Criteria 3: Research, Innovations and Extension

Key Indicator – 3.3 Research Publications and Awards

3.3.4 Number of research papers per teacher in the Journals notified on UGC website during the last five years (10)

Index

Sr. No.	A.Y	Computer Engineering	E&TC Engineering	Mechanical Engineering	Civil Engineering	Total Count
1	2017-18	07	14	04	07	32
2	2016-17	07	08	17	07	39
3	2015-16	02	27	18	06	53
4	2014-15	05	18	06	03	33
5	2013-14	04	14	02	03	23

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Criteria 3: Research, Innovations and Extension

Key Indicator – 3.3 Research Publications and Awards

3.3.4 Number of research papers per teacher in the Journals notified on UGC website during the A.Y.-2015-16

Index

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISBN/ISSN number
Grading Of Soyabean Leaf Disease Based On Segmented Image Using K-Means Clustering	Dr.Prof. S. B. Patil	E&TC Engineering	IAES International Journal of Artificial Intelligence (IJ-AI)	2015-16	ISSN: 2252-8938
Feasibility of Using Various Fruit Seeds Oil As A Source of Bio Diesel	Prof. S. K. Pawar	Mechanical Engineering	International Journal of Scientific Progress and Research	2015-16	ISSN:2349-4689
Analysis of Various Exploiting Modification Direction Techniques of Image Steganography: A Review Paper	Prof. S. I. Nipanikar	E&TC Engineering	International Journal of Research in electronics and Computer Engineering (IJRECE)	2015-16	ISSN:2348-2281 ISSN(E): 2321-3159
Study analysis of embedded web server for boiler parameters	Prof. S. I. Nipanikar	E&TC Engineering	International Journal of Advanced Research in Electronics and Communication Engineering	2015-16	ISSN: 2278 – 909X

FPGA Implementation of Image Fusion Using DWT for Remote Sensing Application	Prof. S. I. Nipanikar	E&TC Engineering	International Journal of Current Engineering and Scientific Research (IJCESR)	2015-16	ISSN (PRINT): 2393-8374, (ONLINE): 2394-0697
Embedded Web Server Based Industrial Automation for Boiler System	Prof. S. I. Nipanikar	E&TC Engineering	International Journal of Current Engineering and Scientific Research (IJCESR)	2015-16	ISSN:2393-8374
Implementation of Image Fusion Techniques for Remote Sensing Application	Prof. S. I. Nipanikar	E&TC Engineering	International Journal of Emerging Technology and Advanced Engineering	2015-16	ISSN :2250-2459
Implementation of Exploiting Modification Direction (EMD) - A Steganography Technique Using Raspberry Pi	Prof. S. I. Nipanikar	E&TC Engineering	International Journal of Current Engineering and Scientific Research (IJCESR)	2015-16	ISSN:2393-8374
Comparative Evaluations Of Surface Roughness And Cutting Forces During Hard Turning Under Dry And Compressed Air Cooling Medium	Prof. Suryakant Thorbole	Mechanical Engineering	International Journal Of Engineering Sciences & Research Technology	2015-16	ISSN:2277-9655
Design, Development, & Optimization of Hydraulic Press	Prof. D. A. More	Mechanical Engineering	International Journal of for Research in applied Science and Engineering Technology	2015-16	ISSN:2321-9653
Comparative study of free fatty acid composition and physico chemical properties of biodiesel produced from various non edible oil seeds	Prof. S. K. Pawar	Mechanical Engineering	International Journal of Science and Research	2015-16	ISSN(Online) :2319-7064

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Grading of Soybean Leaf Disease Based on Segmented Image Using K-means Clustering

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ABSTRACT

Traditional method used for disease scoring scale to grade the plant diseases is mainly based on neckaed eye observation by agriculture expert or plant pathlogiest. In this method percentage scale was exclusively used to define different disease severities in an illustrated series of disease assessment keys for field crops.The assessment of plant leaf diseases using this aaproach which may be subjective, time consuming and cost effective.Also aacurate grading of leaf diseases is essential to the determination of pest control measures. In order to improve this process, here we propose a technique for automatically quantifying the damaged leaf area using k means clustering, which uses square Euclidian distances method for partition of leaf image.For grading of soybean leaf disese which appear on leaves based on segmented diseased region are done automatically by estiamting thae ratio of the unit pixel expressed under diseased region area and unit pixel expressed under Leaf region area.For experiment purpose samples of Bacterial Leaf Blight Septoria Brown spot, Bean Pod Mottle Virus infected soybean leaf images were taken for analysis.Finally estiamated diseased severity and its grading is compared with manual scoring based on conventional illustrated key diagram was conducted. Comparative assessment results showed a good agreement between the numbers of percentage scale grading obtained by manual scoring and by image analysis The result shows that the proposed method is precise and reliable than visual evaluation performed by patahlogiest.

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1. INTRODUCTION

Soybean Leaf diseases like Bacterial Leaf Blight, Septoria Brown Spot, and Bean Leaf pod Mottlle are cause significant reduction in yield loss and lead to affect quality of soybean Products [1], thus influence economy and farmers life. An effective way to control soybean foliar diseases is by applying fungicides.To test the method for disease assessment, black and white drawings from a manual of disease assessment keys showing foliar diseases with different disease severities [2].Although there is an industrial recognized corresponding standard to grade the leaf spot disease [4-7], the naked eye observation method is mainly adopted in the production practice.Because of the difference of personal knowledge and practical experience; the same samples are classified into different grades by different experts. Therefore, the result is usually subjective and it is impossible to measure the disease extent precisely. Although grid paper method can be used to improve the accuracy, it is seldom used in practice due to cumbersome operation process and time-consuming. Therefore looking for a fast and accurate method to measure plant disease severity is of great realistic significance. Since the late 1970s, computer image processing technology is applied in the

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Feasibility of Using Various Fruit Seeds Oil As A Source of Biodiesel

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Abstract *- Energy is the critical input factor for the socioeconomic development and welfare of human being of any country. Fossil fuels are the major sources for the energy demand since their exploration. Due to limited reserves of fossil fuels, environmental degradation, and volatility in fuel prices, there is a growing need for energy security and protection of the environment. Country like India with an agricultural background has wasteland of about 55.27 million hectares, which can be utilized for growing plants/crops, which produce nonedible oil in appreciable quantity. Thus indigenously produced biodiesel, which is defined as the mono-alkyl ester of vegetable oils or animal fats, obtained by transesterifying oil or fat with an alcohol, is considered one of the options to substitute the petroleum fuels. Various fruit seeds containing large amount of oil in their seeds such as Mango, Custard Apple, Papaya, Cucurbita Pepo, Luffa Cylindrica, Cucumis Melo can be used for biodiesel production.*

Keywords *- Fruit seeds, transesterification, Biodiesel, Ethyl ester.*

I. INTRODUCTION

Biofuels have become one of the major solutions to issues of sustainable development, energy security and a reduction of greenhouse gas emissions. Biodiesel, an environmental friendly diesel fuel similar to petro-diesel in combustion properties, has received considerable attention in the recent past worldwide, Biodiesel is a methyl or ethyl ester made from renewable biological resources such as vegetable oils (both edible and nonedible), recycled waste vegetable oil and animal fats. The use of vegetable oils as alternative fuels has been in existence long ago but was set aside due to the availability of petroleum products which appears to be cheaper.[10]

Biodiesel is now recognized as an alternative because it has several advantages over conventional diesel. It is safe, renewable and non-toxic. It contains less sulphur compounds and has a high flash point (>130°C). It is almost neutral with regards to carbon dioxide emissions, and emits 80% fewer hydrocarbons and ~50% less particles. It enjoys a positive social impact, by enhancing rural revitalization. It is the only alternative fuel currently available that has an overall positive lifecycle energy balance.

II. OIL EXTRACTION PROCESS

Various techniques such as mechanical extraction, solvent extraction, traditional extraction and super critical fluid extraction are used to obtain the oil from the seeds. The solvent extraction has become the most popular method of extraction of oil because of its high percentage of oil recovery from seeds. Solvent extraction bridges the gap between mechanical extraction which produces oil with high turbidity metal and water content and supercritical fluid extraction which is very expensive to build and maintain its facilities. Temperature is increased for oilseeds after pre-treatments such as cracking, dehulling and milling by heating, roasting and steaming of oilseeds prior to extraction and is termed thermal treatment of oilseeds.[2] Better extraction is achieved by heating, which reduces the oil viscosity and released oil from intact cells, and also reduces moisture in the cells. Temperature plays an active role in the seed treatment for mechanical extraction and ensures an effective solvent process by heating the solvent which hastens the extraction process. At the right temperature and moisture content, the individual oil droplets unite to form a continuous phase and flow out maximizing oil yield. Solvent extraction is the use of chemicals as solvents in the extraction of oil from oilseeds. Solvent extraction is known for its high yielding oil output, ease and swiftness to carry out: relatively cost effective, high overhead cost, and hazardous effects during and after operations. The use of this method requires a complete refining process to ensure traces of the solvents to be removed totally. Solvent extraction of cleaned, cracked, dehulled and conditioned flakes with hexane is commercially practiced to extract oil.

III. BIODIESEL PRODUCTION

Generally two stage transesterification process is used for the production of biodiesel. This process consists of a sequence of three consecutive reversible reaction i.e. conversion of triglycerides to diglycerides followed by diglycerides to monoglyceride. The glycerides were converted into glycerol and one ester molecule at each step. If the oil contains more than 4% free fatty acids (FFA), then a two step transesterification is applicable to convert the high FFA oils to its mono esters. The first step, the acid

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Analysis of Various Exploiting Modification Direction Techniques of Image Steganography: A Review Paper

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Abstract— Exploiting Modification Direction (EMD) is a spatial domain image steganography technique to conceal secret data into digital images. In this paper, different types of EMD methods are explained. The important idea behind EMD is to embed the secret data with minimum loss of carrier image. This method provides high embedding efficiency when compared to other techniques. This paper gives the brief idea of different EMD techniques and their comparison.

Keywords - *Steganography, Exploiting Modification Direction (EMD), Stego image.*

I. INTRODUCTION

Now a day, internet is the key part of human's day to day life. Since for various kinds of transactions internet is a key element day by day its usage is increasing. Generally, with the help of internet, we can send various kinds of digital messages or information. Although internet provides ease of communication and low cost way there are many kinds of dangers hidden behind its advantages. For ex. secret information can be leaked, changed or being used on any unauthorized cases by hackers during data communication from transmitter to receiver. Thus, there is a necessity to avoid all the kind of unknown third party interference with the system. For this reason, a method is developed known as data hiding. Basically, it deals with hiding of secret message inside the cover image so that no one has any idea about hidden secret message. Such image is called as stego image. Later this stego image is successfully transmitted to its desired recipients where secret data is taken out from the stego image. This method is known as steganography.

Up till now, different data hiding methods were proposed and generally maximum data hiding methods are using LSB (least significant bites) position to conceal the confidential data. Means first confidential information is converted into binary format then it is replaced by least bit. [1, 2, 3].

EMD is a steganographic embedding method [4] used for digital images in which n cover pixels carries each secret digit in (2n+1) ary notational system. Here, only one cover pixel is either increased or decreased by 1 or remain same. In general, there are 2n possible ways of alteration for each group of n cover pixel. These 2n ways of modification and one case in which no pixel is changed form (2n + 1) different values of a secret digit. Since the direction of modification of cover pixel is fully exploited here thus this method is called EMD which achieves high embedding efficiency as compared to other techniques.

Various types of EMD methods are also developed which are given in this paper. This paper is arranged as follows: In section II, concepts behind EMD technique has been discussed. Various types of EMD schemes have been explained and compared in section III. In section IV, the overall paper is concluded.

II. CONCEPT BEHIND EMD

The basic EMD method was proposed by Zhang and Wang [4] which is having highest embedding efficiency and embedding rate than matrix encoding and run length encoding. In this method, binary confidential data is converted into secret digit (d) in (2n+1) ary notational system in such a way that one secret digit is carried by n pixels. Thus, secret message is first converted into secret digits in (2n+1)-ary notational system and then each secret digit are embedded into pixel group ($g_1, g_2 \ldots g_n$). To embed secret digit (d) into pixel group, value of extraction function f_e is calculated by using:

$$fe\,(g_1,g_2,\ldots.g_n) = (g_1*1+g_2*2+\ldots.+g_n*n) \bmod (2n+1)$$

If $f_e \neq d$, then only one of the pixels from the pixel group has to be incremented or decremented by one. If $f_e = d$, then there is no need to change any pixel and the process continues until no secret digit is remaining.

For extraction of the secret data, same equation is used for each pixel group ($g_1,g_2,\ldots\ldots,g_n$) to track the secret digits. Then all the secret digits are converted back into binary format from (2n+1)-ary notation to find out the secret message.

But the disadvantage of this method is that it is having less embedding capacity and more processing time. Since message needs to be converted into another format.

III. VARIOUS TYPES OF EMD TECHNIQUES

EMD scheme proposed by Zhang and Wang [4] give high embedding efficiency and also its PSNR value is above 50, but its disadvantage is that it hides only one secret digit in each n pixel group. Thus for improving embedding capacity various improved EMD techniques were proposed. Few of them are described below:

A. Data Hiding By EMD Technique Using Optimal Pixel Grouping

The optimized EMD method was proposed by analyzing the relationship between n and payload by Lin et al [6] in 2010 having high PSNR value than OPAP and LSB method

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STUDY ANALYSIS OF EMBEDDED WEB SERVER FOR BOILER PARAMETERS

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Abstract – This paper presents a design of new industrial automation system that uses embedded web server technology which can be used to communicate with the system remotely. It introduces design of Embedded Web server based on ARM 7 processor and Ethernet controller. It is better to use embedded web server rather than PC as a server due to small size, low cost and less power consumption. This Embedded Web server can be used in various applications like industrial, agriculture and home automation. This paper proposes a review on remote monitoring and control of boiler plant parameters. Users and admin can locally (LAN) or remotely (internet) manage and control system by entering correct ip address in the browser with correct password.

Key Words– Embedded Webserver, ARM 7, Ethernet controller.

I. INTRODUCTION

Our daily life has become so much dependent on automation that it is difficult to imagine life without automation. Environmental protection engineering, agriculture, industrial and medical engineering are some of the areas where automation is playing important role. In the past, automation engineering was mainly thought as control engineering with a number of electrical and electronic components. This phenomenon has been changed since computers and software have made their way into each component and element of communication and automation. Data acquisition systems with remote access are much in need in industrial sector and consumer applications. With the ability to access the application remotely, one can avoid the need to send a person to the application and thus save money and labor time. A web server provides access to the end devices for the client by uploading web pages as per the requests of the client. When the configured IP address is entered in the web browser, the designed HTML web pages gets displayed through which the client can remotely monitor the sensor status and control the parameters. ARM7 processor is the main controller of the system, ARM Processor is chosen because ARM has high data processing capability. Boiler parameters such as temperature, pressure, water level and gas leakage are used in this system which can be monitored through the predesigned web pages.

II. LITERATURE REVIEW STAGE

A deep and profound literature survey is backbone of any successful project. Extensively search has been carried out for past and related work in this field. Internet tool is used as source of information for carrying out this literature survey.

(1) "Embedded Web Server for Home Appliances", IJERA, Mar'12 by Mr. Abhishek Vichare and Ms. Shilpa Verma:
Main aim of this paper is to describe how to connect a micro- controller to LAN or Internet and use it as a web server. This paper offers a new approach to control home appliances from a remote terminal, with an option from a local server, using the Internet. The system is designed to control home appliances' on/off, to regulate their output power, and to set their usage timing. The microcontroller which is used in this project is the Philips P89C51RD2BN microcontroller.

(2) "ARM Embedded Web Server Based on DAC System", 2011 IEEE by M Poongothai:
This paper describes the principles to design a system for Internet-based data-acquisition system and control by using Advanced RISC Machine (ARM7/9) processor and in-build web server application with General Packet Radio Service (GPRS) technology. The main core of the system is an embedded hardware running on a NUT OS, an industrial grade RTOS for hard time applications.

(3) "Design and Implementation of an Embedded Webserver Based on ARM", 2010 IEEE by Mo Guan and Minghai Gu:

FPGA IMPLEMENTATION OF IMAGE FUSION USING DWT FOR REMOTE SENSING APPLICATION

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Abstract— Earth observation satellites provide different portion of multisensory data at different resolutions. The fusion of multisensory image data has become a useful tool in remote sensing application. The DWT based image fusion approach has many fusion rules such as maximum, minimum, average. In this paper, we propose the best image fusion approach base on DWT with maximum fusion rule and hardware implementation for DWT maximum fusion rule using Xilinx System Generator (XSG) is demonstrated on FPGA. FPGA board used here is Spartan6 sp601.

Index Terms— Image fusion, DWT, Simulink, Xilinx System Generator (XSG), Hardware Co-Simulation

I. INTRODUCTION

Recently, the image fusion has great importance in digital image processing. Image fusion is a data fusion technology which keeps images as main research contents. The main goal of image fusion is to integrate complementary multisensory, multi-temporal and multi-view information into one new image which is more informative than any of the input images. The multisensory data in the field of remote sensing, medical imaging may have multiple images of the same scene providing different information. In a single image not contains all the information of objects in the image. Image fusion is used to achieve more information contents. Image fusion is the process of combining complementary information from multiple images into a single image which includes more information than any of the input images. Image fusion has widely used in remotely sensed image analysis at pixel, feature, and decision level. Images used for fusion can be taken form multimodal imaging sensors or from the same imaging sensor at different times [1].

The infrared & visible image is part of multisource data fusion for acquiring complementary information toward the formation of high performance perception system. Those images are captured by IR & Visible sensor provide different & complementary information through the fusion of these images are required to get maximum information than original one with the characteristics of information rich and easy to identify.

Image fusion is mainly divided into different levels. In this paper only used the pixel-level fusion. Pixel level image fusion method has various methods such as weighted average, Principal Component Analysis (PCA), Discrete Cosine Transform (DCT), Discrete Wavelet Transform (DWT) and Stationary Wavelet Transform (SWT). The DWT `method has important in an image fusion method for its excellent feature & time frequency analysis. Wavelet transform fusion is defined as considering the wavelet transforms of two registered input images together with the fusion rule. The fused image is reconstructed by taking inverse wavelet transform.

EMBEDDED WEB SERVER BASED INDUSTRIAL AUTOMATION FOR BOILER SYSTEM

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Abstract – **This paper presents a design and prototype implementation of new industrial automation system that uses embedded web server technology which can be used to communicate with the system remotely. It introduces design of Embedded WEB server based on ARM 7 processor and Ethernet controller chip. In various internet application based on client/server architecture, it is better to use embedded web server rather than PC server for decreasing size, cost and power consumption. This Embedded WEB server can be used in various applications like industrial, agriculture and home automation. This paper proposes a review on remote monitoring and control of boiler plant parameters. The proposed system consists of two main components; the first part is the server (web server), which presents system core that manages, controls, and monitors industrial plant. Users and system administrator can locally (LAN) or remotely (internet) manages and control system by entering correct password.**

Index Terms – **Embedded Webserver, ARM 7, Ethernet controller**

I. INTRODUCTION

Society in its daily life has become so dependent on automation that it is difficult to imagine life without automation engineering. Trade, environmental protection engineering, agriculture, building engineering, and medical engineering are some of the areas where automation is playing a prominent role. In the past, automation engineering was mainly understood as control engineering dealing with a number of electrical and electronic components. This picture has changed since computers and software have made their way into every component and element of communications and automation. Data acquisition systems with remote accessibility are in great demand in industry and consumer applications. With the ability to access the application remotely, corporation can eliminate the need to send a service person to the application and thus save the labor time and money. A web server provides access to the end devices for the client by uploading web pages as per the client request. When the configured IP address is enter in the web browser, the predesigned HTML web pages gets displayed through which the client can remotely monitored the sensor status respectively. ARM7 processor is the main controller of web server, ARM Processor is chosen because ARM has high data processing capability.

II. LITERATURE REVIEW STAGE

A deep and profound literature survey is backbone of any successful project. Extensively search has been carried out for past and related work in this field. Internet tool is used as source of information for carrying out this literature survey.

