversion efficiency is low. PV cells provides high power density, but they require constant exposure to light which limits their application in many IoT use cases.

In 1880, Pierre and Jacques Curie measured surface charges that appeared on crystals of tourmaline, quartz, topaz, cane sugar and Rochelle salt when they were subjected to an external mechanical stress, which is called the direct piezoelectric effect.

Energy harvesting techniques are used for harvesting energy from the environment and provide enough energy to the IoT services and applications to perform their operations, they significantly increase the device lifetime and eliminate the need for batteries as an energy source.

II. METHODOLOGY

a. INTRODUCTION

Piezoelectric materials can be used to convert oscillatory mechanical energy into electrical energy. The technology together with innovative mechanical coupling designs, can form the basis for harvesting energy from mechanical motion. Piezoelectric energy can be harvested to convert walking motion from the human body into electrical power. Recently proof-of-concept Heel Strike Units were developed where each unit is essentially a small electric generator that utilizes piezoelectric elements to convert mechanical motion to electrical power in the form factor of the heel of the boot. Similarly, this project is to harvest electrical energy by developing a piezoelectric mat to convert



PARTIAL PRODUCT ARRAY HEIGHT REDUCTION USING RADIX-16 FOR 64-BIT BOOTH MULTIPLIER

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ABSTRACT

We describe an optimization for binary radix-16 (modified) Booth recoded multipliers to reduce the maximum height of the partial product array of columns to $\frac{n}{4}$ for $n = 64$ -bit unsigned operands. This is contrast to the conventional maximum height of $(n + 1)/4$. Therefore, a reduction of one unit in the maximum height of partial product is achieved. The reduction may add flexibility during the design of the pipelined multiplier to meet the required design goals, it may allow further optimizations of the partial product array reduction stage in the area/delay/power and/or may allow additional addends to be included in the partial product array without increasing the delay. The method that can be extended to the Booth recoded multipliers, signed multipliers, combined signed/unsigned multipliers, and other values of n .

Keywords: Partial Product, Booth recoded multipliers

I. INTRODUCTION

Binary multipliers are a widely used building block element in the design of microprocessors and embedded systems, and therefore, they are an important target for implementation optimization. Current implementations of binary multiplication follow the steps of 1) recoding of the multiplier in digits in a certain number system 2) digit multiplication of each digit by the multiplicand, resulting in a certain number of partial products 3) reduction of the partial product array to two operands using multi operand addition techniques and 4) carry-propagate addition of the two operands to obtain the final result.

The recoding type is a key issue, since it determines the number of partial products. The usual recoding process recodes a binary operand into a signed-digit operand with digits in a minimally redundant digit set [7], [8]. Specifically, for radix- r ($r = 2m$), the binary operand is composed of no redundant radix- r digits (by just making groups of m bits), and these are recoded from the set $\{0, 1, \dots, r - 1\}$ to these $\{-r/2, \dots, -1, 0, 1, \dots, r/2\}$ to reduce the complexity of digit multiplications. For n -bit operands, a total of n/m partial products are generated for two's complement representation, and $(n + 1)/m$ for unsigned representation. The maximum column height may determine the delay and complexity of the reduction tree, In this extra column of one bit could be assimilated (with just a simplified three bit addition) with the most significant part of the first partial product without increasing the critical path of the recoding and partial product generation stage.

The result is that the partial product array has a maximum height of $n/2$. This reduction of one bit in the maximum height might be of interest for high-performance short-bit width two's complement multipliers (small n) with tight cycle time constraints that are very common in SIMD digital signal processing applications. Moreover, if n is a power of two, the optimization allows to use only 4-2 carry-save adders for the reduction tree, potentially leading to regular layouts. These kind of optimizations can become particularly important as they may add flexibility to the "optimal" design of the pipelined multiplier.

Optimal pipelining in fact, is a key issue in current and future multiplier (or multiplier-

Utilization of Waste Materials in Flexible Pavement Construction

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Abstract - Due to increase in population, urbanization, development activities, and the quantity of plastic waste, municipal solid waste and tires are increasing day by day. This waste is disposed by land filling and incineration, which are hazardous and not eco-friendly. The aim of project is to analyze & study how the waste material will be effectively utilized in construction of pavement as a binder material for replacing the content of bitumen. Plastic & tires are cheap in cost and not environmentally friendly. The physical properties of bitumen mix at variation of 10 to 40% of waste plastic (PET) and 10 to 40% of waste rubber is examined by simultaneously combining both plastic and rubber equally from 5 to 20%. According to this research we find optimum percentage of waste plastic, rubber & both combination of (plastic + rubber) is 30%, has given better finish, stability, binding property, resistance to water and durability & Due to use of waste materials, the cost reduction is up to 25 % when compare to ordinary bitumen.

Keywords :- (Flexible Pavement, Environmentally Friendly, Marshall Stability, Plastic, Tires, Waste.)