(1) "Embedded Web Server for Home Appliances", IJERA, Mar'12 by Mr. Abhishek Vichare and Ms. Shilpa Verma:

Main aim of this paper is to describe how to connect a micro- controller to LAN or Internet and use it as a web server. This paper offers a new approach to control home appliances from a remote terminal, with an option from a local server, using the Internet. The system is designed to control home appliances' on/off, to regulate their output power, and to set their

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Implementation of Image Fusion Techniques for Remote Sensing Application

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***Abstract*— in remote sensing; there are many applications that simultaneously require the high spatial and high spectral resolution from multisensory images. Image fusion is required to combining relevant information from two or more images into a single image which is more informative than any of the input images. In this paper, we propose an image fusion approach based on Discrete Cosine Transform (DCT), Discrete Wavelet Transform (DWT) & Stationary Wavelet Transform (SWT) and the hardware implementation of fused image using Discrete Wavelet Transform on FPGA platform and their comparative analysis with the help of parameter evaluation for various test images.**

***Keywords*— Discrete Cosine Transform (DCT), Discrete Wavelet Transform (DWT), Fusion, Multi-Sensor, Stationary Wavelet transforms (SWT).**

I. INTRODUCTION

Recently, the image fusion has great importance in digital image processing. Image fusion is a data fusion technology which keeps images as main research contents. The main goal of image fusion is to integrate complementary multisensory, multi-temporal and multi-view information into one new image which is more informative than any of the input images. The multisensory data in the field of remote sensing, medical imaging may have multiple images of the same scene providing different information. It is not possible to have a single image that contains all the information of objects in the image. To achieve this, image fusion is required. Image fusion is the process of combining relevant information from two or more images into a single image which is more informative than any of the input images. Data fusion has been widely used in remotely sensed image analysis at pixel, feature, and decision level. Images used for fusion can be taken form multimodal imaging sensors or from the same imaging sensor at different times [1].

The IR images contain information that is not the same as in the visible range images. The IR reflectance of objects may be different than for the visible light.

Foliage is often much more intensive in IR images and some semitransparent objects may become transparent in IR wavelengths and vice versa. One possible solution comes from the field of data fusion of these images with different contents could be utilized to enhance image quality of object if suitable cameras are available. A number of methods have been proposed for merging infrared images with visible spectrum images concentrate heavily on the surveillance and remote sensing applications [10]. Fusion methods can be broadly classified into two that is spatial and transform domain fusion. But spatial domain methods such as Averaging, Brovery, and Principle Component Analysis (PCA) based methods produce spectral distortion in the fused image. This is particularly crucial in remote sensing if images to merge were not taken at the same time. In the last few years, multi-resolution analysis has become one of the most promising methods for the analysis of images in remote sensing. Recently proposed new approach to image merging that uses a multi-resolution analysis procedure based upon wavelet transform. The DWT and SWT based method will be more efficient for fusion. Stationary Wavelet Transform (SWT) is similar to Discrete Wavelet Transform (DWT) but the only process of down-sampling is suppressed that means the SWT is translation-invariant [2]. But the image fusion algorithm based on DWT is faster developed image fusion method in recent decade. Discrete Wavelet Transform has good time frequency characteristics. DWT is defined as considering the wavelet transform of the two registered input images (Infrared and Visible) together with the fusion rule. Then, the inverse wavelet transform is computed, and the fused image is reconstructed.

II. IMAGE FUSION

The general image fusion process is to perform a multi-scale transform (MST) on each source image, then construct a composite multi-scale representation from these according to some specific fusion rules as shown in Fig.1

IMPLEMENTATION OF EXPLOITING MODIFICATION DIRECTION (EMD) - A STEGANOGRAPHY TECHNIQUE USING RASPBERRY PI

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Abstract **– Exploiting Modification Direction (EMD) is a spatial domain image steganography technique to conceal secret data into digital images. In this paper, basic EMD method is explained and also two level method is explained. From results it can be seen that two level EMD is having twice the embedding rate than basic EMD by compromising stego image quality. It can also be seen that two level EMD provides more security than basic EMD. Later raspberry pi –a general purpose hardware module is used to implement extraction algorithm of two level EMD.**

Index Terms **- Exploiting Modification Direction (EMD), Steganography, Stego image**

I. INTRODUCTION

Now a day, internet is the key part of human's day to day life. Since for various kinds of transactions internet is a key element day by day its usage is increasing. Generally, with the help of internet, we can send various kinds of digital messages or information. Although internet provides ease of communication and low cost way there are many kinds of dangers hidden behind its advantages. For ex. secret information can be leaked, changed or being used on any unauthorized cases by hackers during data communication from transmitter to receiver. Thus, there is a necessity to avoid all the kind of unknown third party interference with the system. For this reason, a method is developed known as data hiding. Basically, it deals with hiding of secret message inside the cover image so that no one has any idea about hidden secret message. Such image is called as stego image. Later this stego image is successfully transmitted to its desired recipients where secret data is taken out from the stego image. This method is known as steganography.

Up till now, different data hiding methods were proposed and generally maximum data hiding methods are using LSB (least significant bites) position to conceal the confidential data. Means first confidential information is converted into binary format then it is replaced by least bit. [1, 2, 3]

EMD is a steganographic embedding method [5] used for digital images in which n cover pixels carries each secret digit in (2n+1) ary notational system. Here, only one cover pixel is either increased or decreased by 1 or remain same. In general, there are 2n possible ways of alteration for each group of n cover pixel. These 2n ways of modification and one case in which no pixel is changed form (2n + 1) different values of a secret digit. Since the direction of modification of cover pixel is fully exploited here thus this method is called EMD which achieves high embedding efficiency as compared to other techniques.

Low embedding rate is one of the disadvantages of basic EMD. So it is possible to overcome it with the use of two level EMD [6] in which each pixel group can successfully carries two secret digits. To implement this two level embedding strategy is used. For first level embedding ,first secret digit is embedded into

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COMPARATIVE EVALUATIONS OF SURFACE ROUGHNESS AND CUTTING FORCES DURING HARD TURNING UNDER DRY AND COMPRESSED AIR COOLING MEDIUM

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ABSTRACT

In this present work, an experimental investigation through mathematical modelling was carried out to study the effects of different cooling mediums and cutting parameters on surface roughness and cutting forces, during the hardturning of hardened AISI 52100 steel (60±2) HRC. Experiments were performed using PCBN insert under dry and compressed air cooling medium. Experimental observations indicates that hard turning under compressed air cooled condition produced lower values of surface roughness and cutting forces. However, there is no significant effect of cutting speed on the surface roughness. Compressed air lubrication have proved to be more productive with better surface finish and reduced cutting forces. It has been observed that surface roughness gets affected mostly by feed and not by depth of cut. Cutting forces changing randomly as per change in cutting speed.

KEYWORDS: RSM, PCBN, Hard Turning, Cutting forces, Surface roughness

INTRODUCTION

In recent years, with continuous development in cutting tool materials and cutting tool technology, it has become possible to machine harder materials having hardness up to 65HRC. Now a day's machining of hard turning is an interesting subject in industry and research. Hardened steels are mostly utilized in automobile, die gear, bearing industries. Therefore advanced technologies required for machining of hardened steel with higher material removal rate (MRR). Hard turning is conducted on materials with hardness with the range of 45-65 using different types of cutting tools such as coated carbide inserts, CBN, coated CBN insert and PCBN[1].

Even though grinding is producing good surface finish research on hard turning indicates that, it minimises the machining time up to 65 times for conventional turning. From literature survey it is high speed, low feed and low depth of cut finishing process. In present study cutting speed, feed and depth of cut as indicated in the following table 1. PCBN inserts are more suitable for this type of operation, because of high hardness, wear resistance and chemical stability [1]

Table 1: machining process parameters used in experimentation

Parameters	Levels				
	-1.66	-1	0	+1	+1.66
Cutting speed (m/min)	100	125	150	175	200
Feed rate (mm/rev)	0.1	0.15	0.2	0.25	0.3
Depth of cut (mm)	0.1	0.2	0.3	0.4	0.5

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Design, Development and Optimization of Hydraulic Press

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Abstract *— A hydraulic press is a machine using a hydraulic cylinder to generate a compressive force. Frame, hydraulic cylinder and press table are the main components of the hydraulic press. In this project press frame, cylinder and press table are designed by the design procedure. They are analyzed to improve their performance and quality for press working operation. Using the optimum resources possible in designing the hydraulic press components can effect reduction in the cost by optimizing the weight of material utilized for building the structure. An attempt has been made in this direction to reduce the volume of material. So in this paper we consider an industrial application project consisting of mass minimization of H frame type hydraulic press. This press has to compensate the forces acting on the working plates and has to fulfill certain critical constraints. Here we use FEA implementation for analysis and optimization of hydraulic press.*

Keywords *— Hydraulic press, Frame Structure, FEA, Optimization, Stress Analysis.*

I. INTRODUCTION

Presses are one of the most commonly used machine tools in industry for the forming of different materials. In the past, for the pressing tasks in industry, mechanical presses were more frequently used, but nowadays hydraulic presses take precedence due to their numerous advantages, such as: full force throughout the stroke, moving parts that operate with good lubrication, stroke that can be fully adjustable which contributes to the flexibility of application, built in overload protection, can be made for very large force capacities, silent operation and more compact. Hence a hydraulic press is a machine that makes use of the pressure exerted on the fluids to crush, straighten or mould. The concept of the hydraulic press is based on Pascal's theory, which states that when pressure is applied on fluids in an enclosed system, the pressure throughout the system always remains constant. In hydraulic press, the force generation, transmission and amplification are achieved using fluid under pressure. The liquid system exhibits the characteristics of a solid and provides a very positive and rigid medium of power transmission and amplification. In a simple application, a smaller piston transfers fluid under high pressure to a cylinder having a larger piston area, thus amplifying the force. There is easy transmissibility of large amount of energy with practically unlimited force amplification. This paper describes design, development and manufacturing of multi-purpose H-frame hydraulic press. For mass minimization, we use standard steel sections instead of plates. Due to this, the fabrication of hydraulic press frame also becomes simple. ANSYS has been used for the analysis; the main aim is to reduce the weight of the hydraulic press without compromising on the quality of the output. This particular press is used for a variety of tasks from doing mechanical work to straightening or intentionally bending structural components. It is also used to take force related measurements such as spring rates of coil and leaf springs.

II. DESIGN

The principal parameters of the design included the maximum load (200 kN), the distance the load resistance has to move (stroke length, 500 mm), the system pressure (250 bar), the cylinder area (bore diameter = 100 mm) and the volume flow rate of the working fluid. The critical components that require design includes the frame, the hydraulic cylinder and the press table.

A. Design of Press Frame

Machine frame is the most important part of the machine. It transfers all the forces that are produced during working of machine to the ground. It provides strength and stability to the machine during operation. The size and shape of machine structure should be such that it not only provides safe operation but also working stress and deformation do not exceed specific limit. Before designing the frame structure all the DFMA, Ergonomics constraints should be well understood.

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Comparative Study of Free Fatty Acid Composition and Physico Chemical Properties of Biodiesel Produced from Various Non Edible Oil Seeds

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Abstract: *Due to recent petroleum crisis and unavailability of petroleum diesel the demand for petroleum diesel is increasing day by day hence there is a need to find out an appropriate solution. Bio fuels are being given serious consideration as potential sources of energy in the future. Biodiesel is a clean burning alternate fuel, produced from both edible and non-edible oil seeds. It can be used in compression-ignition engines with little or no modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics. It can be stored just like petroleum diesel fuel. The use of biodiesel in conventional diesel engines results in substantial reduction of unburnt hydrocarbons, carbon monoxide and particulate matters. Its higher cetane number improves the ignition quality even when blended in petroleum diesel. Various nonedible plants in their seeds contain 30% or more oil. Studies have been undertaken to compare free fatty acid composition and physico chemical properties of biodiesel produced from various nonedible oil seeds such as jatropha, karanja, mahua, rubber, castor, neem etc.*

Keywords: Non-edible oil seeds, Diesel, Biodiesel

1. Introduction

The energy demand of Indian industry is increasing due to growing economic activities. Therefore India is focusing on development of renewable fuels. Biodiesel, an alternative renewable fuel made from transesterification of vegetable oil with alcohol & is becoming more readily available for use in blends with conventional diesel fuel for transportation applications. A national mission on biodiesel has been proposed in India & specifications for diesel have been amended, to allow upto 10% blending of biodiesel in diesel. Biodiesel can be produced from edible as well as non-edible vegetable oil seeds. However India is not self sufficient in edible oils. Non-edible tree borne oilseeds (TBOs) are considered as the source of straight vegetable oil (SVO) and biodiesel. Plant species, which have 30% or more fixed oil in their seeds or kernel, have been identified. In order to explore additional oil resources, studies have been undertaken for screening of various tree borne oil seeds for their potential as biodiesel feed stock such as, Jatropha, Karanja, Castor, Mahua, Neem, Rubber etc.[1]

2. Oil Extraction Process

The seed kernels are to be ground, using mechanical grinder, and defatted in soxhlet apparatus. The extracted oil was obtained by filtering the solvent oil. The extracted oil is to be stored in freezer for subsequent physico chemical properties.[1] The seed oil is to be analyzed for oil content, acid value, Iodine value, Saponification value, Calorific value, kinematic viscosity, flash point, cloud point, fire point, density, cetane number etc. The disadvantages of vegetable oils as diesel fuel are;

- High viscosity
- Low volatility
- High density

This causes several problems during their long duration use in CI engines such as Injector coking and carbon deposits.

There are many ways and procedures to convert vegetable oil into a Diesel like fuel.

a. Pyrolisis
b. Micro emulsification
c. Dilution
d. Transesterification

3. Transesterification Process

The transesterification process was found to be the most viable process. Transesterified oils have proven to be a viable alternative diesel engine fuel with characteristics similar to those of Diesel fuel. Its physical and chemical properties required for operation of diesel engine are similar to petroleum based diesel fuel. Like petroleum diesel, biodiesel operates in compression-ignition engines. Transesterification is a chemical reaction that aims at substituting the glycerol of the glycerides with three molecules of monoalcohols such as Methanol thus leading to three molecules of methyl ester of vegetable oil. Methanol and ethanol is widely used in the transesterification. Methanol is used because of low cost, and physicochemical advantages with triglycerides and sodium hydroxide. The acid catalyst is the choice for transesterification when Low - grade vegetable oil used as raw material because it contains high free fatty acid (FFA) and moisture. Acid catalyst as sulphuric acid (H_2SO_4) is used for esterification process.[2]

For Textile Mills Design And Implementation Of LabVIEW Based SCADA

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Abstract— **In business quality is most important part. Lack of quality lack of customer satisfaction and is also cause loss of material which use for production .This problem also found in textile mills. In textile one major problem is maintenance for fabric producer or manufacturers. Currently in many small scale textile industries have manual or semi or unskilled worker and labors, so high level supervision required. so lack consistency in quality. Such like normal automation in textile mills are not be perfect. Therefore it is required to provide robust , effective , economical and reliable automation solution for such problem in industries. This paper addresses the need of industry automation for control machine in small scale textile factory. The project is present LabVIEW as a SCADA which act as centralized control.in this project PLC is solid state field controller to operate the stenter machine prototype, which widely use in textile factory. LabVIEW is provide HMI front end and graphical user interface. The PLC controller and LabVIEW SCADA are communicate with each other through RS-232 link. Labview software have efficient to cost and it's reliable solution for automation of small scale textile industries.**

Keywords—**Programmable Logic Controller (PLC), LabVIEW , SCADA , Stenter Machine , Printing Machine.**

1. INTRODUCTION

In India small scale textile industries make major profit own Indian government economy. The aim of all textile factory to make good quality product but many several reason it can't get give proper output. Large loss in this industries due to faulty fabric. At above 75% faulty fabric found in garment industry. This losses found due to irregular shrinking of cloths. The manual operating work in industries is not economical and work is very time consuming.[1]. A basic level control scheme through a defined logic and a visual experience is the main objective of this paper. At its level as it will provide the basic design guidelines for the one who wants to implement it on an industry level for this paper can be used[4]. The section 2 in this paper discusses literature servey, section 3 provides the existing system. The section 4 gives idea about proposed system.The section 5 discuss SCADA system. section 6 gives information about PLC as a controller.The section 7 gives information about LABVIEW software.The section 8 gives flowchart. section 9,10 gives the conclusion and references of project.

2. LITERATURE SURVEY

We survey about textile industry there have many problem about accuracy.So we select this project in which plc is use for control the operation and scada for supervision control.All plant control is seen in single PC by using labviwe software. In which also peripheral control is done .Plc is most better controller than microcontroller. Which have multiple operation control property.

3. EXISTING SYSTEM

The existing system is use in testile industry recent year. The faults found in the fabrics are around 80 - 85% the defects in the garment industry. These faults are obtained in the fabrics due to irregular stretching and shrinking of the cloth. The manual inspection of fabric material is not economical and work is very dull.

Fig 1. Existing system

Sensor Based Automatic Irrigation Management System

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***Abstract*—in the field of agriculture, use of proper method of irrigation plays an important role for the economy and development of a country. In the conventional irrigation system, the farmer has to keep watch on irrigation timetable, which is different for different crops. This work makes the irrigation automated. With the use of low cost sensors and the simple circuitry this work aims low cost product, which can be bought even by a poor farmer. This work is best suit for places where water is scarce and has to be used in limited quantity. Also, the third world countries can afford this simple and low cost solution for irrigation and obtain good yield on crops.PIC controller that is be used in this work. A 16×4 LCD is connected to the microcontroller, which displays the soil moistures level and switches are provided to set the limits of humidity for switching the individual solenoid valves controlling the water flow to the field. The humidity and temperature levels are transmitted at regular time interval to the LCD through a serial port for data display and analysis. The humidity sensors are constructed using aluminum sheets and housed in easily available materials. The aim is to use the readily available material to construct low cost sensors. Relays are controlled by the microcontroller through the high current driver IC and provided for controlling solenoid valves, which controls the flow of water to different parts of the field. Other relay is used to shut-off the main motor which is used to pump the water to the field. Performance of sensors in terms of energy consumption has also been analyzed.**

Keywords: **Automated irrigation system, WUE, sensors, PIC**

I. INTRODUCTION

II.

In Ethiopia, agriculture is one of the sectors that give profit to the economy of our country. Based on their motto, "agriculture is life for more than 85%",the government has invested more money to develop the technology in order to increase the productivity of agriculture. Saving water is most important issues in dry lands. It is also an important element for the plants to survive. Therefore, the humidity of the soil that determines the amount of water in soil must be checked regularly to prevent the plant from wilting otherwise in the worst case it might die. Besides, each species of the plant have its own characteristics. So, the consumption of water is different following their type. For example, cactus does not need a lot of water in order to survive. It just needs to be sprinkled once or twice of a week. To become part of the government effort on giving the new spirit to the agriculture sector, a system which monitors the humidity of the soil and temperature of the air will be developed so that the end user such as farmer, gardener and so on can use it to determine the exact time to sprinkle their plant. Keeping these facts in mind, we decided to tackle part of the problem by trying to improve the efficiency of water use in irrigation systems. Common methods of water distribution can be enhanced or replaced by using recent technological advances. I hope to use it to improve the efficiency of water distribution, to automate the process of irrigation management, to provide an easy to use programming and reporting interface, and to provide a scalable, versatile base from which to expand or modify if needed. One of the main drawbacks with the old fashioned farming system that is experienced by the farmers themselves is that they do not accommodate for changing environmental conditions. Temperature, wind, rainfall and other elements can dramatically affect the amount of water needed to sustain a plants health. If these elements were monitored and used to influence the watering cycles, then the water used should be more effective. Once the basic requirements of our work had been established (sensor driven, high automation), the lengthy process of deciding what hardware to use and what software should tie it all together was undertaken.

Eventually a microcontroller was chosen for the heart of the system. A microcontroller based solution meant that the system was more independent and hopefully more reliable, with cheaper running costs. Versatility was also a requirement of the design and as the controller is based on a PIC16F887 .Most of the sensors needed for the system could be have been cheaply produced using discrete components in conjunction with an analogue to digital converter, but in this case I used sensors in the irrigation system which incorporated the following: Soil moisture and humidity sensors, its serial port output meant it was able to send data directly to the controller for processing. Hopefully this work can show that automation in the area of irrigation can lead to water regularly & automatically to the crops/plants/gardens how much water it

Accelerometer Based Gesture controlled Robotic Car Using RF Transmitter and Receiver

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***Abstract*-In military, industries, construction vehicles in civil side, medical application for surgery, it is quite complicated to control the robot or particular machine with remote or switches, sometimes the operator may get confused in the switches and button itself, so a new concept is introduced to control the machine with the movement of hand which will simultaneously control the movement of robot. In today's world, in almost all sectors, most of the work is done by robots or robotic arm having different number of degree of freedoms (DOF's) as per the requirement. This paper presents an accelerometer based gesture controlled robotic car using RF transmitter and receiver. Gestures can be captured with the help of MEMS based an accelerometer. The accelerations of a hand in motion in three perpendicular directions are detected by an accelerometer respectively and transmitted to a receiver module via RF wireless protocol. This project analyzes the motion technology to capture gestures through an accelerometer and a RF module to control the kinetics of the robot.**

Keywords - Accelerometer, RF Modules, MEMS, DOF.

I. INTRODUCTION

Humans are anxiously working on finding new ways of interacting with machines. However, a major breakthrough was observed when gestures were used for this interaction. A gesture is a form of non-verbal communication in which visible bodily actions communicate particular messages. It comprises of sound, light variation or any type of body movement. Based upon the type of gestures, they have been captured via Acoustic (sound), Tactile (touch), Optical (light), Bionic and Motion Technologies through still camera, data glove, Bluetooth, infrared beams etc. Motion Technology has succeeded in drawing the attention of researchers from different parts of the world. Hand gestures are extensively used for Telerobotic control applications. Robotic systems can be controlled naturally and intuitively with such Telerobotic communication. A prominent benefit of such a system is that it presents a natural way to send geometrical information to the robot such as: left, right, etc. Robotic hand can be controlled remotely by hand gestures. In market many types of robot are available that are controlled by remote or cellphone or by direct wired connection. But limitations of these robots are that they can only perform those activities which are present in their programs. They don't have ability to sense the situation and react as per that and more over their cost are high even for low application activities. It should be self-activated robot which will be driving itself according to movements of user's hand. It does what user desires to do.

Vehicle Number Plate Recognition using Template Matching

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Abstract-The VNPR (Vehicle Number Plate Recognition) is a system designed to help in recognition of characters on number plates. This system is intended for the purpose of the security system. VNPR is an image processing technology which uses number (license) plate to identify the vehicle. Main aim is to design an efficient automatic number plate recognition system by using the vehicle number plate. This system used on gate entrance to identify the vehicles number plate. When a vehicle comes in front of gate, number plate is automatically recognized and stored in database. The system is implemented and simulated in Matlab. Thus the focus is on the design of algorithms. VNPR system extracted number plate region, segmented characters on number plate, Optical character recognition technique is used for the individual character recognition on number plate. The resulting data is then used to compare with the stored on a database.

Keywords **- Vehicle Number Plate Recognition (VNPR), Character segmentation, Optical Character Recognition (OCR), Template Matching.**

I. INTRODUCTION

Massive integration of information technologies into all features of present life caused demand for processing vehicles as theoretical assets in information systems. Because a separate information system without any data has no intelligence, there was also essential to transform information about vehicles between the certainty and information systems. This can be reached by a human agent, or by distinct quick equipment which is be able to recognize vehicles by their number plates in a real environment and reflect it into theoretical assets.

Also In the last few years, Intelligent Transportation Systems (ITSs) have had a inclusive effect in people's life as their scope is to progress transportation safety and flexibility and to improve productivity through the use of progressive technologies. In the area of present information technology , the use of mechanizations and intelligent systems is becoming more and more extensive.The Intelligent Transport System (ITS) technology has conventional so much attention that many systems are being established and useful completely done the world. Therefore Automatic Number Plate Recognition (ANPR) has turned out to be an important research issue. Because of this, numerous recognition methods have been developed.This development of a method by which can extract the number from number plate image taken is known automatic number plate recognition system. There may be additional changes over these (like matching the vehicle number plate with a specific database to track supposed vehicles etc.) but the basic construction remains the identical. A controlling parameter in this favor is country-specific transportation standards and ideals. This helps to well adjust the system i.e. number of characters in the vehicle number plate, text luminance level (relative index i.e. dark text on light background or light text on dark background) etc.

So the problem can then be narrowed down for application in a particular country. For example, in India the norm is printing the license plate numbers in black color on a white background for private vehicles and on a yellow background for commercial vehicles. The general format for the license plate is two letters (for state code) followed by district code, then a four digit code specific to a particular vehicle.

A robust process for number plate position, segmentation and recognition of the characters offered. The images of many vehicles have been developed manually and transformed in to gray-scale images. Then filter is used to remove noise existing in the number plates. The segmentation of binary image generated by finding edges using Sobel filter and then bwlabel is used to count the number of connected component. Finally, single character is detected.

Human Identification Method Using Iris Biometrics

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Abstract **- A biometric system provides automatic identification of an individual based on a unique feature or characteristic possessed by the individual. Iris recognition is regarded as the most reliable and accurate biometric identification system available. Most commercial iris recognition systems use patented algorithms developed by Daughman, and these algorithms are able to produce perfect recognition rates. First given image is converted into gray scale. The iris recognition system consists of an automatic segmentation system that is based on the Daugman integro differencial operator, and is able to localise the circular iris and pupil region, and reflections are removed by using simple morphological operations. The extracted iris region was then normalized into a rectangular block with constant dimensions to account for imaging inconsistencies. Finally, the Feature extraction is done by 1D Log-Gabor filters and template is created. The Hamming distance is used to find the similarities between two templates. Therefore iris recognition is shown to be a reliable and accurate biometric technology.**

Keywords: **Iris biometrics, Log Gabor, identification method.**

I. INTRODUCTION

Identification and authentication of any human is becoming very important in now days. In the surrounding where electronics devices are more commonly used and there is a need for accurate and secured authentication. Old techniques such as passwords, ID cards, are not accurate and secure. Thus there is an increasing need for automatic authentication process. In the last few years biometric identification is very popular. There is many other biometric systems are present such as fingerprint face, voice etc. Among the physiological biometrics, iris is an important feature of the human and it has uniqueness. Now a day's Iris recognition technology is very popular in the authentication and identification eg. Airport security system, in different organizations etc.

II.PROPOSED SYSTEM

Block diagram of Iris Recognition System

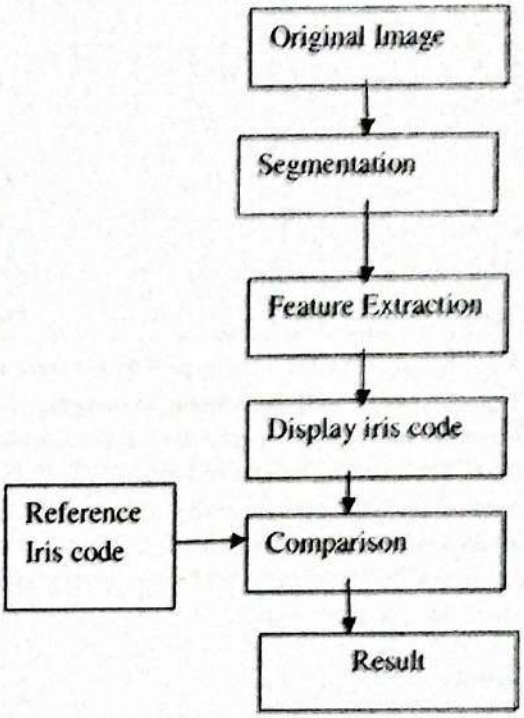

Fig.1. System block diagram

A. Iris Acquisition

In this project I had used CASIA database[5]. I also used the iris images taken by simple 5 Mega pixel camera.

B. Iris Segmentation

The success of segmentation depends on the imaging quality of eye images. Images in the CASIA iris database [13] do not contain specular reflections due to the use of near infra-red light for illumination. The

Control Home Devices Using Brain Wave Signal Detection

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Abstract—this paper presents a brain controlled home appliances using Brain wave signal detection or brain wave sensor. In analysis handicapped people cannot perform their tasks, but their brain is still working so, perform their task using brain wave sensor for analysis brain wave signal helps to physically handicapped but mentally work people to controlled the home appliances by using brain wave signal and eye blinking movement. Brain-Computer Interfaces (BCIs) technology that can transfer the information from brain to computer by interfacing through muscles and brain wave signals by the collecting electrodes placed on scalp of brain. These paper present waves are intercepted by dry electrodes in brain wave sensor. In brain waves alpha, beta, gamma and theta waves of EEG output are used to control the home appliances operation

Keywords—Arm7, Keil, Matlab, Brain wave sensor

I. INTRODUCTION

We are analysing in Human Brain 80-100 millions of interconnected neurons are present this neurons represent thoughts and emotional states and generate different electrical waves. This electrical waves are Alpha, Beta, Gamma and Theta in this we use Alpha and Beta waves

A muscle will also generate electrical signal. All these electrical waves will be sensed by the brain wave sensor and it will convert data into packets and transmit through Bluetooth medium [8].

A Bluetooth these waves are transmit to computer and in computer MATLAB software is installed and this MATLAB software compare there waves and create the raw data waves and original waves and what we think in position eye blinking operate home devices like fan, bulb etc.

II.INFORMATION OF BRAIN

We have two eyes, two hands, two legs so why not two brains? The brain is divided in half a right and left hemisphere Right Hemisphere-Right hemisphere does a different job than the left

Fig 1: Structure Of Brain.

It deals more with visual activities and play role In putting things together for e.g. it takes visual information Puzil together and says, "I recognize that" a chair or that car and that a house. it organize group information together.

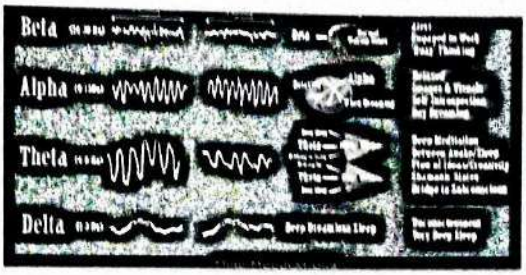

Fig 2: Different types of Brain Waves.

Left Hemisphere-Left Hemisphere tends to be the more analytical part; if analyse information collected by the right. If takes the information from the right hemisphere and applies language to it the right hemisphere sees bobs house and but the left hemisphere says oh yeah, I know whose house that it's Uncle Bob's house [4].

A. Principle Of Brain

Different brain states are the result of different pattern of neural interaction. These pattern lead to wave characterized by different amplitude and frequency for example wave between 8 to 12 hertz Beta wave are associated with concentration while wave between 8 to 12 hertz Alpha wave are associated with realization and a state of metal calm [2].

Embedded Cryptography Hardwired Using RSA

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Abstract— **Cryptography is the practice and study of hiding an information & has two types are hardware & software cryptography. Today's requirement is that to secure data from hacking. We proposed a system that in which we are explaining the concept of hardware based cryptography on ARM based processor. This paper discuses the RSA (Rivest-Shamir-Adleman) cryptography algorithm which is provide more security to data using prime numbers. Multiple level of cryptography use for increasing the security**

Keywords— cryptogrphy, RSA,GSM,Algoritham

I. INTRODUCTION

It is widely recognized that in the design of future IT system data security will play central role. This paper focuses on the implementation of cryptographic application based on embedded system using hardware In cryptography the actual data that has to be send to the other is referred as Plain Text.

Cipher Text is the message which has been converted by the encryption algorithm is called cipher text. In cryptography the original message is transformed into non readable message. Encryption is a process of converting plain text into cipher text is called as Encryption. Cryptography uses the encryption algorithm and a key to send confidential data through an insecure channel. Decryption is a reverse process of encryption is called decryption. It is a process of converting cipher text into plain Text. Decryption requires decryption algorithm and a key. Cryptography provides a number of security goals to ensure the privacy of data, non alteration of data cryptography it is widely used today due to the great security advantages of it. Here are the various goals of cryptography.[1]

Confidentiality: Information in computer is transmitted and has to be accessed only by the authorized party and not by anyone else.

Authentication: The information received by any system has to check the identity of the sender that whether the Information is arriving from an authorized person or a false identity.

Integrity: Only the authorized party is allowed to modify the transmitted information. No one in between the sender and receiver are allowed to alter the given message.[2]

The cryptographic algorithms provide security servic There are two types of cryptographic algorithm: symmetr key algorithm & asymmetric key algorithm. Cryptograph hardware based & software based for hardware base cryptography security more.

Nearly all companies, government agencies and hom users depend on computer systems and communicatio systems such as the Internet and Intranet. The expansion of th worldwide communication network such as the Internet an the increased dependency on digitized information in m society makes information more vulnerable to abuse. If the are security problems in these information systems, users sh fear that their sensitive information may be monitored an business secrets stolen. For these reasons, it is important t make information systems secure by protecting data an resources from malicious acts — crypto (cryptography algorithms are the core of such security systems [3]. By encoding a message using crypto algorithms, users can mak information transmitted over communication systems almo impossible to read, even if such information is intercepted fo malicious purposes. It is fairly easy to implement crypto algorithms in software, but such algorithms are typically too slow for real-time applications such as storage devices embedded systems, network routers, etc. For this reason, it becomes necessary to implement crypto algorithms in hardware using ARM processer so this paper focuses on implementation of hardware based cryptography for security purpose.

An embedded system is nearly any computing system (other than a general-purpose computer) with the characteristics like Single-functioned, typically, is designed to perform predefined function. Tightly constrained. Must continually monitor the desired environment and react to changes. Hardware and software co-existence In our system we have used the ARM7TM processor, the 32-bit RISC type processor block with a three stage pipeline [4][5]. It controls the operation of the dedicated crypto block during encryption, decryption, and key scheduling, and also performs the operations required to interface with external devices such as the input buffer, output buffer, memory, and IC card interface logic. Since the RISC processor block is fully programmable, it can execute various crypto algorithms, protocols and application programs with a high degree of freedom.

Hand-glove controlled wheel chair based on MEMS and accelerometer

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***Abstract*:Wheelchairs are very useful for everyone and widely for the disabled peoples. Driving a wheel chair in domestic environment is a difficult for normal person and becomes even more difficult for the peoples those arephysically challenged. Although manual wheelchairs have proven to be beneficial for the disabled but it has only served the purpose of people with minor disabilities. Hand-Glove controlled wheel chair based on MEMS and accelerometer is the best way for the physical disabled people. As the paper describes an automatically controlled wheel chair for disabled peoples. The wheelchair is movable and chair enables the user to move this by the movements of his fingers and hands. The wireless link between glove and chair enables any person to operate the chair [1].**

***Keywords:* mems, accelerometer, arm7, motor, Wi-Fi module**

I. INTRODUCTION

IN this project 'MEMS sensor' isembeddedinto a hand gloves in order to achieve the desired goal. The main aim of these MEMS sensors is that senses the movement of the fingers. The controller is used which can sense the signals. There are two sections in which at the receiver section get the signal from the transmitter section and according to the signal;motor is running which changes wheelchair movement. In this an affordable and technologically advanced wheelchair is to be designed and developed. This is very helpful for disabled paper which isused to aid the communication of severely disabled people and enhance the man covering of the vehicle with the use of hand movements [2]. Another alternative would be an electric power wheelchair controlled by joystick.As per the compare both the electric powered wheelchair is much better and easier to control device. The paper presents a control method to man motorised wheel chair merely by the movement of fingers.

II.DRAWBACK OF CONVENTIONL SYSTEM

There is much equipment available for physically disabled peoples. Before this electronic the technology requires equipment's which are manual or semiautomatic which requires more human power to move or to walk. In some Joysticks are used to control the direction.

III. BLOCK DIAGRAM OF PROPOSED SYSTEM

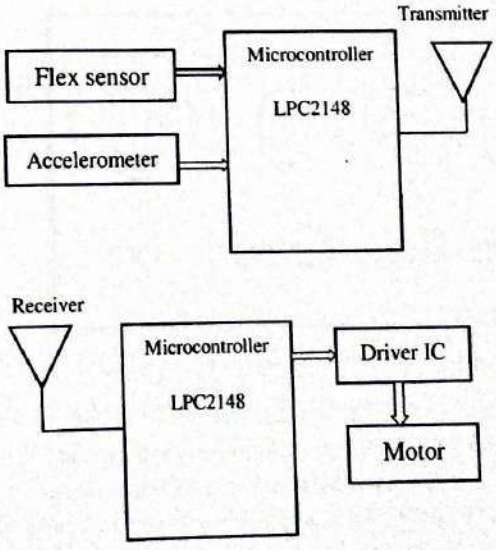

Fig.1: Block Diagram of Transmitter& Receiver section.

FPGA Based Bunch By Bunch Data Transfer Using Multi Port Memory Controller

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***Abstract*— By transmitting data through latch as a digital device, it required dedicated interface and shared memory devices. But for large amount of data use of latch is not possible so for this type of data it is required to use multi port memory controller. The multi port memory controller has a vital role in designing of system on chip to provide enough memory bandwidth for real time applications. In this paper to meet the real time requirement multiple Intellectual Properties (IPs) are used as a set complex instruction for 32 bit MicroBlaze Processor. Each IP is trained specifically to fulfill the needs of the application and at the same time to consume the minimum FPGA logic resources. By cancelling the system bus, MPMC allows number of entities to directly use memory. The realized system demonstrates continuous data transfer at a rate of 278.26 MBPS, into aDDR2. This paper gives idea about the implementation of MPMC system.**

***Keywords*— MPMC, FPGA, DDR2, IP, real time.**

I. Introduction

For transmitting information by using Latch, it required a particular communication interface and bus. Latch process is mostly used for small system and fast system. Latch required less time to process the data. Latch process is frequently used for small system in addition to for fast system. But as the size of data going to increase it required large amount of latches. To process data in large number of latches it required large number of decoder. And for These decoders required a dedicated interface. Depending on data speed of processing can be fast or slow so because of which to process this real time data processor take long time. Multi port memory controllers are very useful for completing real time requirement and increasing storage capability [1]. MPMC is a completely parameterizable memory controller that supports SDRAM/DDR/DDR2/DDR3/LPDDR memory.Memory can be accessed by using one to eight ports through multi port memory controller. Here each port can be selected from a collection of personality Interface Module (PIM).This PIM allow connectivity to MicroBlaze Processor [2]. Here FPGA-based bunch by bunch data transfer using multi port memory controller is presented, and implemented using VHDL.To given experimental proof, A 32 world data of real time process is write into DDR2 memory through MPMC also stored data can be read from memory through MPMC.

II. FIFO (IP Cores)

To capture arrived data from generator a FIFO can be used as a buffer & it allow the consumer's to receive data, in order, in convenience [3]. Control logic used by Asynchronous FIFO to perform read & write operation. For interfacing with user logic, status flag & optional handshaking signal can be used by FIFO. For the IP core in FIFO two types of memories are available they are Block RAM or shift register lookup RAM. Block RAM in most cases give better timing approach as compared to shift register lookup RAM(SRL). For the case in which MPMC has large number of ports , in this case SRL RAM gives better results than block RAM. This FIFO's having FULL, EMPTY, ALMOST_FULL & ALMOST_EMPTY flags[3]. Invalid request are unable to corrupt FIFO status. For FIFO memory width is up to 65535 location & data width up to 256 bits. There is WR_ACK, RD_ACK, WR_ERR, RD_ERR are four optional handshake signals for read & write operation. The Core Generation operation to generate FIFO or wizard presents a number of options as how a FIFO will be implemented in the FPGA fabric. These options include Block RAM, distributed RAM, shift register(s), and built-in FIFO(s) if supported by the device. Different features are offered by these different memory types and, as a result, different reasons for choosing one over another.