1. INTRODUCTION

In a recent scenario, a world without roads, cars, motorcycles, trucks is almost unimaginable. India encompasses a road network of over 5,603,293 kilometers as on 31 March 2016. The second largest road network in the world. As on 31 March 2016, 62.6 % of Indian roads were paved. Only 40% of Indian roads are flexible pavements. Rest 22.5% of roads are rigid pavements. Indian roads are primarily bitumen-based macadamized roads. Due to extreme climatic conditions and a steady increase in high traffic intensity in terms of commercial vehicles, and the significant variation in daily and seasonal temperature demands improved road characteristics. The entire road infrastructure with its diversity of transport concepts now has a prominent position in our civilization. The question is thus not so much whether or not there'll still be a road infrastructure within the future, however, rather how can society read these quality facilities in say 20 or 30 years' time. Comparing the road infrastructure and suggests that of transport of these days with those of 40 years past, it becomes clear within the next forty years' time everything can once more look a lot different to how it looks today. Societies area unit perpetually developing and, consequently thus area unit people's requirements regarding the use, structure and design of the road infrastructure – not simply roads in urban areas (urban roads), but also the motorways (inter-urban roads) between the major cities. It is conjointly quite conceivable that the longer term construction and style of infrastructure constructions like bridges and tunnels are

be subject to completely different needs. In view of the long time span of 10 to 15 years between planning infrastructure facilities and its actual completion, followed by an operational period of at least 25 years, more clarity of these future needs, demands and requirements becomes essential in order to make the right choices for tomorrow. Making the longer term a lot of acknowledgeable and tangible reveals the gaps of information and indicates which new technologies can need to be developed to meet the future demands and needs. Besides generic developments like shortage of clean environment, space and energy, spotting and extrapolating the social and economic trends and technical advances offer starting-points for forming a more realistic image of the longer term and therefore the associated desires and demands associated with road transport. Bitumen is a useful binder for road construction. Different grades of bitumen like 30/40, 60/70 and 80/100 are available on the basis of their penetration values. In the construction of flexible pavements, bitumen plays the role of binding the aggregate together by coating over the aggregate. It conjointly helps to boost the strength of the road. But its resistance towards water is poor. Use of plastic and rubber leads to excellent pavement life, driving comfort and low maintenance. Scientists and engineers are constantly searching on different methods to improve the performance of bituminous pavements. A common methodology to improve the quality of bitumen is by modifying the rheological properties of bitumen by blending with organic artificial polymers like rubber and plastics. Polymer and crumb rubber can be used as a binder with respect to aggregate and bitumen in construction of flexible pavement. This paper aims at proposing a method of disposal of plastic and tire waste by using them on the surface course of the pavement. The Main objective of this study are safe and productive disposal of wastes - plastic and tire, study of index properties and suitability of waste-bituminous mix on surface course of the pavement.

1.1 Objectives

- 1 To study the physical properties of bitumen & crumb rubber, bitumen & PET, both rubber & PET mixed bitumen & at the various percentage.
- 2 To find out an optimum percentage of waste materials in the bituminous mix
- 3 To improve the properties of bituminous mix & to provide the solution for disposal in a useful way.
- 4 To increase the Marshall Stability value.

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Utilization of Crumb Rubber in Construction of Flexible Pavement

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Abstract: Waste tires have recently proved to be an ecological and financial burden in many regions of the world. The materials for road pavements generally are, bitumen, concrete, aggregates, etc. but these materials are not sufficient to fulfill our demands. So we are replacing the waste material in road construction. The aim of project is to analyze & study how the waste material will be effectively utilized in construction of pavement as a binder material for replacing the content of bitumen, in detail process & its successful applications. Physical properties of bitumen mix at variation of 10 to 50% of waste rubber is to be examined. It has given better finish, stability, binding property, resistance to water and durability. The main objective of this research that we found optimum percentage of waste rubber is 30% and due to this process stability is increased by 1.68 times and deformation of pavement is reduced to 0.47 times simultaneously, cost of construction of road can be decreased and hence disposal problem of waste rubber can be solved, so that the environmental gains can be achieved.

Keywords:(Flexible Pavement, Environmentally Friendly, Marshall Stability, crumb rubber)

1.INTRODUCTION

India has a road network of over 5,603,293 kilometers (3,481,725 mi) as on 31 March 2016. The second largest road network in the world. As on 31 March 2016, 62.5% of Indian Roads were paved. 40% of Indian roads are flexible pavements. Rest 22.5% of Indian roads are rigid pavements. Roads in India are primarily bitumen-based macadamized roads. The steady increase in high traffic intensity in terms of commercial vehicles, and the significant variation in daily and seasonal temperature demands improved road characteristics. So, improvement in the property of the binder is needed. Bitumen is a useful binder for road construction. Different grades of bitumen like 30/40, 60/70 and 80/100 are available on the basis of their penetration values. In the construction of flexible pavements, bitumen plays the role of binding the aggregate together by coating over the aggregate. It also helps to improve the strength of the road. But its resistance towards water is poor. So, anti-stripping agents are being used. Scientists and engineers are constantly searching on different methods to improve the performance of asphalt pavements. A common method to improve the quality of bitumen is by modifying the rheological properties of bitumen by blending with organic synthetic polymers like rubber. Crumb rubber can be used as a binder with respect to aggregate and bitumen in construction of flexible pavement. The various tests can be conducted during this study on aggregate i.e. impact value, abrasion value, shape test specific gravity and also on bitumen i.e. penetration value, ductility, softening point, flash and fire point etc. obtained results can give rise to better quality roads and utilization of waste materials in pavement construction. This paper aims at proposing a new method of disposal of tire waste by using them on the surface course of the pavement. The Main objective of this study are safe and productive disposal of wastes - tire, study of index properties and suitability of waste-bituminous mix on surface course of the pavement.