III. NPI

For the requirement of high bandwidth and low latency transfers to off chip memory, Xilinx provides a custom interface to their multi-ported memory controller (MPMC) known as then native port interface (NPI).This NPI is completely different from bus master because in case of bus master connection of device is given to controller through shared bus and for NPI a device is directly connected to the memory controller. As here the interface is not shared it does not require arbitration, allowing for lower latency transfers. In case of NPI as there is direct connection given to memory controller, its operating frequency is greater than bus operating

Electricity Billing Using Power Line Communication

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Abstract— **In this project we have implement automatic meter reading using power line communication. As in every where automation is required to reduce the work . The main purpose of this project is PLM (Power Line Modem) to the man power. The process of this project is totally automated and communication is possible through the power line. This project introduce number of application not only the billing but also the control of system is fully automated. When consumer fails to pay his bill in given period of time the supply automatically get cut off and the restoration is done only when bill is paid. This project eliminates the need for employing EB meter readers and this set of employees can be used elsewhere. In this paper we have proposed an automatic meter reading system which is low cost, high performance, highest data rate, highest coverage area. The most important features in this system is the use of digital meter is consisting of ARM controller and PLC modem.[1]**

Keywords— **Digital meter, ARM7 , PLM**

I. INTRODUCTION

This technology that enables the transmission as well as reception through the power line that carries and supply electric power. This system provide effective and efficient automatic power reading. The scope of this project to make use of new technology and implement them into more practical fields. Communication network in the field of electricity billing. The use of this system such that even complex problem can be handled in a easier way

The currently prevailing system involves the user to go up to the EB office to manually pay his bill. The reading are taken using the analog meter present in customer house. In this system analog meter are replaced by digital meter the meter reading in the form of digital data are transferred from customer end to the EB office through power line. The meter reading are collected at regular time interval and the present reading is compared with previous reading and the bill is made as per consumed unit by the customer. At the EB end a computer maintenance a data base of its entire customer. Once the bill is generated.

The customer are prvided with limited period of time for the payment of bill if customer fails to pay his bill a signal is sent to reset circuit connected to meter through same network when bill is payed the supply is automatically restored back hence no more worker is required to come to the customer house to remove the fuse to cut off the supply which is oldest EB tradition followed even at present stage. The advantage of the system is less labour, no more queues, quick update, no manipulation and cost effective. [1][2]

II. INFORMATION OF POWER LINE MODEM

PLM is useful to send and receive serial data over existing AC mains power lines of the building. It has high immunity to electrical noise persistence in the power line and built in error checking so it never gives out corrupt data. This is bi-directional data communication. The modem is in form of a ready to use circuit module.

Features:

i. Transmit and receive.
ii. Serial data at 9600 bps.
iii. Powered from 5v.
iv. Low cost and simple to use.
v. Built in error checking.
vi. Direct interface with.
vii. Microcontroller UART TXD, RXD pins.

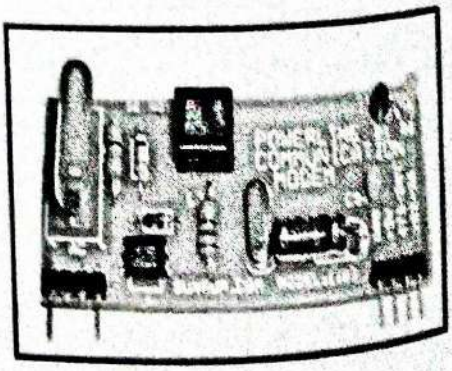

Fig 1:Power Line Module[3]

AN AERIAL SURVELLIANCE SYSTEM USING QUAD COPTER FOR NATURAL DISASTER AND RELIEF

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Abstract—

This paper presents a quad copter for natural disaster & their relief. There are different types of natural disaster like landslide, earthquake, flood etc. Due to this type of disaster so many people leave their life. Internationally reported that in disaster there are more than 210 millions people die. communication plays more important role during disaster for public safety. There are number of existing systems are present for preventing damage & serve life like fire fighter robots etc. But like humans nobody is perfect in this world like this every system has some drawback such as for using robot there is economical problem & also having technically intelligent handling staff. Also for fire-fighter again there is problem of risk of injury. For avoiding such problems we propose a system to provide medical relief during natural disaster. For that we are providing Quad copter(UAV). We will have camera for surveillance and a medical kit for medical relief.

I. INTRODUCTION

Communication infrastructure can be damaged during natural disaster for example Earthquake in Nepal in last year & also in 2011 tsunami in Japan. Due to this whole cellular network infrastructure get damaged which negatively affect on search & rescue operation, emergency communication and coordinating among first responder. For such natural disaster there are some existing systems present like fire-fighter , robots etc. But every existing system does not give perfect output they have some drawback. Mainly there is economical problem in developing nation like India, Nepal etc. And also for fire-fighter there is risk of injury. For such problems we propose a system to provide medical relief during natural disaster. For that we are providing Quad-Copter. We will have a camera for aerial surveillance & medical kit for medical relief. Research and development of unnamed aerial vehicle (UAV) and micro aerial vehicle(MAV) are getting high encouragement nowadays, since the application of UAV and MAV can apply to variety of area such as rescue, mission, military, film making, agriculture and others.[2]

II. EXISTING SYSTEM

1)*Name of existing system :-*

- Fire-fighter
- Robot

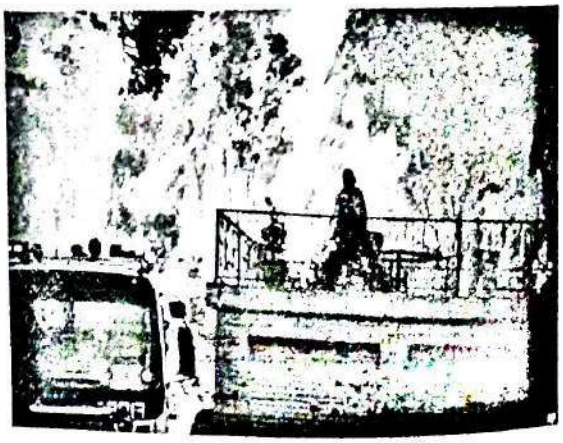

Fig No. 1 Natural Disaster

2) *Problems of existing systems:-*

- Fire-fighters

Disadvantage of being a fire-fighter is risk of injury or death, low payment rate, early retirement, irregular working hours.

- Robots;-

If we are using robots in natural disaster, then it is expensive. As a result the countries which are economically stable they can only afford such expense.

Digital Display System

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Abstract-In the last couple of decades, communication technology has developed by leaps and bounds. The use of "Embedded System in Communication" has given rise to many interesting applications. One of such applications is public addressing system (PAS). Many companies are manufacturing audio / video systems like public announcement system, CCTV, programmable sign boards etc. But all these systems are generally hardwired, complex in nature and difficult to expand. So, by adding wireless communication interface such as GSM to these systems, we can overcome their limitations. Now-a-days LED Message Scrolling Displays are becoming very popular .These displays are used in shopping malls, theaters, public transportation, traffic signs, highways signs, etc. This paper describes the GSM based LED display.

Keywords- **GSM, Interface, Message, Modem, Receiver, Transmitter.**

I. Introduction

In this modern world Mobile Phones and the related technologies are becoming more and more prevalent. Various technical arenas in the field of Telecommunication and Embedded Systems are becoming omnipresent in the people. The use of cell phones has rapidly increased over the last decade and a half. Up gradation in networking technologies has encouraged the development and growth of very dense networks. Now-a-days the general mass prefers communicating while on the move therefore landlines usage has been drastically reduced. Notice boards are one of the widely used ones ranging from primary schools to major organizations to convey messages at large. A lot of paper is been used and which is later wasted by the organizations. This in turn leads to a lot of deforestation thus leading to global warming. Small innovative steps in making use of technology for regular purposes would have an adverse effect on the environment issues which we are presently concerned about. The main aim of this paper is to design a SMS driven automatic display Board which can replace the currently used programmable electronic display and conventional notice boards. It is proposed to design receive cum display toolkit which can be programmed and later be used from an authorized mobile phone. The whole process can be described from the block diagram in Figure 1. The GSM modem receives a message from the authorized mobile phone and the message is extracted by the microcontroller from the GSM modem and is displayed on the LED display board. Serial communication is used for the entire process from GSM module to Microcontroller and from microcontroller to the LED display. The three devices are powered by the same power supply. This proposed system in this paper has many upcoming applications in educational institutions and organizations, crime prevention, traffic management, railways, advertisements etc. Been user friendly, long range and faster means of conveying information are major bolsters for this application. By using this proposed methodology we can enhance the security system and also make awareness of the emergency situations and avoid many dangers.

II. Analysis Of Problem

Now a day's every advertisement is going to be digital. The big shops and shopping centers are using the digital moving displays now. In Railway station and bus stands everything that is ticket information, platform number etc is displaying in digital moving display. But in these displays if they want to change the message or style they have to go there and connect the display to PC or LAPTOP. Suppose the same message if the person want to display in main centers of the cities, means he has to go there with laptop and change the message by connecting into PC .This system is also useful mainly for police or army .i.e. displays will be connected to all the main centers in city if they want to display messages about something crucial within 5 minute, which they cannot. So keeping this in mind a new display system which can be accessed remotely, using the GSM technology to make the communication between microcontroller and mobile was designed.

III. Design Overview

The led Display System is aimed at the colleges and universities for displaying day-to-day information continuously or at regular intervals during the working hours. Being GSM-based system, it offers flexibility to display flash news or announcements faster than the programmable system. GSM-based display system can also be used at other public places like schools, hospitals, railway stations, gardens etc.

Study Of Advanced Braking System

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Abstract-

The brake booster is designed to create a greater braking force from a minimum pedal effort, using a difference in atmospheric pressure and the engine's manifold vacuum. When pressure is applied to the brake pedal, pressure is exerted on the booster air valve. With pressure created by the booster the master cylinder is applied. Vacuum brakes are first used in place of the air brake in railway locomotives. This braking system uses a vacuum pump for creating vacuum in the brake pipe. The integral construction of the brake cylinder uses this vacuum reservoir for the application of brakes. Nowadays most of the light vehicles are fitted with vacuum-assisted hydraulic braking system where vacuum is created from the engine which reduces the driver effort on foot pedal. The system operation is somehow similar to air braking system. The main difference with air brake system is that vacuum is used instead of compressed air. Now a day's accidents are increasing more and more , so safety has acquired a priority. Improper usage of brakes is also one of the problems for accident. The project idea is to improve the safety parameters regarding to brakes. At present time the problems of enhancing safety and finding new energy sources are very actual for the world automotive industry. The developments in the field of brake design are dominant from the viewpoint of this aspect.

Key words-

Air braking system, Hydraulic brake, Vacuum braking system

I. Introduction

The basic principle of the brake booster is pressure differential. The brake booster consists of the body, booster piston, piston return spring, reaction mechanism, and control valve mechanism. The body is divided into a constant pressure chamber and a variable pressure chamber. The chambers are separated from each other by a diaphragm. The control valve mechanism regulates the pressure inside the variable pressure chamber.

a) Control valve closed/open:

When vacuum is applied to both sides of the piston, the piston is pushed to the right by the spring and remains there. When atmospheric air is allowed into chamber B the piston starts to compress the spring, due to the difference in pressure, and moves to the left. This causes the piston rod to move the piston of the master cylinder, generating hydraulic pressure as shown in figure 1.

b) Booster Air Valve Operation:

In the OFF position, the Air Valve (connected to the Valve Operating Rod) is pulled to the right by the Air Valve

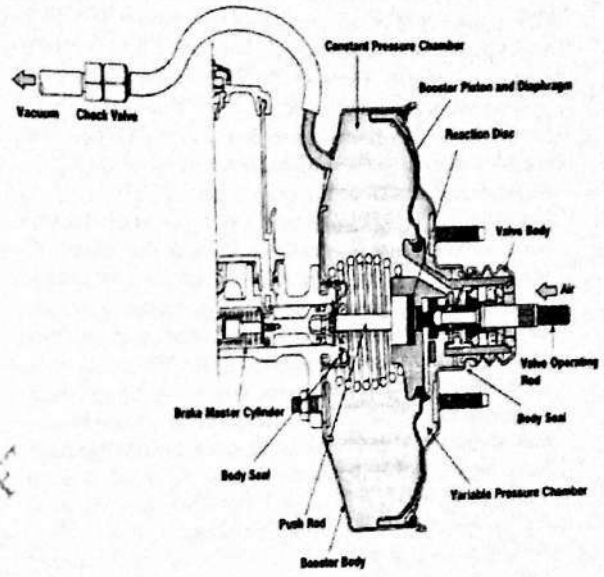

Fig. 1 Brake Booster

Return Spring. The Control Valve is pushed to the left by the Control Valve Spring. This causes the Air Valve to contact the Control Valve. Therefore, the atmospheric air that passes through the air cleaner element is prevented from entering the Variable Pressure Chamber. The piston's Vacuum Valve is separated from the Control Valve in this position, providing an opening between passage A and passage B. Since there is always vacuum in the Constant Pressure Chamber, the opening allows vacuum into the Variable Pressure Chamber. As a result, the piston is pushed to the right by the piston return spring.

In the ON position, when the brake pedal is depressed, the Valve Operating Rod pushes the Air Valve to the left. The Control Valve which is pushed against the Air Valve by the Control Valve Spring, moves to the left until it touches the Vacuum Valve.This blocks off the opening between passage A and passage B (Constant Pressure Chamber (A) and Variable Pressure Chamber (B)). As the Air Valve Pmoves further to the left, it moves away from the Control Valve. This allows atmospheric pressure to enter the Variable Pressure Chamber through passage B. The pressure difference between the Constant Pressure Chamber and the Variable Pressure Chamber causes the piston to move to the

Design and Analysis of Drive Train Worm andWorm Wheel for Bi-Axial Tensile Testing Machine

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Abstract: **For the power transmission different types of gear drives are used according to the position of axes of two shafts between which motion is to be transmitted.In this paper drive train worm and worm wheel are designed and developed for biaxial tensile testing machine.Worm and worm wheel are used as they provide smooth and silent operation alongwith high reduction ratio. The theoretical analysis is done by using Lewis Strength equationand the empirical correlations. The worm and worm wheel are modeled in 3-d using Unigraphix software followed by FE analysis in ANSYS workbench 14.5. The theoretical results are compared with analytical results. We found that the stresses occurred in the worm pair drive are in the given limit.**

Key Words: Unigraphix, structural analysis, ANSYS

I. INTRODUCTION

Laminated structures are widely used for different applications like aerospace, automobile, medical, civil, and mechanical engineering because of their easy handling, improved mechanical properties and low fabrication cost .During these structures are subjected to different types of loads in one or more direction in cycles or as intermittent load due to which failure occurs. Thus it is important to study the failure of such components subjected to bi-axial loading. To accomplish this biaxial tensile test machine is designed & developed & is used to apply uni-axial as well as bi-axial loads to laminated plates. The same machine can be employed for different purposes. It can be used to perform compression and tensile tests which determines mechanical properties for different materials.

The worm gear drive is the main driving set. It consists of worm and worm wheel rotating w.r.t each other. The axes of the worm drive are perpendicular to each other. The worm gear drive is the mostly used drive where high reduction ratio and multiplication of torque is required.

The machine have different elements like an electric motor, geardrive, reduction drive, crown bevel gear & pinions and power screws with specimen holders. The electric motor drives the drive train worm and worm wheel via spur gear pair. The crown bevel gear is the central gear that is mounted on the worm gear shaft. This crown rotates the four bevel pinions simultaneously. This rotation provides load required for experimentation work.

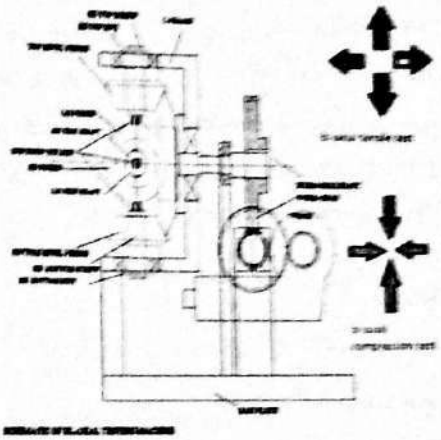

Fig -1: Biaxial tensile testing machine

II. WORKING METHODOLOGIES

The analysis work will be performed by using following methodologies.

1. Theoretical Analysis:

This includes theoretical calculations of all machine components i.e. calculations of forces and bending strength using Lewis equation.

2. FE Analysis:

The Finite Element Analysis is the powerful tool employed to evaluate the stresses of the elements. In this paper, the FE analysis will be done with the help of ANSYS software. The procedure includes-

1. Modeling of worm& worm wheel is done by using suitable Unigraphics software using gear parameters.
2. Selection of proper element for meshing.
3. Specifying required material properties like modulus of elasticity, rigidity, poissions ratio, etc.
4. Applying boundary conditions and constraints.
5. Carrying out the Post Process in ANSYS to solve the problem.

III.THEORETICAL ANALYSIS

A.Design of Gear Motor to Worm Shaft

Power = 80 watt

Speed = 55 rpm

b = 10 m

Small Capacity Windmill Opportunities in India

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Abstract **-Wind energy based decentralized power generation implies power generation at islands, remote villages or hilly regions either by standalone wind energy systems or by wind-diesel-solar hybrid systems that are not connected to common grid. There is an imperative need to review the past and discuss the present situation in this upcoming field. This paper reviews the research and development in decentralized power generation by using small capacity windmill. Considering the electricity requirement of an institute, small capacity wind turbine is selected Small wind turbine technology opportunities and barriers have been investigated.Wind energy based decentralized power generation that reduces transmission and distribution losses and restricts grid expansion.**

Keyword:Smallcapacitywindmill, decentralized Energy

I. INTRODUCTION

Wind energy is one of the most widely used renewable energy resource. Wind powered electricity is the clean and green power generation method. Particularly, in developing countries like India, there is need to have decentralized type of energy source because large part of the population lives in villages and farms. The most potential application of wind energy is in remote, windy places which have weak Decentralized Power Generation System (DPGS).

Small wind turbines have less generating capacity than the huge commercial turbines found on wind farms, b u t their reduced costs and added versatility allow wind power to be used in a wider set of applications . These small turbines are used primarily f o r distributed generation generating electricity for use onsite, rather than transmitting energy over the electric grid from central power plants or wind farms. Small turbines are a s m a l l scale alternative to solar panels, providing clean renewable energy to rural homes, farms and businesses. This reduces reliance on large fossil fuel power plants and lowers the burden on the electrical transmission grid. Small wind turbines can have a generating capacity of anywhere from 0.3 to 100 kW, though the amount of power they actually generate depends on wind speed. A small turbine will typically need wind speeds of four meters per second (or nine miles per hour) at the height of the turbine. Because steady wind speed is important, small turbines must be placed away from buildings, trees, and other obstructions that may block the flow of wind. This makes them ideal for rural and suburban communities that do not have the space restrictions found in urban centers.

The United States is the global leader in small turbine manufacturing. Domestic manufacturers reported sales of $115 million in 2011, with 54 percent of that revenue coming from exports. The industry represents an estimated 1,600 full time jobs in the United States. In 2010, the U.S. small wind cumulative capacity was 179 MW, making the United States the world leader in installed capacity, as well Despite the growing market and robust sales, the small wind industry relies on state and federal policies to drive investment in small wind and to provide certainty for turbine manufacturers.

II NEED TO HAVE DECENTRALISED ENERGY

The electric power becomes now prime need of mankind. Power is generated by thermal energy, hydraulic energy, wind energy and solar energy.There is an option of nuclear energy also that could be used to generate power. Due to safety and other issues, it has been little bit avoided. Nuclear energy can be the great source of power generation if it could be possible in safe.

Government and companies are generating power at setting up plants and supplying electricity to the people with the grid extension. But what if the grids

CONVERSION OF DIESEL ENGINE TO DUAL FUEL MODE USING BIOGAS

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Abstract- **The alternative fuels implemented in internal combustion engines are becoming the subjects of interest nowadays. It describes a production of biogas from cow dung, diesel engine conversion process with engine modification of 5 hp diesel engine. To produce biogas, the usual practice is to mix water with some organic material, such as cow dung (a free source of the appropriate micro-organisms). The slurry is placed in a leak-proof container (called a digester) and leaves it to ferment. After several days at suitable temperature, sufficient methane will have formed to make a combustible gas. Fix dome type of biogas plant is chosen in this gas production for cost saving and to produce sufficient gas at lower temperature. In this test, we have use the 5 hp diesel engine for conversion in dual fuel mode instead of spark ignition engine as100% biogas or CI engine for 100% biogas engine for conferrable, efficient and low cost power generation. In this paper included everything right from biogas production, types of conversions, efficient power output conversion method; also include 3D designs, AutoCAD designs. I have highlighted the advantages, disadvantages and various possible applications related diesel engine conversion to dual fuel mode. The application of this engine is mainly in rural area to generate electricity at low cost.**

Keywords: *. Biogas, Brake Specific Fuel Consumption, Internal Combustion Engine.*

I. NTRODUCTION

A. Background:

In a developing country, energy is an essential factor of production. It grows by a factor greater than of gross domestic product. The main source of energy for the rural people, who constitute the majority of the population of the country, is biogas fuel like fire-wood, agricultural residues and cattle dung.