1.1 Objectives

- 1 To study the physical properties of bitumen & crumb rubber mixed bitumen at various percentage.
- 2 To improve the properties of bituminous mix & to provide the solution for disposal in a useful way.
- 3 To find out optimum percentage of waste rubber in bituminous mix
- 4 To increase the Marshall Stability value.

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COMPRESSIVE STRENGTH OF FLY ASH BRICKS WITH ADDITION OF BAGASSE ASH

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Abstract

The present study is to manufacture fly ash bricks with the addition of two waste materials i.e. Sugarcane bagasse ash and Quarry dust. In India population is increasing day by day and large quantity of waste is generated through many industries and agriculture which creates health hazards, disposal of this waste has become a major problem. Sugarcane bagasse is one among it which is produced due to burning of bagasse ash. In order to use waste material effectively we used bagasse ash in preparation of fly ash bricks in different proportions i.e. 10%-50%. Trial bricks of size (150*150*150mm) are prepared and the tests carried out are Water absorption and Compressive strength as per Indian standards. The present study carried out is to explore the potential of using bagasse ash in brick production. The outcome of this work indicates the maximum compressive strength obtained for optimal mix percentage. Henceforth we can conclude that addition of waste material in manufacturing of brick can minimize the environmental burden leading towards cost effective and green construction. **Keywords:** Cement, Quarry Dust, Fly Ash, Sugar cane bagasse ash[SCBA], Lime and Compressive strength

1. INTRODUCTION

In India there is a substantial increase in population due to increase in industries which

leads to production of approximately 250 to 300 million tons of industry waste. It is very necessary to abandon this waste safely without affecting public health, environment and fertilize land. Therefore an attempt is made to reuse the sugarcane

Bagasse ash in the preparation of bricks in different proportions to calculate its compressive strength after 7 days, 14 days and 28 days. Based on the result the suitability of bagasse ash in different structural elements has been decided.

OBJECTIVES

The main objective of this work is to study the effect of addition of Bagasse ash in manufacture of fly ash bricks and to protect the environment by effective disposal of Bagasse ash.

LITERATURE REVIEW

Mirtyunjay Kumar, Shivani Singh Dhriyan [2017] concluded that 10 to 20% of cement can be partially replaced by SCBA for higher strength, flexural strength and tensile strength. By addition of SCBA concrete had become more durable and requirement of super plasticizer is not needed. SCBA concrete mixture show good modulus of elasticity. Manish Cetroja [2018] demonstrated that addition of bagasse ash more than 20% causes more water absorption, reduction in compressive strength less hardness under burnt. So he recommended that upto 20 to 25% bagasse ash can be replaced by clay in bricks. Kishore, S. Kotteswaran concluded that

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EXPERIMENTAL STUDY ON THE TREATMENT OF DAIRY WASTE WATER USING LOW COST NATURAL ADSORBENTS

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ABSTRACT

Dairy industry is the one of the pollution food industry and considering huge amount of water is used during production of milk and its products. The waste water contains dissolved sugars, proteins, and fat which is biodegradable and organic in nature. So that dairy waste water is considered as high concentration of organic matter and high BOD. It is estimated that dairy industries generate 2.5 to 3 litres of waste water per litre of milk processed. Such untreated waste water pollutes land and water bodies so that proper treatment of dairy waste water is necessary before disposal in the environment. The aim of present research work is to determine behaviour of various parameters of dairy waste water. An investigation of possible use of low cost natural adsorbents in their powdered form like rice husk, curry leaf, orange peel, neem leaf and rice husk in the treatment of dairy waste water. After conducting the experiments we found that the COD, BOD, Turbidity and pH of the dairy waste water is reduced.

KEYWORDS: Dairy waste water, Natural adsorbents, COD, BOD, Turbidity and pH

INTRODUCTION

The dairy industry involves processing of raw milk, into products like consumer milk, butter, cheese, yogurt etc. Dairy industry contains high amount of organic constituents. So, it is needed to provide required treatment before discharge into the environment. The treatment mostly classified as aerobic and anaerobic treatment. Due to rapid industrial growth world's economy improve with rid growth but also that