The technologies used for the conversion of organic materials to biogas have been in existence for many years in both the developed and developing countries, the gas being used either for direct combustion in cooking, lighting or indirectly to fuel combustion engines delivering electrical of motive power. A biogas mainly consists of methane and carbon dioxide liberated from degraded organic wastes fermented by methanogenic bacteria in anaerobic condition. This process can be used to the great benefit of the rural community for a number of reasons. First, it produces a smoke-free fuel. Secondly, it produces an excellent fertilizer. Thirdly, it destroys most of the disease-carrying pathogens and pathogens and parasites. Fourthly, the biogas technology is appropriate to rural conditions as comparatively sophisticated devices and highly qualified expertise are not involved.

Many countries became aware of biogas technology by the middle of the twentieth century, International organizations like the food and Agriculture Organization of the United Nation (FAO), the United Nations Industrial Development Organization (UNIDO), etc have done considered work in disseminating and developing biogas technology. Three countries have installed a large number of units. In numerical order these are: China (7.8 million digesters), India (100,000), and South Korea (29,000).

B. Present Work:

Engine Data:

Using all collected idea to electricity generation in I.C. engine in two methods.

1) S.I. engine:

In this method the diesel engine is totally converted into biogas engine. For this, conversion of engine to recommend some changes:

i) Removing fuel injection pump, fuel lines and injector.

ii) Modification of cylinder head for injection of spark plug in the injector hole.

iii) Mounting of ignition system.

iv) Installation of gas carburetor.

Current trends in applications of smart materials –an overview

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Abstract

Sensing and actuating is part of our life to react with surroundings. Thus with development of technology it becomes answerable to ask a question as if we design equivalent mechanisms that can logically interrelate with their environment and structures that can be used on field applications. Such smart structures could have a marvelous impact in progressing towards many fields including drug, microelectronics, and robotics. Especially among others for out of track approach smart materials are a wide group of materials that can be employed. The common characteristic of all of them is the fact that one or more properties can be changed purposefully under controlled condition. In this smart materials era we come across the materials that receive, broadcast, or process a stimulus and respond by producing a useful effect that may include a signal that actuates materials. At earlier stages, smart materials were defined as the materials, which respond to its environments in a time domain. This study focuses on an overview of introduction to smart materials and their classifications. Also different applications of smart materials in current fields are also being summarized from engineering point of view.

Keywords: Smart Materials, Actuators, Piezoelectric, External Stimuli

I.INTRODUCTION

With the improvement of material science, high caliber and cost-productive materials have come into utilization in different field of uses. In past decades, the materials got to be multifunctional and from their particular properties zone of utilization is more widened. With the last development, the idea of composite materials came into picture and as of late, the following transformative step is anticipated with the idea of shrewd materials. Smart materials are new era materials beating the routine basic and utilitarian materials. These materials hold adaptivity to outer sign, for example, loads with characteristic knowledge. They have the ability to alter their physical properties in a specific way because of particular boost information.

These data jolts could be weight, temperature, electric and attractive fields, chemicals, hydrostatic weight or atomic radiation. The relative variable properties may be shape, firmness, consistency or damping. Regularly, straightforward gadgets produced using a solitary sensing or actuating material are used in certain applications. However, systems that involve both sensing and actuating materials can be used to build more sophisticated applications. Such systems are referred to as smart

structures, which incorporate sensors and actuators with processing/control units connecting them. To get an idea of how smart structures can be implemented, it is necessary to understand the fundamental components of these structures: sensor and actuator materials. For centuries, materials have been known to react to the surrounding environment producing some form of response. For instance, in 1824, Rochelle salt was discovered to become electrically polarized by the application of heat. That was the first discovery of the effect known as pyroelectricity. Since that time, numerous additional materials have been discovered having the inherent capability to convert one form of energy into another. Sensors are materials that respond to a physical stimulus, such as a change in temperature, pressure, or illumination, and transmit a resulting signal for monitoring or operating a control. Actuators are materials that respond to a stimulus in the form of a mechanical property change such as a dimensional or a viscosity change. By controlling operating properties, smart materials can detect flows and discontinuities and hence can be used as a diagnostic tool. Table 2.1 lists the sensor/actuator material classes that will be discussed in this Material EASE along with their associated energy stimulus and response forms.

II.CLASSIFICATION

Smart materials can likewise be characterized into two classifications as active and passive. Fairweather (1998) termed a smart materials as materials which display the ability to modify their geometric or material properties with the utilization of electric, warm or attractive fields, in this way having a basic ability to transduce vitality. Piezoelectric materials, SMAs, ER liquids and magnetostrictive materials are inclined to be the smart materials and consequently they are appropriate as actuators and power transducers. Kumar (1991) demonstrated that SMA has huge recuperation power, of the request of 700 MPa (105 PSI), which can be additionally executed for activation reason. At the same time piezoelectric materials are additionally

BIOMIMICRY: AN INSPIRATION FROM NATURE

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ABSTRACT : Capitalizing on the emergent movement towards integrating transdisciplinary with biomimicry, this paper provides an overview of the biomimicry approach, including discussion of its three basic dimensions: (a) Nine principles of life (b) Nature as model, measure and mentor and (c) The Design Spiral methodology. If the intent of transdisciplinarily is to understand the world in all its complexities, and the world includes humans, non- humans and nature, then it makes sense to gain insights from non-humans (other species) and nature, the intent of biomimicry. In the search of sustainable building design and technology Biomimicry is an alternative solution. The inspiration from nature is driving force in architecture, resulting in majestic works of architecture. Biomimicry is about solution refined and developed by nature. For any sustainable building design, need to consider structural efficiency, water efficiency, zero-waste systems, thermal environment, and energy supply. Biological organisms refined and developed by natural selection over a billion year research and development period can be seen as embodying technologies, functions, and systems that are solutions to the problem of surviving in nature. These problems are often equivalent to those encountered by humans as we seek new ways to design and live sustainably, and in many cases have solved the same problems with a far greater economy of means. This paper aims at revealing how radical increase in resource efficiency can be achieved by looking to the nature for inspiration. Exploring the application of Biomimicry in current architectural design, resulting in a set of design approaches, levels and principles. The paper also discuss about the architects work inspired by nature. As a supposedly novel technical practice, biomimicry makes promises about solving the world's technological problems and environmental problems simultaneously. After posing questions about the features, assumptions and ambitions of biomimicry, it is concluded that biomimicry might be a productive way to render nature's secrets available for commercial and industrial purposes, but for it to move society towards eco-friendliness as its supporters often claim, they will have to actively reconstruct the concept with the help from eccentric ideas.

Keywords: biomimicry, complexity, design, spiral, transdisciplinarity.

I. INTRODUCTION

Studying nature to get ideas to solve transdisciplinary problems has recently received new attention from the field of biomimicry. An intriguing discussion has emerged in the literature during the last five years about transdisciplinary and biomimicry. Those engaged in this intellectual discourse argue that humanity is encountering powerful new insights from the foundations of transdisciplinary quantum physics, chaos theory, complexity theory and living systems ecosystems theory. They further suggest that those engaged in transdisciplinary work can benefit from employing the principles of biomimicry (and vice versa), they maintain that sustainable products, processes, services and institutions are needed as catalysts to the transition towards a sustainable human civilization. They believe that solutions to the world's problems require the transdisciplinary integration of multiple perspectives and Knowledge bases, augmented with insights from biomimicry. If the intent of transdisciplinarily is to understand the world in all its complexities, and the world includes humans, non-humans and nature, then it makes sense to gain insights from non-humans (other species) and nature, the intent of biomimicry. Madni, when discussing Daimler Chrysler's transdisciplinary application of biomimicry principles to design a concept car, observed that "humans have much to learn from Mother Nature". Transdisciplinary rise from the increasing demand for relevance and applicability of academic research and non-academic knowledge to social challenges. Biomimicry arose from the increasing demand for deeper innovations and inspirations. It has witnessed explosive growth as a new concept. This paper provides an overview of biomimicry, anticipating insights for future conversations about the synergy between transdisciplinary as a methodology and biomimicry as an approach to solving problems. Biomimicry claims that the laws of nature can be applied to modeling social systems, that we can adopt natural laws and logics to human needs. Jucevicius observes that analogical thinking (transferring ideas from one context to another) is at the heart of creative solutions to complex human problems. Successful biomimicry thinkers are in-Biomimicry from bios, meaning life, and mimesis, meaning to imitate is a new discipline that studies nature's best ideas and then imitates these designs and processes to solve human problems. Studying a leaf to invent a better solar cell is an example, it as "innovation inspired by nature." The core idea is that nature, imaginative by necessity, has already solved many of the problems grappling with. Animals, plants, and microbes are the consummate engineers. They have found what works, what is appropriate, and most important, what lasts here on Earth. This is the real news of Biomimicry, After 3.8 billion years of research and development, failures are fossils, and what surrounds us is the secret to survival. Biomimicry is a new science that studies nature's models and then emulates these forms, process, systems, and strategies to solve human problems sustainably. Biomimicry uses an ecological standard to judge the sustainability of our innovations. After many years of evolution, nature has learned what works and what lasts. Biomimicry is a new way of viewing and valuing nature. It introduces an era based not on what we can extract from the natural world, but what we can learn from it.

A.Biomimicry: Explained

The term biomimicry is from Greek bios, life and mimesis,

Trends in Deburring Process: Dry Ice Blasting

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Abstract—Today, CO_2/dry ice blasting is being effectively used in a wide array of applications from heavy slag removal to delicate semiconductor and circuit board cleaning. Imagine a process that can be used on-line without damaging equipment or requiring a machine "teardown". Unlike conventional toxic chemicals, high-pressure water blasting and abrasive grit blasting, CO_2/dry ice blasting uses dry ice particles in a high velocity air flow to remove contaminates from surfaces without the added costs and inconvenience of secondary waste treatment and disposal. In this I want to discuss how this dry ice blasting is a best cleaning method.

Keywords—Blasting, Dry Ice(CO_2), Pelletization Process

I. Introduction

It is simple to operate with the driver parking and leaving the vehicle in the system at the ground level. Once the driver leaves the incorporated safety zone the vehicle is automatically parked by the system rotating to lift the parked car away from the bottom central position. This leaves an empty parking space available at the ground level for the next car to be parked on. The parked car is easily retrieved by pushing the button for the relevant position number the car is parked on. This causes the required car to rotate down to ground level ready for the driver to enter the safety zone and reverse the car out of the system. Except vertical car parking system all other systems use a large ground area, vertical car parking system is developed to utilize maximum vertical area in the available minimum ground area. It is quite successful when installed in busy areas which are well established and are suffering with shortage of area for parking. Dry ice is the solid form of Carbon-Dioxide (CO_2), which is a colourless, tasteless, odourless gas found naturally in our atmosphere. Though it is present in relatively small quantities (about 0.03% by volume), it is one of the most important gases we know of.

CO_2 is a natural media that serves many life sustaining purposes. It is a key element in the carbon cycle; it is the only source of carbon for the carbohydrates produced by agriculture; it stimulates plant growth; and it helps to moderate the temperature of the earth overall. With a low temperature of -780C, solid CO_2 has an inherent thermal energy ready to be tapped. At atmospheric pressure, dry ice sublimates directly to vapor without going through a liquid phase. This unique property means that, the blast media simply disappears, leaving only the original contaminant to be disposed.

Cold jet blasting uses compressed air to accelerate frozen carbon CO_2, "Dry Ice" pellets to a high velocity. A compressed air supply of 80 psi/ 5.5 bars can be used in this process. Dry ice pellets can be made on site or supplied. The grade of CO_2 used in dry ice blasting is the same as that used in the food and beverage industry. CO_2 is a non-poisonous, liquefied gas that is both inexpensive and easily stored at work sites. Of equal importance is its non-conductive and non-flammable nature. CO_2 is a natural by-product of several industrial manufacturing processes such as fermentation and petro-chemical refining. The CO_2 given off by the above production processes is captured and stored without losses until needed. When the CO_2 is returned to the atmosphere during the blasting process, no new CO_2 is produced. Instead, only the original CO_2 by-product is released.

II. BLASTING IN GENERAL

Blasting refers to a high-speed impact of a projectile on a target. The projectile can be either discrete, as in solid media blasting, or continuous, as in water blasting. A simple impact phenomenon involves two bodies. The projectile normally called the blast media can be spherical or angular, large or small, hard or soft, solid or liquid and projected at a variety of speed and angle towards the target. In general the user has no choice in terms of nature of target the user's choice is in the media property and condition of blasting.

A. *Abrasive Blasting:*

In applications where erosion is to be controlled, solid media of low abrasivity such as plastic media, starch media, glass beads, etc. are used. One aspect of solid media blasting is the generation of dust and secondary solid waste from spent media. Therefore, abrasive blasting is not a cleaning process.

B. *Water Blasting:*

Water Blasting is non-abrasive therefore its applications relate mainly to cleaning. Although at very high pressures, water is used for cutting as in water jetting. For effective cleaning, normally detergents or other cleaning chemicals are added to the water. In many applications the water is recycled, thereby requiring water treatment as additional process and cost. Generally water blast uses a large volume of water, in the range of 1000-2500 Liters per hour. The treatment cost for such a high volume can be considerable.

C. *Ice Blasting:*

Ice blast is a cleaning technology which is essentially a hybrid between abrasive (i.e. sand) and non-abrasive (i.e. water) types. Because ice is a phase change material, it

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Identity Based Distributed Provable Data Possession in Multi Cloud Storage

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Abstract—

Cloud computing has become an important thing in computer field. Cloud computing takes information processing as a service, such as storage and computing. Data integrity is important thing in cloud storage. In certain situations, clients should store their data such as image or text in multi cloud. When the client stores his/her data on multi-cloud servers, the distributed storage and integrity checking is very important. Here we propose an Identity Based Distributed Provable Data Possession (ID-DPDP) protocol for multi-cloud storage. Remote data integrity checking is important in cloud storage. It can make the clients verify whether their data is kept as it is without downloading the entire data. In some application scenarios, the clients have to store their data on multi-cloud servers. At the same time, the integrity checking protocol must be efficient in order to save the verifier's cost.

Keywords— Cloud Computing, Integrity, Multi-Cloud, Data Possession.

I. INTRODUCTION

A protocol (ID-DPDP- Identity - based distributed provable data possession) is proposed to store data in multi cloud .ID-DPDP protocol eliminate the certificate management. In this system, the client's data is distributed to multi cloud servers based on type of the data and size of the data. Private Key generator generates the private key for the client, it contains the client unique id. Client's data is transferred to combiner; the combiner distributes the data according to the size and type of data. Verifier sends the challenges to the Combiner, the combiner transfer the challenge to the respected cloud. Afterwards, combiner aggregates the result and check whether it is valid or not. If it is valid, allow clients to store the data in multi cloud. In the phase Extract, PKG creates the private key for the client. The client creates the block-tag pair and uploads it to combiner. The combiner distributes the block-tag pairs to the different cloud servers according to the storage metadata. The verifier sends the challenge to combiner and the combiner distributes the challenge query to the corresponding cloud servers according to the storage metadata. The cloud servers respond the challenge and the combiner aggregates these responses from the cloud servers. The combiner sends the aggregated response to the verifier. Finally, the verifier checks whether the aggregated response is valid. The concrete ID-DPDP construction mainly comes from the signature, provable data possession and distributed computing. The signature relates the client's identity with his private key. Distributed computing is used to store the client's data on multi-cloud servers. At the same time, distributed computing is also used to combine the multi-cloud servers' responses to respond the verifier's challenge. Based on the provable data possession protocol, the ID-DPDP protocol is constructed by making use of the signature and distributed computing. This paper is organized as follows: I. Scope, II. Related Work, III. System Model, IV. Contributions, V. Conclusions, VI. Future Work.

II. SCOPE

PDP is a technique for validating data integrity over remote servers. In a typical PDP model, the data owner generates some metadata/information for a data file to be used later for verification purposes through a challenge response protocol with the remote/cloud server. The owner sends the file to be stored on a remote server which may be untrusted, and deletes the local copy of the file. As a proof that the server is still possessing the data file in its original form, it correctly computes a response to a challenge vector sent from a verifier — who can be the original data owner or other trusted entity that shares some information with the owner. Researchers have proposed different variations of PDP schemes under different cryptographic assumptions; one of the core design principles of outsourcing data is to provide dynamic scalability of data for various applications. This means that the remotely stored data can be not only accessed by the authorized Users, but also updated and scaled by the data owner. PDP schemes presented and focus on static or warehoused data and do not consider the case of dynamic data that are usually more prevailing in practical applications. Dynamic provable data possession (DPDP) constructions reported in the literature focus on the provable possession of a single copy of a dynamic data file. Although PDP schemes have been presented for multiple copies of static data, PDP scheme exists for multiple copies of dynamic data.

III. RELATED WORK

RDPC allows a client that has stored data at a public cloud server (PCS) to verify that the server possesses the original data without retrieving it. The model generates probabilistic proofs of possession by sampling random sets of blocks from the server, which drastically reduces I/O costs. The client maintains a constant amount of metadata to verify the proof.

A QoS Load Balancing Scheduling Algorithm in Cloud Environment

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Abstract *- As we all know that the rapid development in Internet especially in cloud computing, the scheduling algorithm plays very important and vital role in day-today life. For implementing the process and handling the resources, the proper load balancing technique is required in cloud environment. In distributed environment, it is very difficult to achieve the resources with having different configuration and capacity. To optimize a particular outcome, the load balancer can map the task to resource that based on some particular objectives and utilize a task that takes necessary objectives the most commonly used load balancing objectives are tasks completion time and resource utilization. The cloud workflow background that completely generalizes and describes the workflow scheduling optimization problems based on QoS (Quality of Service) under the architecture of cloud. In the first stage , Service Level Agreement (SLA) based scheduling algorithm determines the priority of the tasks and assign the task to the respective cluster. In the second stage, the Idle-server monitoring algorithm balanced the load among the server within the each cluster. Our main goal is to understand the existing load balancing scheduling techniques and develop an optimized load balancing scheduling algorithm which gives maximum benefit to cloud environment. This paper outlines a comparative study that has been done to assess these Scheduling algorithms on the cloud computing environment.*

Key Words *- Cloud computing, Quality of Service, Load balancing scheduling techniques, Load balancing algorithm.*

I .INTRODUCTION

The cloud load balancing is one type of load balancing method that is performed in cloud computing environment. Load balancing is process of distributing or dividing workloads across multiple computing system or resources. A load balancing reduces cost and maximizes availability of resources which is associated with document management systems. In order to suit user requirements, it uses a precise method to map the tasks to appropriate cloud resources, though by default maximum strategies are static in nature.

As we all know that the load balancer holds the current state of system. We call it good scheduler when it does not changes report of resource availability and the existing status of cloud resources and able to generate resourceful schedules so the overall performance of the system is improved. An important issue is that when operating with load-balanced services it shows how to handle information that must be kept across the multiple requests as per user in a user's session. If this information is stored on one backend server locally then subsequent requests are going to different backend servers so that it is unable to find that previous information. To introduce this performance issue, the cached information should be recomputed in which the request of load balancing requests to different backend servers.

Ideally cluster of servers behind the load balancer should be session-aware, so that if a client connects to any backend server at any time, the user gets unpredicted experience. This is usually achieved with in-memory database or shared database. In distributed resources, scheduling problem is process that maps and manages the implementation of independent tasks. In order to meet the user's specific need, process can provide appropriate resources to ensure that the workflow can be successfully completed. Cloud Computing is state which gives proper and on-demand network access to shared pool of computing resources like network, storage, servers and services that are to be rapidly released with the efficient way in minimum management.[7]

Primarily cloud computing provides following types of service models:

A. Software as a Service Model –

In Software as a Service model, where customers can request for desired software, use it and pay only for the duration of time it was used, instead of purchasing, installing and maintaining on their local machine. An Example for SaaS is Google Docs.