make impact in terms of pollution on environment. Large concentration of pollutants in terms of quantity and quality of liquids, solids, and gaseous pollutants shows harmful effects on flora and fauna as well as on many areas on environment. Organic toxic waste (oil and grease (O&G)) causes ecology damages for aquatic organisms, plant, animal, and equally, mutagenic and carcinogenic for human being. They discharge from different sources to form a layer on water surface that decreases dissolved oxygen. O&G layer reduces biological activity of treatment process where oil film formation around microbes in suspended matter and water. This lead to decrease dissolved oxygen levels in the water. There are various methods of oil and grease removal that one of the examples is by using adsorption method. This method commonly uses activated carbon that is one Of the effective adsorbents. Although effective, the cost for activated carbon is expensive thus a study was conducted by using natural resources as alternative adsorbents for oil and grease removal. This study objective is to determine the ability of three adsorbents, which are curry leaf and neem as an adsorbent in removing oil and grease from wastewater. It involved the characterization of adsorbent and the performance studies of the adsorbent. Many technologies are in practice to treat the dairy wastewater and in the present study; an attempt was made to investigate the application of low cost adsorbents from orange peel for the treatment by considering the wastewater from local dairy form. Tones of orange peels were discarded and send to garbage as useless materials and it is very significant and even essential to find applications and uses for these peels, as the management of wastes nowadays



EXPERIMENTAL INVESTIGATION ON PARTIALLY REPLACEMENT OF BITUMEN WITH WASTE MATERIALS FOR FLEXIBLE PAVEMENT CONSTRUCTION

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Abstract

Roads and highways are among the most important infrastructure systems in the India, traveled on by roughly 65% of Indians. The conditions of the majority of these roads and highways are considered to be in inferior shape and to provide good all weather road connectivity to unconnected villages, towns and cities are mandatory for the economic development of a country. In spite of increase in blossom pursuits in an evolving nation has led to a swell in population. Due to this the quantity of plastic waste, squandering and tires are increased. This is undeniable a genesis for concern squander to disposed by junk yards, landfill antonyms and proclivity, which are perilous and risky. Our aim of the project is to inspect & study how the waste stuffs will be effectively utilized in construction of surface course and how it acts as additive or modifier which could improve the performance of bitumen properties as bitumen modifier. We have conducted the experiments on the physical properties of bitumen mix by varying from 10 to 60% of waste plastic (PET), waste rubber, both plastic and rubber equally combined respectively. According to this research we found that 30% is the optimum percentage of waste stuff can be restored. In addition, the use of these waste substance will play a significant role in reducing the use of non-renewable resources, in constructing sustainable pavements and leads to decrease in cost of construction up to 38.5%, 40% and 39.3% when waste (plastic, rubber, plastic & rubber respectively) restored when compare to ordinary bitumen.

Keywords :- (Flexible Pavement, Environmentally Friendly, Marshall Stability, Plastic, Tires, Waste)

I. INTRODUCTION

India is a blossoming country where roads and highways are the most important in infrastructure systems. India encompasses a road network and stands second largest road network in the world. As on 31 March 2019. But absence of roads, cars, motorcycles, trucks and plastic materials are almost ineffable. Waste valorization has become central to a more efficient and sustainable development in the India today. The reuse and reinsertion of waste substances in the production chain reduces the consumption of basic commodities and, in many cases, even avert the depletion of valuable natural resources. Moreover, it also alleviates the accumulation of waste at dumpsites, which is now a serious problem. Consequently, great efforts are currently being made to reuse squander stuff in production systems. New technologies can need to be evolved to meet the future demands and needs to decrease the cost of construction. In the construction of flexible pavements, bitumen plays the role of binding the aggregate together by coating over the aggregate. It conjointly helps to boost the strength of the road. But its resistance towards water is poor. Use of plastic and rubber leads to excellent pavement life, driving comfort and low maintenance. This paper aims at proposing a method of disposal of plastic and tire waste by using them on the surface course of the pavement. The Main objective of this study are



STABILIZATION OF BLACK COTTON SOIL USING RICE HUSK ASH AND CRUMB RUBBER

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ABSTRACT

Black Cotton Soil (BCS) is a major soil deposit in India. There is a presence of significant amount of mineral montmorillonite in BCS which is the reason behind the alternate swell-shrink property which occurs due to the changes in moisture content and has proven to be troublesome in carrying out civil engineering activities. To encounter this problem stabilization is in practice. The utilization of waste materials such as Rice Husk Ash (RHA), Crumb Rubber (CR) as soil stabilizers is being carried out in our research paper. As the disposal of scrap tyres and agricultural wastes has a potential negative impact on the environment causing pollution and finally affects the ecosystem, thus it is mandatory to make use of these wastes in an environmentally friendly way. The main objective of the paper is to study the geotechnical properties i.e. the Consistency limits, Unconfined Compression Strength, Compaction parameters and CBR characteristics. RHA and CR are blended along with BCS in different proportions and the geotechnical properties of stabilized soil samples are examined. Ultimately the results being computed are studied and the suitable soil stabilizer which proves to be effective enough to withstand the variations and resist the deformations is being suggested.