B. Platform as a Service –

In Platform as a Service model, where complete resources are needed to design develop, testing , deploy and hosting an application are provided as services without spending money for

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Implementation of Hand Gesture Recognition for Controlling In-Car Devices

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Abstract: When the system is integrated with facility of the recognizing real time gesture then system can be used for interfacing HCI (Human computer Interface). This work presents a technique for a human computer interface through hand gesture recognition that can recognize most of English alphabet from the American Sign Language hand alphabet. Gesture control is techniques which are to be explored as it can tremendously simplify numerous interactions between the car and the driver and/or other passengers. Distracted driving is one of the main causes of vehicle collisions. To provide support at times of danger and critical situation networking are used that transmit the gestures to the respective Industry along with whereabouts of the user of asset. Alert about traffic in rout is provided using sound sensor, obstacle sensor and vibrator. An internet based SMS (Short Message Service) application issued for where there is emergency which will message the real time location of asset and its speed and location name to the user's mobile. The GPS receiver system uses a hardware GPS receiver provided with a USB (Universal Serial Bus connector) so that the receiver is compatible and can be easily connected to a user computer. A GPS antenna is connected to the GPS receiver to acquire the signals. There should not be obstacle between the antenna and the satellite to achieve stronger signal. The software used for system is developed in VB.NET (visual basic.NET) programming language. VB.NET is an application oriented computer programming language.

Keywords: GPS, GSM, Image Processing, MATAB.

I. INTRODUCTION

In today's world employee security has become a major concern especially employee's that are working in call centres who have to do a night shifts and return home at late night hours. For such employees their safety is a major worry for all companies. We read many attacks on such call centre cabs in recent times; moreover, there is no efficient way to in-form the company or the police so that any immediate action can be taken. To resolve above mentioned problems we have come up with the solution of GSM and GPS based employee tracking and security. Here we are making a Cab unit which has GPS and GSM for tracking the current position of cab. The μC will send the current coordinates to the Server Unit with the help of GSM. The SMS will have the current coordinates of cab which will be displayed on the Google MAP of server The Cab unit is also interfaced with a Fingerprint sensor which will identify the person / Employees getting and out of cab. The μC will send this data to the server unit with the employee information as well as the GPS co-ordinates to pin point the location of pick up and drop of company employees. We have also interfaced MATLAB based hand gesture information system. Here the camera fitted inside the cab will continuously take snaps inside of car. Then it will try and identify any special hand gesture made by the users. Here we have 2 categories of hand gestures. One is for car automation which is used for controlling functions inside of car such as volume up volume down, Child lock on/off; etc. The second one is for the emergency condition. When the employee senses any danger to life he/ she have to make specialized gesture which is picked up by camera. Once it is processed the gesture is recognized and appropriate action and GPS locations is send to Company and the nearest police station.

II. LITERATURE SURVEY

Attempts to automatically recognize sign language began to appear in the 1990's. Re-search on hand gestures can be classified into two categories: First category relies on electromechanically devices that are used to measure different gesture parameters such as hand's position, angle, and the location of the fingertips. Systems that use such devices are called glove-based systems. The second category uses machine vision and image processing techniques to create visual based hand gesture recognition systems. The second technique is not flexible to users and is expensive. Reference [1] and [2] discuss the gesture recognition for human robot interaction and human robot symbiosis. Reference [3] discusses different categories for gesture recognition. Markov models are used for gesture recognition in reference [4] and [5]. A comprehensive framework is presented that ad-dresses two important problems in gesture recognition systems in [6]. An augmented reality tool for vision based hand gesture recognition in a camera projector system is described in reference [7]. A methodology using a neighborhood-search algorithm for tuning system parameters for gesture recognition is addressed in [8]. A novel method is introduced to recognize and estimate the scale of time-varying human gestures in [9]. In the past decade, much

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Quadcopter for Traffic Surveillance

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Abstract

This paper presents an approach for a self-navigating quad copter. It can greatly reduce the labour in commercial purpose. The UAV is capable of sustained without a human operator on board which can be controlled by autonomously. The main purpose of the project is to reduce the traffic in mostly rushed areas and in festival places (ganpati ralleys),where human cannot interfere or unable to watch on traffic situations so UAV will help to reduce the traffic by keeping eyes on it through video surveillance.
Keywords- Self Navigation, Return to Origin, Barometer based Altitude hold, GPS, Wireless, raspberry pi

I. INTRODUCTION

Quad copter also usually known as drone or Unmanned Aerial Vehicle (UAV) is either an autonomous or remote controlled aerial flying vehicle without a human on board. Quad copters have the VTOL (Vertical Take Off landing) characteristic unlike the other conventional flying objects or the Unmanned Aerial Vehicles which allows hovering at a particular point. They are highly suitable for environments (i.e. indoor or congested environment) where human access is at difficult situation. Quad copters are 6 degree of freedom unmanned air vehicles (UAVs) which generally use 4 rotary blades for propulsion.

The paper is divided into several sections. Section II represents the related works done regarding quad copters, section III describes about a flight dynamics, section IV gives the concept of its control system. Section V demonstrates about the sensors for balancing and tracking and also deals with wireless transmission. Section VI presents the design of autonomous robotic arm and Section VII represents the experiment and results obtained and finally the conclusion and future work is given in Section VIII.

II. RELATED WORK

Drones came into first use after World War II when unmanned jets, such as the Ryan Fire bee started field operation. The quad copter concept started as early as the 20th century and the earliest work were started by George DeBothezat and Etienne Oemichen . Their work failed due to lack of proper lifting power, instability, unresponsive and susceptibility to reliability issues. After putting efforts in recalculations and redesigning, the mentioned issues were overcome. Until the mid-1950s the quad copter designs done by Marc Adam got into its true shape and structure which was also the first quad copter designed to have flown forward successfully. Many hobbyists also give contribution to the designing of quad copter. Some of the successful work found are Arducopter, KK Multicopter, MultiWii, Microkopter, DJI Naza Lite and other various Open Source Projects. Early quad copters would typically have the engine sitting somewhere centrally in the fuselage of the copter, driving the 4 rotors via belts or shafts. Belts and shafts however are heavy and importantly, subject to breakage. As the 4 rotors of a quad copter are all slightly different from each other, a quad copter is not naturally stable, simply running 4 rotors at the same speed, while producing enough lift to hover the copter, does not produce stable flight. On the contrary, quad copters have to be constantly stabilized. In the absence of computers, this meant a monumental workload for the pilot. As a result, multicopter designs were abandoned in favor of single, or on rare occasions for very large transport helicopters, double rotor designs. With the advent of electric motors and especially microelectronics and micromechanical devices, a few years ago it became possible to build reliable and efficient multirotors. Modern multicopters have an electric motor mated to each rotor, sitting directly below or above it. A flight computer constantly monitors the orientation of the copter and corrects for instability by changing not the pitch of the rotors but simply the rpm of the individual motors/rotors. This fixed pitch design is much simpler than the complex swash plate mechanics that are required for single rotor helicopters. This design has proven to be hugely successful and most modern VTOL drones and hobby aircraft are now multicopters rather than single copters. The scaling up of this to aircraft that are able to carry people has only just begun and Krossblade is part of this development.

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A Review of Adaptive Thresholding Techniques for Vehicle Number Plate Recognition

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Abstract: Automatic vehicle number plate recognition is a challenging task and becoming important area of research due to its difficult applications such as Traffic data collection, toll collection, crime prevention and security control of restricted areas. Therefore in the last few decades many efforts were taken by researchers to develop different techniques for thresholding and segmentation of the vehicle number plate. This review presents many basic and advanced adaptive thresholding techniques for automatic vehicle number plate recognition.

Keywords: Adaptive thresholding, Integral image, mean, median, Gaussian filter.

I. INTRODUCTION

In image processing, thresholding is one of the important step. Thresholding is used to segment an image by setting all pixels whose intensity values are above a threshold to a foreground value and all the remaining pixel to a background value.

Adaptive Thresholding is the form of thresholding which consider the problems such as illumination, noise, resolution and according to that threshold window moves successively over every pixel in image. This review presents the different methods of Adaptive Thresholding.

II. TECHNIQUES OF ADAPTIVE THRESHOLDING

In adaptive thresholding for each pixel in the image we calculate separate threshold value and if threshold value is greater than current pixel value it is set to background otherwise it will be foreground.

Here we are presenting four methods of adaptive thresholding.

1. Adaptive Thresholding using Mean
2. Adaptive Thresholding using Median
3. Adaptive Thresholding using Gaussian filter
4. Adaptive Thresholding using Integral image

A. Adaptive Thresholding using Mean

It is the basic method of thresholding in which the current pixel value of image is replaced with mean or average of all the neighbouring pixels and that value is compared with current pixel value.If the value of current pixel is less than mean value then it is set to black otherwise it is set to white.

Example1: Consider the current pixel values of the image matrix are,

$$\begin{bmatrix} 4 & 1 & 5 & 3 & 6 \\ 9 & 7 & 2 & 1 & 9 \\ 1 & 2 & 8 & 4 & 7 \\ 0 & 7 & 8 & 9 & 1 \end{bmatrix}$$

Here we will use 3*3 mask for mean filtering. we will apply mean adaptive thresholding on it. 3*3 mask window values are,

$$\begin{bmatrix} 5 & 3 & 6 \\ 2 & 1 & 9 \\ 8 & 4 & 7 \end{bmatrix}$$

The computed mean matrix value is,

$$\begin{bmatrix} * & * & * \\ * & 5 & * \\ * & * & * \end{bmatrix}$$

Current centre pixel value 1 is replaced by mean value 5. This value is compared with current pixel value using,

$$\text{Output threshold O (i,j)} = \begin{cases} 0, Im < Flm * [(1-t)]/100 \\ 255, otherwise \end{cases}$$

Figure 1 shows input image and fig.2 shows output of adaptive mean threshlding. It is useful to remove noise and it ignores soft gradient change.

Fig.1 Input image

Fig. 2. Output binary image for Mean adaptive thresholding

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Detection of Left Object using Temporal Modelling via Static-Camera

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ABSTRACT: In this paper, a detection system is framed which is based on the Real-time capture of video via Camera and interpret the temporal flow of events related to abandonment of object. The video is captured on real time with the help of static cameras and same video is processed with the help of Image Processing. Our approach is framed to identify static foreground regions based on the temporal transition information which is based on the sequential pattern of each pixel. After detection it also analyses the previous frames by using back tracing methodology to identify and record the most likely luggage owners and raises an alarm. Therefore the proposed approach handles the problem of abandoned object very well using the dual rate background modelling methodology.

KEYWORDS: Abandoned object detection, object detection and tracking, visualSurveillance, Background Modelling, short-term background model and long-term background model

I. INTRODUCTION

Now-a day's security on public places has become a vital issue with concerns about terrorism on the rise. It is very important to identify the suspicious stationary object/items for the public security. The demand for reliable surveillance systems is increasing day by day, especially areas such as airports, railway and subway stations. Thus, video surveillance systems which can carry out automatic detection of security related events are gaining increasing interest.

But the main problem is though the cameras have installed at many places but the footage is only used after incident had taken place. However we can use those cameras in a smarter way that to prevent such incidents from occurring. As we know that there is no such type of object which falls under 'Abandoned' category, historic methods like training an object detector for a particular category fails in such case. Hence to make a way out of it, we are processing the real-time input and processing it with the help of image processing.

The camera which is mounted captures the video if a person is keeping any unknown object/item in the public place and leaving it there. In case if that person is just stepped away momentarily and visible within the scene, there is no concerned to be raised. But in case if the person is not found in the scene, it will raise an alarm and notification will sent to the security people.

In our approach we are also using back tracing methodology to look for the object owner. The system will inspect the previous frames captured in video checking when the left object was with the person who brings the object into the scene and sets it down there. The system will figure out the features of the object owner. These features are then utilised and get it matched with the features of the owner in the subsequent frames. If the features get matched, the alarm is diffused and if the match does not found out for a particular time period which is pre-defined the object is considered as Abandoned and alarm is triggered.

The solution of this problem is foreground and background techniques which are feasible to identify static foreground regions. We are combining the short-term background model and long-term background model to extract the foreground objects.

This Paper is organized as follows: Section II describes related works, Section III describes the proposed work in detail. Conclusions are given in section IV.

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Design, Development and Optimization of Hydraulic Press

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***Abstract*— A hydraulic press is a machine using a hydraulic cylinder to generate a compressive force. Frame, hydraulic cylinder and press table are the main components of the hydraulic press. In this project press frame, cylinder and press table are designed by the design procedure. They are analyzed to improve their performance and quality for press working operation. Using the optimum resources possible in designing the hydraulic press components can effect reduction in the cost by optimizing the weight of material utilized for building the structure. An attempt has been made in this direction to reduce the volume of material. So in this paper we consider an industrial application project consisting of mass minimization of H frame type hydraulic press. This press has to compensate the forces acting on the working plates and has to fulfill certain critical constraints. Here we use FEA implementation for analysis and optimization of hydraulic press.**

***Keywords*— Hydraulic press, Frame Structure, FEA, Optimization, Stress Analysis.**

I. INTRODUCTION

Presses are one of the most commonly used machine tools in industry for the forming of different materials. In the past, for the pressing tasks in industry, mechanical presses were more frequently used, but nowadays hydraulic presses take precedence due to their numerous advantages, such as: full force throughout the stroke, moving parts that operate with good lubrication, stroke that can be fully adjustable which contributes to the flexibility of application, built in overload protection, can be made for very large force capacities, silent operation and more compact. Hence a hydraulic press is a machine that makes use of the pressure exerted on the fluids to crush, straighten or mould. The concept of the hydraulic press is based on Pascal's theory, which states that when pressure is applied on fluids in an enclosed system, the pressure throughout the system always remains constant. In hydraulic press, the force generation, transmission and amplification are achieved using fluid under pressure. The liquid system exhibits the characteristics of a solid and provides a very positive and rigid medium of power transmission and amplification. In a simple application, a smaller piston transfers fluid under high pressure to a cylinder having a larger piston area, thus amplifying the force. There is easy transmissibility of large amount of energy with practically unlimited force amplification. This paper describes design, development and manufacturing of multi-purpose H-frame hydraulic press. For mass minimization, we use standard steel sections instead of plates. Due to this, the fabrication of hydraulic press frame also becomes simple. ANSYS has been used for the analysis; the main aim is to reduce the weight of the hydraulic press without compromising on the quality of the output. This particular press is used for a variety of tasks from doing mechanical work to straightening or intentionally bending structural components. It is also used to make force related measurements such as spring rates of coil and leaf springs.

II. DESIGN

The principal parameters of the design included the maximum load (200 kN), the distance the load resistance has to move (stroke length, 500 mm), the system pressure (250 bar), the cylinder area (bore diameter = 100 mm) and the volume flow rate of the working fluid. The critical components that require design includes the frame, the hydraulic cylinder and the press table.

Design of Press Frame

Machine frame is the most important part of the machine. It transfers all the forces that are produced during working of machine to the ground. It provides strength and stability to the machine during operation. The size and shape of machine structure should be such that it not only provides safe operation but also working stress and deformation do not exceed specific limit. Before designing the frame structure all the DFMA, Ergonomics constraints should be well understood.

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A Survey on Telemedicine Application in an Embedded System

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Abstract: In rural and remote areas, many people struggle to receive urgent medical treatment, also there is a lack of expert physicians in certain sectors of the health service. We can use telemedicine to provide health care at a distance. It can improve access to medical services in distant rural areas. Nowadays, telemedicine is forming a new structure of health-care services. The healthcare experts in the specialized fields can access or exchange information for diagnosis, treatment and prevention of disease. Telemedicine facilitates the delivery of the medical advice at the right time using new communication technologies for medical purposes. This paper proposes an application of telemedicine using GSM module and PHP.

Keywords: Telemedicine, GSM, Embedded system, PHP.

I. INTRODUCTION

Telemedicine refers to the use of telecommunication in the field of health-care system. India is geographically large country with many towns and villages located in remote rural areas. Few medical facilities exist to serve the large population in the villages. According to survey India has 80% of its main health-care centres located in cities that serves only 30% of the population. These percentages reveal a dismal health-care scenario where only 20% confined to rural community.[1] These reasons have propelled the growth of telemedicine in India. It can also save the patience's extra cost associated with the treatment such as travel and living expenses. With the help of tele-medicine we can transfer medical data from remote area to the well equipped city hospitals. System can be divided into two modes. First mode is patient data are available at the remote terminal immediately after acquisition, and store-and-forward mode, which involves sending data to the health care centre. GSM module is used to send data from remote area to city hospital. Remote area is nothing but client side and city hospital is server side. At remote area assuming there is no internet availability, GSM is used. Patient can take medical test here and send data to the city hospital and it may be displayed on the website. At client side application will automatically check for the temperature or the ECG data of patient.

II. BLOCK DIAGRAM

Following block diagram shows the proposed telemedicine system.

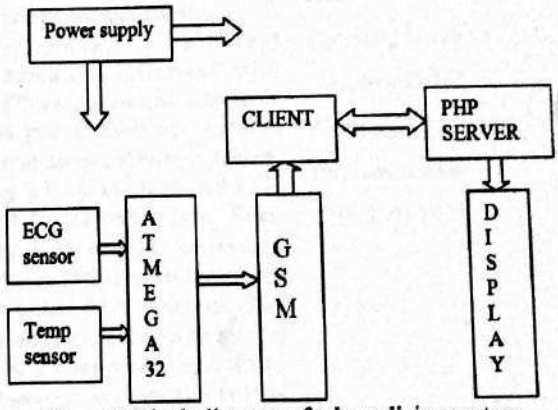

Figure1: Block diagram of telemedicine system

BLOCK DIAGRAM DESCRIPTION:

Single Lead Heart Rate Monitor:
It is an integrated signal conditioning block for ECG measurement. It will extract, amplify, and filter small signals in the presence of noisy conditions. We can check the patient's ECG readings and can send it further for observations.

Body temperature sensor
This is waterproofed version of the DS18B20 Temperature sensor. Temperature reading is taken and can send it Further for observations.

AVR Microcontroller (ATmega32)
The ATmega32 is low-power CMOS 8-bit microcontroller based on enhanced RISC architecture.ATmega32 achieves throughputs approaching 1MIPS/MHz, allowing the system designed to optimise power consumption versus processing speed. It is used to convert analog signal to digital signal and GSM is initialised through AVR.

GPRS MODULE (SIM900)
It is standard developed by European Telecommunications Standards Institute (ETSI). The SIM900 is a complete Quad-band GSM/GPRS solution in a SMT module which can be embedded in the customer applications. It delivers

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Home Automation System Using Power Line Communication and Android Wi-Fi Device

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ABSTRACT

The main advantages with PLC (Power Line Communication) are the use of an existing infrastructure. An open source automation system for controlling electrical appliances using PLC is presented here. Control messages are sent over Wi-Fi network from a Wi-Fi device i.e. Android Smartphone to the FPGA (Field-Programmable Gate Array) which then couples the messages to the power lines. Wi-Fi module is interfaced with FPGA through UART serial link. Android smart phone and FPGA communicates over wifi using P-to-P (point to point) communication. Ubiquitous power lines are used as physical media to transmit data over 220V/50Hz signal to control appliances/equipment. The data from the FPGA is coupled onto the power lines using a PLC modem and FSK (Frequency Shift Keying) modulation technique is employed to transmit data. Each receiver unit consists of PLC modem plus microcontroller and can be connected anywhere in the power line network. The receivers have addresses assigned to them and only respond to the commands sent to them by the transmitter PLC modem. The receiver unit controls the flow of electricity to the socket. The entire system is devoid of a computer to save power and make it low cost. Use of open source hardware, PLC, FPGA at master side and micro-controller at slave side collectively reduce the cost of controlling appliances remotely.