Key Words: Black Cotton Soil (BCS), Rice Husk Ash (RHA), Crumb Rubber (CR), Liquid Limit(LL), Plastic Limit(PL),

Unconfined Compression Strength(UCS), California Bearing Ratio(CBR)

1. INTRODUCTION

Black Cotton Soil is considered to be weak soil and has low stability against heavy loading. In order to withstand the heavy loading, the soil needs to be stabilized. By stabilizing the soil its engineering properties will be improved. BCS absorbs moisture from the surface during monsoon and exudes moisture by means of evaporation during summer season. Due to this property of soil it is recognized as an expansive soil. It is greyish to blackish in colour and contains montmorillonite clay mineral. Stabilization is a process of changing chemical properties of soil by adding stabilizers to increase the strength and stiffness of expansive (weak) soils. The stabilizers utilized in this research paper are Rice Husk Ash and Crumb Rubber.

2. MATERIALS

Black Cotton Soil taken for the investigation is procured from Mavinalli, Indi Taluk, Bijapur District. BCS is derived from basaltic bedrock and is alkaline in nature with low potassium and nitrogen content. Table 1 describes the properties of BCS alone.

Table: 1 Properties of Black Cotton Soil

Property	Value
Specific Gravity	2.78
Liquid Limit (%)	69
Plastic Limit (%)	37.5
Plasticity Index (%)	31.5

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EXPERIMENTAL INVESTIGATION ON HDPE & PET IN CONSTRUCTION OF BITUMENOUS PAVEMENT (SURFACE COURSE)

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Abstract - The waste plastic and its clearance is a major threat to the environment, which results in pollution and global warming. The exploitation of plastic waste in bituminous fusions enhances its possessions and also its strength. In addition it will also be elucidation to plastic dumping & several defects in pavement viz., pot holes, corrugation, ruts, etc. The waste plastic is shredded & glazed over aggregate & varied with hot bitumen and resulted mix is used for pavement construction. This will not only strengthen the pavement and also increases its durability. The key perseverance of this research to reduce bitumen content and by using plastic as effective binder in bituminous mix. In this paper we are improving bitumen possessions and diminish cost of construction and mainly plastic disposal so that environment expansion can attain and its eco-friendly and also here we are profitable to diverge PET and HDPE content from 10% to 50% to increase the Marshall stability strength of the road. By the experimental analysis we got 30% and 40% optimum values for PET and HDPE respectively.

Key Words: (Urbanization, Bituminous Mix, Eco-Friendly, Non-Biodegradable, Deformation)

1. INTRODUCTION

The foremost danger to the environment is the discarding of waste plastic. A substantial that contain one or more organic polymer of bulky molecular encumbrance, solid in its completed state, can be molded by its drift is called as "plastic". Plastic is a non-degradable waste, causes greenhouse effect and global warming. The various experiments have been carried out whether the waste plastic can be reused productively. The various literature indicated that the waste plastic when added to hot aggregates will form a fine coat of plastic over the aggregate and such aggregates when mixed with binder is found to have higher strength, higher resistance and better performance over a period of time. Along with bitumen, use waste plastic increases its life and smoothness. It is economical and eco-friendly. Addition of plastic waste in construction of pavements reduces the plastic shrinkage and drying shrinkage. Use of waste plastic in the construction of flexible pavement shows good binding property and improves the bitumen's property because plastic acts as anti-striping agent and avoids the water percolation for the sub grade through surface course. Modified hot mix bitumen enriches

pavement performance, safeguard atmosphere and provide low cost roads.

Objectives

1. To make use of the waste plastic as useful binding material.
2. Carry out marshal stability test on sample prepared with plastic.
3. To trim down the cost of material in construction of flexible pavement.

2. MATERIAL

i. Bitumen

Bitumen is firewood product obtained by refinement of crude oil. It is black, extremely viscous and semi sold material. 60/70 grade bitumen is used.

ii. Coarse Aggregates

Coarse aggregate is the major and prime material. used in pavement construction. As it as good load bearing stresses and also resist to abrasive action of traffic movement under both dry and wet conditions when used in surface course of pavement.

iii. Plastic

Plastic usage is very collective and inevitability in everyday life. As it's very cheap, economic and easy to handle and carry. In India it's found that about 12-16kg of plastic is expended by per capita by per person. In plastic PolyEthylene Terephthalate (PET) and High Density polyethylene(HDPE) are the most important form it is long chain, semi crystalline thermo plastic it as high general properties and most common household things are made up of PET and HDPE as it is high durable, unchanging and easy to switch.

PRINCIPAL

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Experimental Study on Bituminous Mix using LDPE, Crumb Rubber and Mild Steel Chips in the Construction of Flexible Pavement

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Abstract — In recent years, the use of plastic (LDPE), rubber from squandering to modify the mechanical possessions of bituminous fusions has become progressively important in highway engineering. There is presently much research devoted to the influence of this waste substantial on mix performance. This paper presents a study of the incorporation of plastic and crumb rubber. The results obtained show that plastic and crumb rubber improved the stiffness and stability of mixes. A part from the evident environmental benefits, adding this waste to asphalt mixes improves the long-term performance of road surfaces because it reduces the effect of traffic loads on the pavement. In this paper we are improving bitumen possessions and diminish cost of construction and mainly plastic and rubber disposal so that environment expansion can attain and its eco-friendly and also here we are profitable to diverge LDPE and crumb rubber content from 10% to 50% to increase the Marshall stability strength of the road and we have utilized mild steel as an admixture to increase the Marshall stability in rubber replacement. By the experimental analysis we got 20% and 20% optimum values for LDPE and Crumb Rubber respectively.