Keywords— Power Line Communication, Field Programmable Gate Array, Frequency Shift Keying

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I. INTRODUCTION

Automation essentially involves leveraging the power of technology to reduce the dependency on human presence and decision making for any process. It leverages different electronic equipment to control different parameters of any process. In these days of energy scarcity, it is prudent to save energy in every way possible. It is paramount to make such systems as easy to use as possible so that people can use their appliances in a smarter way to save energy. It also enables people to be more energy conscious by enabling them to have a real time status of electric appliances.
Automation also helps reduce peak hour power consumption by enabling people to turn off appliances at will remotely. This facilitates a constant power supply by having varied pricing policies for different times of day and night. Aim of this project is to simplify the process of human-machine interaction through the use of a generic. The purpose of the system is to provide convenience to the user interaction system and to make things around us smarter and interactive and also to reduce power consumption and save energy. This system requires no modification to the appliances, and it works for all appliances using electricity since electricity to the socket is controlled and not the appliance directly. The number of appliances needed to be controlled can be easily increased by increasing the range of addresses of the receiver units. Also the hardware and software used to build the system are licensed under open source license, unlike

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Implementation of Image Fusion Techniques for Remote Sensing Application

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***Abstract*— in remote sensing; there are many applications that simultaneously require the high spatial and high spectral resolution from multisensory images. Image fusion is required to combining relevant information from two or more images into a single image which is more informative than any of the input images. In this paper, we propose an image fusion approach based on Discrete Cosine Transform (DCT), Discrete Wavelet Transform (DWT) & Stationary Wavelet Transform (SWT) and the hardware implementation of fused image using Discrete Wavelet Transform on FPGA platform and their comparative analysis with the help of parameter evaluation for various test images.**

***Keywords*— Discrete Cosine Transform (DCT), Discrete Wavelet Transform (DWT), Fusion, Multi-Sensor, Stationary Wavelet transforms (SWT).**

I. INTRODUCTION

Recently, the image fusion has great importance in digital image processing. Image fusion is a data fusion technology which keeps images as main research contents. The main goal of image fusion is to integrate complementary multisensory, multi-temporal and multi-view information into one new image which is more informative than any of the input images. The multisensory data in the field of remote sensing, medical imaging may have multiple images of the same scene providing different information. It is not possible to have a single image that contains all the information of objects in the image. To achieve this, image fusion is required. Image fusion is the process of combining relevant information from two or more images into a single image which is more informative than any of the input images. Data fusion has been widely used in remotely sensed image analysis at pixel, feature, and decision level. Images used for fusion can be taken form multimodal imaging sensors or from the same imaging sensor at different times [1].

The IR images contain information that is not the same as in the visible range images. The IR reflectance of objects may be different than for the visible light.

Foliage is often much more intensive in IR images and some semitransparent objects may become transparent in IR wavelengths and vice versa. One possible solution comes from the field of data fusion of these images with different contents could be utilized to enhance image quality of object if suitable cameras are available. A number of methods have been proposed for merging infrared images with visible spectrum images concentrate heavily on the surveillance and remote sensing applications [10]. Fusion methods can be broadly classified into two that is spatial and transform domain fusion. But spatial domain methods such as Averaging, Brovery, and Principle Component Analysis (PCA) based methods produce spectral distortion in the fused image. This is particularly crucial in remote sensing if images to merge were not taken at the same time. In the last few years, multi-resolution analysis has become one of the most promising methods for the analysis of images in remote sensing. Recently proposed new approach to image merging that uses a multi-resolution analysis procedure based upon wavelet transform. The DWT and SWT based method will be more efficient for fusion. Stationary Wavelet Transform (SWT) is similar to Discrete Wavelet Transform (DWT) but the only process of down-sampling is suppressed that means the SWT is translation-invariant [2]. But the image fusion algorithm based on DWT is faster developed image fusion method in recent decade. Discrete Wavelet Transform has good time frequency characteristics. DWT is defined as considering the wavelet transform of the two registered input images (Infrared and Visible) together with the fusion rule. Then, the inverse wavelet transform is computed, and the fused image is reconstructed.

II. IMAGE FUSION

The general image fusion process is to perform a multi-scale transform (MST) on each source image, then construct a composite multi-scale representation from these according to some specific fusion rules as shown in Fig.1

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Leaf disease severity Detection using K-means clustering and CBIR

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Abstract – *In the process of disease management detection of plant disease and its severity is challenging task. It depends on the image features selection and the accuracy with which diseased portion is segmented. This paper presents the system for detection of the leaf disease that based on Content Based Image Retrieval (CBIR). Also proposed system effectively calculates the diseased area of the leaf to measure its severity. CBIR system is developed using integration of color, shape and texture features of the leaf images while the segmentation of the diseased portion of the leaf is done by using K-means clustering algorithm. It is found that the proposed system performs the tasks of disease detection and severity detection accurately*

Key Words: *Clustering, Decease, Image processing, Matlab, Segmentation*

1. Introduction:

Plant diseases are one of the major factors which affect the quality and productivity of agricultural system. This degrades the life of plant. Agricultural production has a great influence on economy of farmers as well as whole country. Early diagnosis of the disease can lead to the proper treatment which further can inhibit the spared of the disease. The diagnosis of the disease include the identification of the disease and finding the extent i.e. severity of the disease. The measurement of the extent is the hot research in disease control and yield loss estimation. It is also essential for disease catch mechanism, disease resistance and breeding. [1]

Traditionally diagnosis of the disease is done by naked eye observation method [2]. The agricultural expert can do this by visually observing the changes in the colour and appearance of leaf to detect the disease. It is also possible that different experts may detect and classify the same leaf with different disease and with different severity. This creates conflict in the treatment of the plant. If large fields are checked for disease infections then this method is time consuming and laborious for large fields. It suffers from subjectivity. Hence there is demand for developing fast and accurate methods for disease and its severity detection.

Since naked eye observation is the basic approach for the diagnosis of the disease, image processing can be effectively used here as the role of eye & brain can be done by appropriate image capturing device like camera and computer based intelligent system respectively. Hence this paper is proposing image processing based method for detection of disease and its severity. The disease is detected using Content Based Image Retrieval (CBIR) and its severity is computed using K-means clustering algorithm. CBIR system is designed with combination of color, texture and shape features for detection of the disease and K-means clustering is used with L*a*b color space for segmenting the diseased portion of the leaf.

2. Related Work:

Many researchers worked on detection, segmentation of the disease of the leaf and its severity.

Shen Weizheng et al [1] developed image processing based Grading Method of Leaf Spot disease of soybean. H component of HSV image of leaf is used to segment disease spot using Sobel operator. They found that hue component reduces the disturbance of illumination changes and the vein. The quotient of disease spot and leaf areas is used to find the grading of the disease.

Automatic plant disease diagnosis system using multiple artificial intelligent techniques is developed by Meunkaewjinda *et al* [2] for grape leaf diseases. Self-organizing feature map and back propagation neural network is used to recognize the colors of grape leaf. Further a modified self-organizing feature map is used for segmentation and support vector machine for classification. The average percentage of diagnosis achieved in their experiment is 86.03.

Otsu algorithm based method for automatic identification of wheat diseases is proposed by Jinghui *et al* [3]. The diseased area of the leaf is extracted using Otsu algorithm. Segmented region is used to obtain different Morphological characteristics which are further filtered by principal component analysis. The disease detection rate of about 85% is achieved in this experimentation.

Yingfeng *et al* [4] proposed Adaptive learning rate back propagation neural network for segmentation of rice disease spots. Disease segmentation accuracy of about 99% is achieved with 20 reference images of rice leaves.

Histogram based triangular segmentation methods for detection of Brown spot disease on sugarcane plant leaf is developed in [5]. The severity of the disease is

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Pavement Rehabilitation Using Thin White Topping

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ABSTRACT: Thin White topping (TWT) is a technology to construct 100-200mm thick cement concrete overlay on distressed asphalt pavement as a rehabilitation technique. There have been several TWT projects completed in India, the first in Pune, subsequently in New Delhi, Ghaziabad, Mumbai, and Thane. All projects have shown good to excellent performance so far, indicating that this rehabilitation strategy can stand up to the Indian climate and traffic conditions. The suitability of TWT rehabilitation for a particular site is dependent on several factors including existing asphalt thickness, volume of truck traffic, base and sub-grade support, and pavement conditions. This paper outlines the state-of practice in India for construction of TWT considering mix traffic, extreme climatic conditions, use of indigenous materials and design aspects as per Indian Road Congress (IRC) guidelines.

KEYWORDS: Deflection, Hot Mix Asphalt, Stress, Thin White Topping.

1. INTRODUCTION

The increasing truck weights and tyre pressures on our pavements in recent years have pushed the demand on the performance of our pavements to a higher level. Many asphalt pavements have experienced rutting while many others have experienced longitudinal cracking. One of the possible solutions to this problem is the use of white topping (WT), which is a cement concrete layer placed over an existing asphalt pavement.
Concrete overlays have been used to rehabilitate bituminous pavements since 1918 in USA. There has been a renewed interest in white topping, particularly on Thin White Topping (TWT) and Ultra-Thin White Topping (UTWT) over Conventional White Topping. Based on the types of interface

i. **Conventional White topping**– which consists of PCC overlay of thickness 200 mm or more, which is designed & constructed without consideration of any bond between existing overlay & underlying bituminous layer (without assuming any composite action).
ii. **Thin White topping (TWT)**– which has PCC overlay between 100 – 200 mm. It is designed either considering bond between overlay & underlying bituminous layer or without consideration of bond. High strength concrete (M 40 or higher) is normally used to take care of flexure requirement. Joints are at shorter spacing of 0.6 to 1.25 m.
iii. **Ultra-Thin White topping (UTWT)**– which has PCC overlay of less than 100 mm. Bonding between overlay & underlying bituminous layer is mandatory. To ensure this, the existing layer of bitumen is either milled (to a depth of 25 mm) or surface scrapped (with a non-impact scrapper) or gently chiseled. Joints are provided at a spacing of 0.6 to 1.25 m.

White topping is stronger than asphalt overlay, and thus more resistant to rutting and surface initiated cracking. Consequently, white topping pavements pose potential economical and technical benefits. However, they need to be effectively evaluated for feasibility and proper application techniques, suitable for India, so that their use can provide the maximum benefits to the road users in particular and Indian economy at large.

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Effect of Bacteria on the Properties of Fly Ash Concrete

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Abstract— Today the application of concrete is rapidly increasing worldwide; it is already the most used manmade material in the world as it is relatively cheap and its basic ingredients (sand/ gravel/ water) are readily available. However, the development of a sustainable concrete is urgently needed for environmental reasons. It is clear that cement, the key binder ingredient in concrete has a high environmental impact. Presently about 10% of the total anthropogenic CO2 is due to the cement production solely. Today innovation is leadingly being inspired by nature as a sustainable alternative. Hence, taking notes from biotechnology, investigation is being conducted to create concrete the way nature does with microorganisms. The objective here is to study the application of bacterial species i.e. Bacillus Pasteuri to improve the strength of fly ash concrete. The dormant but viable bacteria in the concrete matrix will contribute to the strength of the concrete. Water which enters the concrete will activate the dormant bacteria which in turn will give strength to the concrete through the process of metabolically mediated calcium carbonate precipitation. The spore forming Bacillus Pasteuri may be able to survive in this artificial environment and increase the strength and durability of cement concrete. We found that incorporation of this bacteria will not negatively affect the compressive and split tensile strength of the cement concrete instead induce the precipitation of calcite. Microbial Induced Calcite Precipitation is highly desirable because the calcite precipitation induced as a result of microbial activities, is pollution free and natural. Microbial calcite precipitation was visualized by Scanning Electron Microscope. The unique imaging and microanalysis capabilities of SEM established the presence of calcite precipitation inside cracks, bacterial impressions and a new calcite layer on the surface of concrete.

Key words: Bacillus pasteurii, Bacterial concrete, Fly ash, water absorption

I. INTRODUCTION

Cracking of concrete is a common phenomenon. Without immediate and proper treatments, cracks in concrete structure tend to expand further and eventually require costly repair. Though it is possible to reduce the extent of cracking by available modern technology, remediation of cracks in concrete has been the subject of research for many years. There is large number of products available commercially for repairing cracks in concrete .Surface treatments with water repellents or pore blockers can be applied. However, treatments with organic products involve some disadvantages such as the different thermal expansion co efficient of the treated layers, degradation with the age and the need for maintenance .Furthermore, the use of certain solvents contributes to pollution. Another way to clean, repair or protect concrete and mortar surfaces is to use biological processes, which may have a more ecological character. Smart materials react to changes in stimuli (temperature, moisture or pH) and can simulate biological, human like behaviour. Humans have the ability to precipitate minerals in the form of bones and teeth continuously. This ability is not only confined to human beings; even Bacillus Pasteruii, a common soil bacterium, can continuously precipitate calcite. This phenomenon is called as microbiologically induced calcite precipitation. Microbiologically induced calcite precipitation is a technique that comes under a broader category of science called bio-mineralization. It is a process by which living organism form inorganic solids. In this method a new highly impermeable calcite layer formation takes place over the surface of the already existing cement mortar layer. Calcite has a coarse crystalline structure that readily adheres to surfaces in the form of scales. In addition to the ability to continuously grow upon itself it is insoluble in water and is pollution free and natural. Due to its inherent ability to precipitate calcite continuously bacterial concrete can be called as "Smart Bio Material". Microbiologically induced calcite precipitation technique can be used to improve the compressive strength and stiffness of cracked concrete specimens. Considerable research on carbonate precipitation by bacteria has been performed using different bacteria. These bacteria's are able to influence the precipitation of calcium carbonate by the production of a urease enzyme. This enzyme catalyzes the hydrolysis of urea to CO_2 and ammonia, resulting in an increase of the pH and carbonate concentration in the bacterial environment. Specifically, microbilogical–induced calcite is environmentally innocuous, compared to synthetic polymers currently used for concrete repair. *The* highly alkaline pH of concrete is a major hindering factor to the growth of a moderate alkaliphile, B.Pasterurii, whose optimum pH for growth is around nine. *B Pasteurii* however, has an ability to produce the endospore, dormant form of the cell, to endure extreme environment

Cracks in concrete significantly influence the durability characteristics of the structure. The bacterial remediation technique can be used for repairing structures of historical importance to preserve the aesthetics value, as conventional technique, such as eporus injection cannot be used to remediate cracks in those structures. This technique resists the penetration of harmful agents (chlorides, sulphates, carbon dioxide) into the concrete thereby decreasing the deleterious effects they cause. Some of the microorganisms, even though they prove to be deadly and dangerous, there are some microorganism which help the human being. There are some other microorganisms, which can even help the man made construction .They can enhance the performance of a structure by increasing its stiffness and strength for example Bascillus Pasteruii microorganism can precipitate calcite which can seal off the microcracks and macrocracks present

STRESSCONCENTRATRION ANALYSIS OF COMPOSITE PLATE WITH CIRCULAR HOLE

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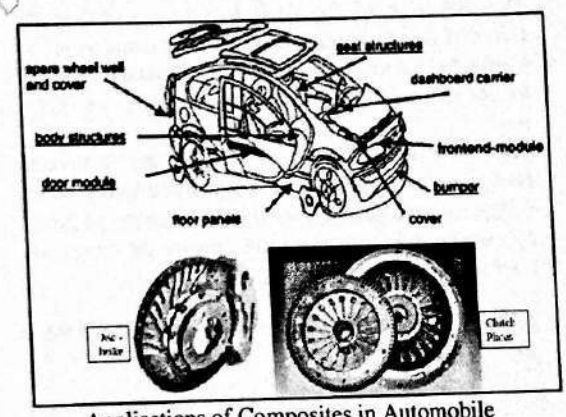
Abstract- **Composite materials are having an extensive variety of uses instructural design, especially for lightweight structure that have stringent stiffness and strength requirements. They are attractive replacement for metallic materials for many structural applications. By finding efficient composite structure design that meets all requirements of specific application. This is achieved by tailoring of material properties through selective choice of orientation, no. of stacking sequence of layers that make up composite material.**
Composites are used more and more often for load carrying and safety structures in all kind of applications foe aviation and space technology, for vehicles etc.Composite materials have been introduced progressively in automobiles, following polymer materials, a few of which have been used as matrices. It is interesting to examine the relative masses of different materials which are used in the construction of automobiles. Even though the relative mass of polymer-based materials appears low, one needs to take into account that the specific mass of steel is about 4 times greater than that of polymers. This explains the higher percentage in terms of volume for the polymers.

Key Words – Composite, Composites Application, FEA, Stress Concentration

I. INTRODUCTION

Composite materials are ordinarily utilized as a part of structures that request an abnormal state of mechanical execution. Their high quality to weight and solidness to weight proportion have encouraged the advancement of lighter structures, which regularly supplant traditional metal structures as appeared in fig. Due to structural requirements, these applications require joining composites either to composites or to metals. Also, for the convenience in manufacture or transportation and limitations on material size, it is rarely possible to produce a construction without joints. All connections or joints are potentially the weakest points in the structures so can determine its structural efficiency. Although leading to a weight penalty due to mechanical fasteners, these are widely used in industry. In which stress concentration is created by drilling a hole in the Unavoidable Actually mechanically secured joints, (for example, stuck joints) are unavoidable in complex structures in light of their ease, effortlessness for collect and assistance of dismantling for repair. In this manner joint proficiency has been a noteworthy worry in utilizing overlaid composite materials. Relative wastefulness and low joint quality have restricted far reaching use of composites. The requirement for tough and solid composite joint is even dire for essential auxiliary individuals made of overlays. In light of the anisotropic and heterogeneous nature, the joint issue in composites is more hard to investigate than the case with isotropic materials.



Applications of Composites in Automobile

Mechanical fasteners remain the primary means of load transfer between structural components made of composite laminates. As, in case of incremental effectiveness of the structure, the functional load persist to increase, the load carried by each fastener increases consequently. This increases probability of failure. Therefore, the assessment of the stresses around the fasteners holes becomes critical for damage design. The correct prediction of the stress distribution along the hole edge is essential for authentic strength valuation and failure prediction. An unskillful design of joints in the case of mechanical fasteners often causes a reduction of load

Generation of Electricity using Running Tap

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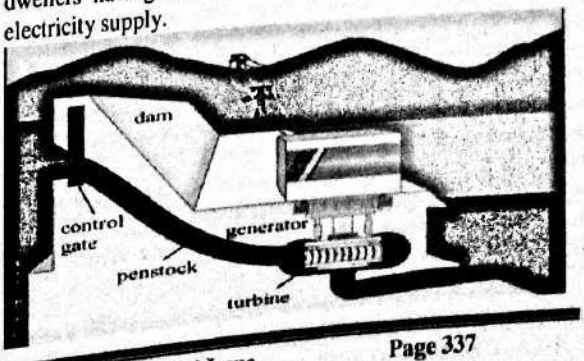
Abstract:Now day's electricity is one of part of human being. Without it human beings not survive. From day start to finish man uses no. of machines in that number of machines runs with the help of electricity. We have to develop electricity with the help of any source from any application for getting more electricity.
There is one of best application from which we can develop electricity is water running tap. In one day every human uses water for many purposes from water tap. With the help of K.E. available in running water from tap we can manufacture small amount of electricity by converting kinetic energy of water into electrical energy with the help of generator.
For doing this here we have design and manufacture a small hydro power unit and done successful trial on that model. And this model is totally pollution free and does not required any extra source of generating energy. This model can be fitted any were where water flowing tap is available. Generated electricity is utilized for charging invertor.
Keywords: Turbine, D. C. motor.

I.INTRODUCTION

Hydropower is energy from water sources such as the ocean, rivers and waterfalls. "Mini-hydro" means which can apply to sites ranging from a tiny scheme to electrify a single home to a few hundred kilowatts for selling into the National Grid. Small-scale hydropower is one of the most cost-effective and reliable energy technologies to be considered for providing clean electricity generation. The key advantages of small hydro are high efficiency (70 - 90%), by far the best of all energy technologies, high capacity factor (typically >50%),high level of predictability, varying with annual rainfall patterns, Slow rate of change; the output power varies only gradually, from day to day (not from minute to minute), a good correlation with demand i.e. output is maximum in winter, It is a long-lasting and robust technology; systems can readily be engineered to last for 50 years or more. It is also environmentally benign. Small hydro is in most cases "run-of-river"; in other words any dam or barrage is quite small, usually just a weir, and little or no water is stored. Therefore run-of-river installations do not have the same kinds of adverse effect on the local environment as large-scale hydro.