Keywords:- (Urbanization, Bituminous Mix, Eco-Friendly, Non-Biodegradable, Deformation)

I. INTRODUCTION

India is a blooming country where conveyance shows a significant role. In India conveyance chiefly depends on the road network which as a road length of 5.6 million kilometers and stands as the second largest road network in the world. Discarded valorization has turn out to be crucial to a more efficient and sustainable development in the world in the present day. The reuse and reinsertion of waste substantial in the production chain reduces the consumption of basic commodities and, in many cases, even prevents the depletion of valuable natural resources. Moreover, it also alleviates the accumulation of waste at landfills, which is now a serious problem. Consequently, great efforts are currently being made to reuse waste material in production systems. As they are non-biodegradable, positioning them is a serious issue. Improper discarding of these waste plastic and tires causes harmful effects on the environment and human life. One of the temporary methods of disposing the waste plastic and tires is burning which releases the toxic harmful gases such as carbon di-oxide and carbon monoxide which results in the air pollution. Therefore, by partially replacing the bitumen with waste plastic and crumb rubber to certain extend the properties of flexible pavement like durability, solidity and strength can

be increased. When crumb rubber is added to the hot bituminous mix, it adequately increases the viscosity, lowers the penetration and increases the softening point of the bitumen. Carbon which is present in the rubber acts as an anti-oxidant and prevents the bitumen from aging and oxidation. The main objective of this study is to find the optimum percentage of waste plastic, crumb rubber and mild steel chips that can be partially replaced for bitumen to strengthen the surface course and reduce the cost of construction and also to provide an alternative solution for the disposal problem of waste plastic and crumb rubber.

II. OBJECTIVES

1. To reduce the bitumen content by the addition of waste plastic and crumb rubber in the hot bituminous mix.
2. To know the stability of the modified bituminous pavement by conducting Marshall Stability test.
3. To minimize the cost of construction of the flexible pavement.
4. To reduce the environmental impacts, that arises during the disposal of waste tires.

III. MATERIALS USED

A. BITUMEN:

In the construction of flexible pavement, bitumen plays an important role in binding the aggregates together. Various grades of bitumen are 30/40, 50/60, 60/70, 80/100.

Desirable properties are,

- Bitumen provides a good resistance to surface wear.
- Reduces the surface water infiltration.
- Provides smooth and readable finish.
- Also provides structural support to the wheel loads.

B. COARSE AGGREGATES:

The aggregates bind together with the help of binding materials such as bitumen. Aggregate are the major constituents of the pavement that should have high strength, durability, toughness, hardness etc. Aggregates used are of sieve size 16mm, 12mm, 12.5mm, 10mm, 4.75mm, 2.36mm and stone dust.

C. LOW DENSITY POLYETHYLENE [LDPE]:

Low density polyethylene is a thermoplastic made from the monomer ethylene. It was the first grade of polyethylene.



DESIGN AND DEVELOPMENT OF SINGLE AXIS SOLAR TRACKER OF SMART MONITORING SYSTEM USING IOT

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ABSTRACT

Solar Energy has been the power supply of choice for Industrial applications, where power is required at remote locations. Solar energy great benefit is that, it is highly reliable and requires little maintenance so it's ideal in places that are hard to get to. Electric power from solar panels is derived by converting solar power from the rays of the sun into electrical current in the solar cells. The main challenge is to maximize the capture of the rays of the sun upon the solar panels, which in turn maximizes the output of electricity. A practical way of achieving this is by positioning the panels such that the rays of the sun fall perpendicularly on the solar panels by tracking the movement of the sun. This can be achieved by means of using a solar panel mount which tracks the movement of the sun throughout the day. A single-axis solar tracker follows the movement of the sun from east to west by rotating the structure along the vertical axis. The solar panels are usually tilted at a fixed angle corresponding to the latitude of the location. Our aim is to design and fabricate the system, which will automatically track the sun's position and accordingly change the direction of the solar panel to get the maximum output from the solar cell. A solar charge controller is also designed to charge the battery.

Keywords: Payload, H-bridge, Solar Panel, PSRAM, Parallel Inverter Circuit, French Physicist Gaston Planteand.

I.INTRODUCTION

Solar Energy has been the power supply of choice for Industrial applications, where power is required at remote locations. Solar energy is also frequently used on transportation signaling e.g. Lighthouses and increasingly in road traffic warning signals. Solar energy great benefit is that, it is highly reliable and requires little maintenance so it's ideal in places that are hard to get to. Electric power from solar panels is derived by converting solar power from the rays of the sun into electrical current in the solar cells. The main challenge is to maximize the capture of the rays of the sun upon the solar panels, which in turn maximizes the output of electricity. A practical way of achieving this is by positioning the panels such that the rays of the sun fall perpendicularly on the solar panels by tracking the movement of the sun. This can be achieved by means of using a solar panel mount which tracks the movement of the sun throughout the day. A single-axis solar tracker follows the movement of the sun from east to west by rotating the structure along the vertical axis. The solar panels are usually tilted at a fixed angle corresponding to the latitude of the location. Our aim is to design and fabricate the system, which will automatically track the sun's position and accordingly change the direction of the solar panel to get the maximum output from the solar cell. A solar charge controller is also designed to charge the battery. A solar tracker is a device that orients a payload toward the sun. Payloads can be photovoltaic panels, reflectors, lenses or other optical devices. In flat-panel



“WAR FIELD SPYING ROBOT WITH NIGHT VISION WIRELESS CAMERA USING ANDROID APPLICATIONS”^s

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Abstract

The main objective for developing the robot is for the surveillance of human activities in the war field or rescue operations in order to reduce attacks from the enemy side. The robot consists of night vision wireless camera which can transmit videos of the war field in order to prevent any damage and loss to human life. Military men have a huge risk on their lives while entering an unknown territory. The robot will serve as an appropriate machine for the defence sector to reduce the loss of human life and will also prevent illegal activities. It will help all the military people and armed forces to know the condition of the territory before entering it. This can also be used in various rescue operations to save the man power and to monitor hazardous situations. The main advantage of this project is that we can easily control the robot using an android mobile by a blynk app. An ArduinoATMEGA2560 is used for the desired operation. A smart cell phone with IP web cam application is mounted on the robot body for spying purpose even in complete darkness by using infrared lighting. This will send the videos wirelessly at the transmitter side (laptop). This is kind of robot can be helpful for spying purpose in war fields and in order to minimize the attacks like 26/11 in Mumbai in future. It can also be helpful where living beings cannot reach.

Key Words: Robot, War Spying robot, Airdroid app (Smart Cell Phone).

1. INTRODUCTION

With the aim of developing a high-tech technology that serves high speed technology, advanced capacity to control the robots and to device new methods of control theory. To realize above standards some technical improvement along with the need of high performance robot is required to create a faster, reliable, accurate and more intelligent robot which can be devised by advanced control algorithm, robot control devices and new drivers.

Earlier the robots were controlled through wired networks but now to make robot more users friendly, they are framed to make user commanded work. Therefore to attain the requirements we can use android as a multimedia to control the user friendly robot.

The design of our project encourages developing a robotic vehicle based on IOT technology for the remote operation connected with the wireless camera mounted on the robot for monitoring purpose. The robot is embedded with arduinoATMEGA2560 for desired operation and is generally used for spying purposes. The transmitting module consist of the push buttons that send the commands to the receiving module for controlling the movement of robot either to right, left, forward, downward. Basically the project is designed to develop a robotic vehicle named War Field Spying Robot using IOT technology for remote operation attached with smart cell phone having Airdroid application for monitoring purpose. The robot along with smart cell phone can wirelessly transmit real time video and will give confidential information regarding opposite parties.



DESIGN AND IMPLEMENTATION OF GESTURE, VOICE AND (IOT) INTERNET OF THINGS BASED HOME AUTOMATION FOR PHYSICALLY CHALLENGED

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Abstract

Home automation allows us to focus on getting our work done without worrying about the safety and security of our home, while enabling us to control the appliances in our home on the go. All of our devices and appliances are networked together to provide us with a seamless control over all aspects of our home and more. Home automation has been around from many decades in terms of lighting and simple appliance control, and only recently has technology caught up for the idea of the interconnected world, allowing full control of our home from anywhere, to become a reality.

This system makes use of gesture command for controlling the home appliances, the concept of controlling home appliances using human voice is also designed such that people who are physically challenged who cannot move their limbs effectively can make use of Voice command in controlling home appliances.

The system also makes use of IOT; IOT is a world, where real, virtual and digital environments combine to create a smart environment which makes life easy. It is a new era of computing technology in which machines interact and communicate with other machines, objects and environment. This new technology has unlimited potential to improve our lives by using a "command-and-control" strategy. The ultimate goal of IOT applications is to automate systems rather than using manual systems, to improve the quality of living.

With home automation, we dictate how a device should react, when it should react, and why it should react. Home automation is a necessity these days as it helps save up on power consumption, makes our homes more secure, provides a way to monitor our home when we are away, and makes our home secure in every way possible.

I. INTRODUCTION

Home automation allows us to focus on getting our work done without worrying about the safety and security of our home, while enabling us to control the appliances in our home on the go. All of our devices and appliances are networked together to provide us with a seamless control over all aspects of our home and more. Home automation has been around from many decades in terms of lighting and simple appliance control, and only recently has technology caught up for the idea of the Interconnected world, allowing full control of our home from anywhere, to become a reality. With home automation, we dictate how a device should react, when it should react, and why it should react. Home automation is a necessity these days as it helps save up on power consumption, makes our homes more secure, provides a way to monitor our home when we are away, and makes our home secure in every way possible.

Rehabilitation engineering is the application of engineering sciences and technology to improve the quality of life for the people with disabilities. A device is designed for the physically challenged people to aid them in operating the home appliances individually. Gesture is defined as a motion of limbs or any other body part which is made to emphasize speech. It can also



STRENGTHENING THE EFFICIENCY OF AIRCRAFT BY HARVESTING THE AIR

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Abstract

This system strengthens the efficiency of aircraft by harvesting the slow moving air which is moving around the fuselage of the aircraft.

In this concept the slow moving air is being collected and harvested by making it to run through boundary layer fan which reduces the overall drag, if the drag is reduced ultimately the consumption of fuel will be reduced. Adding generators to the turboelectric fans can help to generate the power to drive the boundary layer fan. But, in the case of conventional aircraft the boundary layer is just a covering or a cocoon of the slow moving air around the fuselage of the aircraft. Though this does help to reduce friction, as it flows off the rear of the aircraft, the boundary layer breaks up into turbulence.

Thermal efficiency of the aircraft can be further improved by the method of regeneration.

The temperature of the exhaust gases from the turbine is usually higher than the temperature of the air leaving the compressor. The heat of the exhaust gases can thus be utilized to heat the air coming out from the compressor counter flow of heat exchanger, also known as heat regenerator or recuperator. This arrangement helps to reduce the heat supplied in the combustion chamber resulting in improving the thermal efficiency of the cycle.

Keywords: Boundary layer ingesting (BLI), recuperator, infinitesimal fluid volume, thermal efficiency, turboelectric engine.

I. INTRODUCTION

An aircraft is a machine that is able to fly by gaining support from the air. It counters the force of gravity by using either static lift or by using the dynamic lift of an air foil, or in a few cases the downward thrust from jet engines.

Propulsion is a means of creating force leading to movement. The term is derived from two Latin words: pro, meaning before or forward; and pellere, meaning to drive. A propulsion system consists of a source of mechanical power, and a propulsor (means of converting this power into propulsive force).

The main aim of this system is to improve the aircraft efficiency by making use of the slow moving air near the aircraft fuselage with the use of some special instalments.

The turbofan engine is an air breathing jet engine, usually used in aircraft. It consists of a gas turbine with a propelling nozzle. The gas turbine has an air inlet, a compressor, a combustion chamber, and a turbine (that drives the compressor). The compressed air from the compressor is heated by the fuel in the combustion chamber and then allowed to expand through the turbine. The turbine exhaust is then expanded in the propelling nozzle where it is accelerated to high speed to provide thrust. These turbofans engines which is mounted on the bottom of the wings, pulls the air and accelerates it to produce thrust.

The slow moving air near the aircraft fuselage is called the boundary layer. The fan ingests and accelerates the boundary layer air, producing thrust. The slow moving air is sent to the boundary layer fan, BLI works because the

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POWER THEFT PREVENTION SYSTEM USING IOT

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Abstract

These days with emerging developments in all sectors and growing demands, electricity has become priority for every individual and every organization. The basic procedure for power supply includes power generation, power transmission and power distribution to the destinations. Naturally owing to few technical faults, losses may occur due to power dissipation by some devices. These losses can be minimized using the fast developing technology, but what about the other kind of losses? These are the losses caused deliberately by human beings for the sake of illegal access to the power distribution. This is power theft. In developing countries like India, power theft is one of the most prevalent issues which not only cause economic losses but also irregular supply of electricity. It hampers functioning of industries and factories, due to shortage of power supplied to them. It causes shortage of power supply to homes. It leads to loss of revenue by Government as individual enterprises may opt to install their own power generators, increases corruption in form of bribes and many more. Ultimately it is the country's economy which suffers along with the country's political reputation.

In this paper a simple design for single phase power theft identification and alert system is proposed which employs real time comparison method to compare the current (I_1) at incoming side of the energy meter with that of the load side (I_2), if both the I_1 and I_2 are same it is considered that there is no power theft occurred, if I_1 is greater than I_2 then it is considered as power theft has been occurred which is immediately intimated to the Electricity Board via Internet in Real time. On getting the notification on

smartphone the electricity board personal can disconnect the load remotely.

Index Terms: power theft, incoming side, outgoing side, controller, wifi adapter, sensors.

I. INTRODUCTION

The transmission as well as distribution of electricity induces the large amount of loss of power. The quantity of this loss is rising day by day due to it the power authorities are facing losses in their profits a new method to identify the fraud customers is proposed.

There is a huge demand for electricity and there is always a mismatch between supply and demand. Satisfactory operation of power systems requires overall coordination of all the power system components. Attention and focus are given for generating power using both renewable and conventional sources of energy. But the transmission of power also plays a vital role in conveying power with minimal loss to the consumers. Hence proper maintenance of transmission as well as distribution network is mandatory for efficient and effective distribution of power. Though the losses associated with generation can be exactly formulated, there is no proper and precise quantification of transmission and distribution losses. Many parameters are involved and hence more data is required in addition to the sending end data. Also it is not only the technical parameters that influence transmission and distribution losses, but also the non-technical parameters. Power theft is one such parameter in developing countries. In India, the power theft is highly significant and it is approximately 420MW accounting to heavy revenue loss to power utilities.

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