We are surrounded by hundreds of appliances that use electricity to do work. But what is electricity? Basically, electricity is a flow of electrons in a metal wire, or some other conductor. Electrons are tiny particles found inside atoms, one of the basic building blocks of all matter. We call the flow of electrons through any conductor a "current of electricity."Each electron carries a tiny negative charge. When electrons move through a conductor, they produce an invisible field of magnetic force, similar to that found around a magnet. The strength of that field depends on how many electrons are in motion. We can concentrate this field by winding the wire in which the electrons move into a tight coil with many turns. This causes many more electrons to be in motion in a small space, resulting in a stronger field. If we then place a piece of iron in the middle of the coil, the electromagnetic field will turn the iron intoa powerful magnet. While it is true that electrons moving through a conductor produce a magnetic field, the reverse is also true. You can make electrons move in a wire by "pushing" them with a moving magnet, which is how an electrical generator works. Electrical generators usually contain powerful magnets that rotate very close to dense coils of insulated wire. The coils develop a flow of electrons that becomes an electrical current when the generator is connected to an electric circuit. We will be building an electrical generator as part of this project. It uses moving magnets to create a current of electricity in coils of wire. This generator is technically called an alternator because the electrons move back and forth in the wire, rather than flowing in just one direction as they do from a battery. Ammeter connected to the wire would show that the charge of the wire switches or alternates between positive and negative as the electrons change directions. Such an electrical current is called alternating current or AC. Household electrical current is alternating current. Appliances have to be specially designed to use it. The other type of current is called direct current, because the electrons move in one direction only. Most battery-powered appliances such as calculators and portable CD players use direct current.A low head water turbine has been used as a source of power generation where construction of a dam for the head is not required. It works on natural flow of water to generate a specific power output. The power is however limited by flow of water which is sufficient to keep generate a suitable number of revolutions per minutes for the blades. Present work is aimed to design and manufacture a low head turbine which could produce sufficient power to light a couple of energy saver that can suffice the lighting requirements of far flung villagers and dwellers having access to natural streams of water but no electricity supply.



A REVIEW ON HEAT TRANSFER ENHANCEMENT USING NANO FLUIDS

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Abstract -

To increase Heat transfer rate is considered as critical aspect for the design of rapid heating and cooling environment. The convective heat transfer can be increased passively by changing the flow geometry, boundary conditions, or by enhancing the thermal conductivity of the fluid. Researchers try to increase the heat transfer rate by increasing the thermal conductivity of the fluid. The thermal conductivity of the fluid can be boosted by the use of nano-powder in the base fluid. Nanofluids cause drastic change in properties of the base fluid. Nanofluids are termed as the next generation heat transfer elements. The mass concentration of nanoparticles is proportional to the rate of heat transfer within critical limit. The mass concentration of the powder, Reynolds number and size of the particles are the basic parameters controlling the heat transfer of the fluid. A nanofluid is a suspension of nano sized particles made up of metal, carbides or oxides of size up to 100 nm in a base fluid of water, oil or ethylene glycol. Recently large numbers of experiments have been are carried out to evaluate the effect of nanofluid in enhancement of the heat transfer rate in various heat exchangers. The increase in the Peclet number and Nusselt results in the increase in the heat transfer coefficient of the fluid which increase the heat transfer rate.

Key Words- Nanofluids, Nanofluid applications, Heat transfer enhancement, Thermal Conductivity

I. INTRODUCTION

Various types of industries employ different types of heat exchangers to exchange the heat between cold and hold stream and modify them time to time to optimize the heat transfer rate. The augmentation in heat transfer rate is possible to achieve by two steps by optimizing the design of the heat exchanger and by optimizing the operational parameters. Optimization of the operational parameters play main role in enhancement of heat transfer rate after the heat exchanger is designed. The passive and active are the possible ways to enhance the heat transfer rate operationally. The Active method includes sprays, electro hydrodynamics, ultrasound waves, jets, synthetic jet heat transfer and high amplitude vibratory motion, passive method include Nano scale coating, surface coating, nanofluid, turbulence promoters, hydrodynamic cavitation and mixing promoters. The three methods are considered as effective methods to enhance the heat transfers which are Using Inserting Fluid Tabulators, Roughing the Heat Exchanger Surface and Nanofluids.

A nanofluid is a fluid containing nanometer-sized particles, called nanoparticles. These fluids are engineered colloidal Suspension of nanoparticles in a base fluid. The nanoparticles used in nanofluids are typically made of carbon nanofluids, metals, oxides, carbides. Common base fluids include ethylene glycol, oil and water. Nanofluids have properties that make them potentially useful in many applications in heat transfer, heat exchanger, including microelectronics, fuel cells, pharmaceutical processes, and hybrid-powered engines, engine cooling, domestic refrigerator, in grinding, machining, chiller, and in boiler flue gas temperature reduction. They enhanced thermal conductivity and the convective heat transfer coefficient compared to base fluid.

small concentration of particles that completely

II. ADVANTAGE OF NANOFLUID

Nanofluids have been considered for applications as advanced heat transfer fluids for almost two decades. Due to the wide variety and the complexity of the nanofluid systems, no agreement has been achieved on the magnitude of potential benefits of using nanofluids for heat transfer applications. Compared to conventional solid–liquid suspensions for heat transfer intensifications, Nanofluids having properly dispersed nanoparticles possess the following advantages

- High specific surface area so more heat transfer surface between particles and fluids.
- High dispersion stability with predominant Brownian motion of particles.
- Reduced particle clogging as compared to conventional slurries, thus promoting system miniaturization.
- Adjustable properties, including thermal conductivity and surface wettability, by varying particle concentrations to suit different applications.
- Pressure drop is minimum, Due to nano size particles.
- As compared to pure liquid it reduced pumping power to achieve equivalent heat transfer.
- Higher thermal conductivity of nano particles will increase the heat transfer rate.
- Nanofluids are most suitable for enhance heating and cooling systems.

The four unique features observed are listed below

A. *Abnormal enhancement of thermal conductivity* - most important feature observed in nanofluids is an abnormal rise in thermal conductivity beyond expectations and much higher than any theory could predict.

B. *Stability* - Nanofluids have been reported to be stable over months using a stabilizing agent.

C. *Small concentration and Newtonian behavior* Large enhancement of conductivity is achieved with a very maintained the Newtonian behavior of the fluid. The

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Dynamic Response Analysis and Mechanical Properties of Composite Plate Having Different Orientation

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ABSTRACT

Now, fiber reinforced composite materials are gradually becoming more popular for several applications, either as components of complete technical systems, as complete structures or as structural elements. Their resistance to weight ratio is the main advantage of composite over metal components. The purpose of this study is to determine dynamic analysis and mechanical properties of the composite plate having different orientations (0 degree and 45 degree). In this experimental study, Epoxy/ E-Glass composite plate was first manufactured by pouring process. By using simple formulaeshear modulus, poison's ratio, andlongitudinal transverse Young Modulus were determined. The experiment was carried out on a FFT analyzer, which was built specifically to investigate dynamic characteristics of composite plate. The transverse &longitudinal vibrations were obtained experimentally. Inspection of the dynamic behavior of the composite beam for various end conditions is made by both experimental and theoretical analysis.The experiment was carried on Compression Testing Machine with different orientations and volume fraction.

KEYWORDS-COMPOSITE MATERIAL, FIBER ORIENTATION, STRENGTH OF COMPOSITE MATERIALS, VOLUME FRACTION,

1.INTRODUCTION

Rapid technological advances in engineering brought the engineers andscientists to a point, where they became limited by the capabilities of traditional materials. Scientist and Researchers in materials technology are constantly looking for solutions to provide durable andstronger materials which will answer the needs of their fellow engineers. The Composite materials are the most favored solutions to this problem in the field.Composite materials technology is providing compromising solutions and alternatives to many engineering fields by combining the stronger properties of traditional materials and eliminating the disadvantages they bear. Now a day Problems born from material limitations like structural strength,heavy weight. Many more alternatives are being introduced to readily use engineering applications.Composite materials are being used in many engineering applicationsDue to the high specific stiffness and strength. However, the mechanical properties of composite materials may degrade severely in the presence of damage. The Failures of structures, particularly aircraft structures, often have tragic consequences. So that, an especially very important issue to damage detection on-line. Common damage for composite materials isfiber breakage, matrix cracking, delamination between plies andfiber-matrix deboning. Delamination may be induced during in service loading, such as by foreign object by fatigue orimpact. Delamination may not be visible or barely visible on the surface, they are embedded within the composite structures. However, they may significantly reduce the strength and stiffness of the structures. Reduction in the stiffness will affect some design parameters such as the vibration characteristics of the structure (e.g. mode shape andnatural frequency). Delaminations reduce the natural frequency as a direct result of reduction of stiffness. It may cause resonance if the reduced frequency is close to the working frequency. Thereforeit is important to understand the influence of the vibration characteristics of the structures.

What is composite material?

Two or moreMaterials are combined on a macroscopic scale to form a useful third material is termed as composite material. Key is the macroscopic examination of a material wherein the components can be identified by the naked eye. The Different materials can be combined on a microscopic scale, such as in alloy of metals, but the resulting materials is, for all practical purposes, macroscopically homogeneous, i.e. essentially act together and the components cannot be

"Seismic Evaluation of Existing Building"

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Abstract **The seismic evaluation of existing building is the strengthening of building for pre earthquake or post-earthquake. Strengthening is required to increase capacity of structure to resist specific demand of earthquake. Strengthening may be carried out in existing seismically deficient building or earthquake damaged building.Seismic evaluation and retrofitting are undertaken for the life -line building, such as hospital, police station, fire station, major administrative building, school, educational building, historical monument etc. Strengthening may be carried out in existing seismically deficient building or earthquake damaged building.Mostly the existing structure for fails having insufficient capacity to resist the demand. Mostly the strengthening of existing building carried by two ways i.e. jacketing and Carbon fiber reinforced polymer(CFRP).The aim of this paper to evaluate the response of existing building by using linear analysis and nonlinear analysis. The analysis will be carried out on existing building which G+3 located in Pune(Seismic zone III) by SAP2000 with help of guidelines following code I.S 1893:2002(part I),FEMA356,ATC 40.Based on the result of analysis the capacity of existing building for the given demand earthquake. Will be study and if the structure not achieved the specific demand of earthquake, strengthening of existing will be carried out by using CFRP. The requirement of CFRP layer for strengthening will be evaluate as per guideline given in ACI440-2R.The comparison of existing building with and without FRP will be carried out. The results are compared based on pushover curve, hinge formation pattern, and inter storey drift ratio formation.**

Keywords-**Linear analysis,Nonlinear analysis, Strengthening, Retrofitting, Carbon fiber reinforced polymer (CFRP).**

I. INTRODUCTION

Many of the existing building are lacking in adequate earthquake resistance because these are not designed according to modern codes and prevalent earthquake resistance practice. Also many building that are damaged in earthquake may need not only repaired but also upgraded of their strength in order to make them seismically resistant. The aim of seismic evaluation is to assess the possible seismic response of building, which may be seismically deficient or earthquake damaged, for its possible future use. The evaluations are also helpful for adopting the retrofitting of structure. Seismic evaluations of building mean the strengthening of building pre earthquake or post-earthquake. Strengthening required because of due changes zone of area, depending on soil behavior.

The aim of this paper to strengthening or retrofitting of existing building. Strengthening means increase the seismic resistance of building beyond its pre earthquake state. Strengthening may be carried out in existing seismically deficient building or earthquake damaged building. And also reconstruction or renewal of any part of an existing building to provide better structural capacity i.e. higher strength and ductility than the original building. Evaluation of building is required at a two stages (1) Before the retrofitting, to identify the weakness of the building to be strengthened, and (2) After the retrofitting, to estimate the adequacy and effectiveness of retrofit.

The essence of virtually all seismic evaluation procedures is a comparison between some measures of "Demand" that earthquake take place on a structure to measure of the "Capacity" of the building to resist. To get minimum damage and less psychological fear in the mind of people during the earthquake, IS 1893: 2002 permits maximum inter-storey drifts as 0.004 times the storey height. Inter-storey drifts always depend upon the stiffness of the respective storey. The capacity of structure to resist seismic demand is a property known as ductility. It is the ability to deform to beyond initial yielding without failing abruptly.

A. *Necessity of seismic evaluation*

1. The building may not have been designed and detailed to resist seismic force.
2. Earthquake vulnerable building that have not experience to sever earthquake building
3. Lack of timely revisions of codes of practice and standards,seismic zone map of country and construction technique.
4. Building designed to meet modern seismic code but deficiencies exist in design or construction.
5. Essential building strengthens like hospital,historical monument and architectural

Soil Improvement Using Molasses

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Abstract-Now-a-days, there is rapid and continuous development in each and every field of construction industry. Roads are also plays important role in development of our nation. There are many methods and technologies which are effectively adopted for soil stabilization but over this the use of molasses, bagasse and fly ash is beneficial in cost and the material can be made easily available. The raw materials may cause a big impact on environment but if this is properly and if these are properly get used in stabilization of soil the construction becomes eco-friendly. This method of stabilization is very useful and eco – friendly from future point of view as the rapid industrialization may cause harmful effect but effect but using this method the bagasse, fly ash and molasses can be safely and in eco – friendly manner disposed off.

Keywords- molasses, soil, plasticity index.

I.INTRODUCTION

Road plays very important role in development of country. In case of developing country development of road is consider as development of country. Road pavements, today, are one of the most important infrastructures for a developing country like India. Any damage to the same causes a lot of inconvenience to the traffic, physical harm to the commuters and many such problems that are not unavoidable. In days to come, the axle loads and traffic intensity is likely to exceed the capabilities of soil used in construction of road pavements, if the use of the soil is assumed inevitable then certain modification will be essential in future to bring its capabilities to meet the demand of increasing axle loads and traffic intensity. One of such modification is improvement in strength of soil by using molasses. The molasses is available in enough quantity in Maharashtra state as there is much of sugarcane produces.

The sugarcane factory produces 10 tons of sugar and 4 tons of molasses after processing 100 tons of sugar cane. The molasses is use as binding material in stabilization of soil.[1]

II.MATERIALS

2.1Soil: The locally available soil is use at Dhangwadi, Tal. Bhor, Dist. Pune. The percentages of molasses are varying in soil sample.

2.2 Molasses: It is by-product of sugarcane industry. The molasses is syrup left from the final crystallization stage is called molasses. The molasses use is from Rajgad sahkari sakhar karkhanaBhor.

Table: 1 Properties of Soil.[2]

Sr.no	Property	Result
1	Specific gravity	2.59
2	Particle size analysis	
3	Gravel content% (20 to4.75mm.)	18.23
4	Sand content % (4.75 to 0.075mm)	64.86
5	Silt and clay content % (below 0.075mm.)	16.91
6	**Atterberg's Limits: %**	
7	Liquid limit	32.16
8	Plastic limit	22.56
9	Plasticity index	12.87
10	Maximum dry density (gm./cm3)	1.48
11	Optimum Moisture Content (%)	21.42

Table No. 2 : PhysicalProperties[2]

Sr.No.	Physical properties	Molasses
1	Color	Dark brown
2	Specific gravity	1.2
3	Viscosity (cp at 200C)	1450
4	PH	4.2
5	Litters/tone	714
6	Appearance	Syrupy Liquid
7	Gallons/tone	157

Fast Track Methodology Used In Construction Sector

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Abstract—**The globalization of Indian economy and introduction of multinationals in India for the construction and pride program of Golden quadrilateral and other infrastructure projects it has become importance for most to have speedy construction and timely completion of project. Conventional methods of construction cannot cope up with demand of Infrastructural facilities with a high degree of quality control and quality assurance. The demand for residential housing is also on the increase and to cater for such demand also, conventional construction fails in providing required number of dwelling is in time. Latest construction technology like Mivan formwork. Post tensioning slab. Precast techniques. Material Management. Of fast and speedy construction is the only solution to this problem. Use of Industrialized construction system with the state of-the-art technology is the only replacement over conventional system of construction to bridge the gap between demand and supply of residential houses, infrastructure facilities such as roads, bridges, power etc. Shortage/non availability of skilled and semi-skilled works result in problems of cost and time over-runs, inferior construction, poor finishes, leakages, corrosion of structure etc. This can be avoided by adapting industrialized system of construction. This also avoids repairs and rehabilitation of structure before its expected life span. Mainly focused in this paper study of two methods Mivan technology over view and only Acrow formwork, H frames on time and cost, in comparison with conventional formwork.**

I. Introduction

1.1 Indian scenario for fast track development in IT Structure:

Infrastructure development in India has set off in a major way in the last few years and is witnessing impressive growth across various segments. Construction sector is expected to be biggest beneficiary of the infrastructure boom. In India, Construction is the second largest economic activity after agriculture. The investment in construction accounts for nearly 11 present of India's Gross domestic product (GDP) and nearly 50% of its gross fixed capital formation (GFCF). It accounts for nearly65% of the total investment in infrastructure and is expected to be the biggest beneficiary of the surge in infrastructure investment over the next five years. Many clients aim to finish their construction project as fast as possible in order to gain a faster return on their investment. Fast-track construction involves the reduction of time from the normal duration of project activities and should not allow delays during the process. Many factors can cause delays on such projects. 'Ogunlana' suggested that the main reasons for project delays on housing projects were incomplete drawings, material management problems, deficiencies in organization, shortages of construction materials, and inefficiencies in site workers 'Dey' also suggested that delays in materials supply was a major cause of time overrun. This paper reviews practices on fast-track projects and explores the Information and Communications Technology (ICT) tools and techniques implemented. Shortening time-to-market has been one of the most critical factors to the success of businesses in many industries. As a result, companies have sought a method that can ensure a faster product development, most commonly focusing on product cycle time reduction through concurrent development. In the literature, these potential problems are mainly attributed to the increased level of uncertainty and research efforts on fast tracking have focused on uncertainty reduction. Construction sequence by triggering subsequent changes on other tasks, which often contributes to unanticipated schedule delays and cost overruns in fast-tracking construction. For these reasons, to effectively handle fast tracking change iterations involved in fast tracking need to be identified, and the dynamic behavior of construction resulting from those change iterations must be dealt with in a systematic manner.

Fast track techniques:

1) Mivan technology.
2) Precast techniques.
3) Post tensioning slab.
4) Material Management.

Aluform is a construction system for forming cast in place concrete structure of a Building. Aluform system provides aluminium formwork for RCC, load-bearing, multi-storied buildings and enables the walls and slab to be poured in the same operation. This increases efficiency, and also produces an extra-ordinarily strong structure with excellent concrete finish.

Due to the fine tolerances achieved in the machined metal formwork components, consistent concrete shapes and finishes are obtained floor after floor, building after building, confirming to the most exact standards of quality and accuracy. This allows plumbing and electrical fittings to be prefabricated with the certain knowledge that there will be an exact fit when assembled. The dimensional accuracy of the concreted work also results in consistent fittings of doors and windows. The smooth off form finish of the concrete eliminates the need for costly plastering.

Seismic Risk Mitigation Planning Through Cultural Theory

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Abstract— Implementation of seismic risk mitigation in rural areas of developing world is a complex process, which demands for extensive study of socio-economic condition of community and detailing of existing housing inventory. The study area is Nashik district of Maharashtra in India, which is situated on active fault. The present study brings out seismic risk mitigation based on local hazard assessment, vulnerability assessment of elements at risk, risk analysis, which generates worst damage scenario for existing housing inventory and finally mitigation strategy derived on the basis of opinion of community and various stakeholders. The discourse between various actors of society has been critically analysed and used for framing the community based seismic risk mitigation plan.

I. INTRODUCTION

Earthquake has pessimistically affected the human settlement from time immemorial. In developing countries, due to recent substantial economic and industrial growth, there has been rapid growth in housing stock. But lack of knowledge about the existing hazards and construction technology, more than half of the housing stock is non resilient to even moderate to low earthquake shocks. It has been observed that large proportion of population are trapped and killed in non-engineered building during severe earthquakes in India. The damage to buildings and infrastructure are directly correlated to socio-economic and financial losses.

Over the last century, about 75 % of fatalities attributed to earthquake have been caused by the collapse of buildings. Figure 1 shows the breakdown of earthquake fatality causes and proportion caused by masonry buildings. These weak masonry buildings include adobe, rubble, rammed earth and compressed earthen blocks. Figure compiled the world's earthquake-prone countries and their losses of life with viewing building stock in India, as per census 2011. Though, there is a steep decline in the proportion of mud/adobe buildings in last 10 years, still about 30 % of building stock is prone to very high seismic risk.

For commencement of any earthquake disaster mitigation programme, there is a need for evaluation because of the heavy cost incurred in such programme. Mainly seismic rehabilitation will require lot of money and resources. The scarcity of resources demands for trade off between resources and [illegible]. There are number of techniques available for retrofitting [illegible] earthquake mitigation but in view of scarce resources, there [illegible] need to weigh the different alternative and only optimal [illegible] feasible alternatives could be chosen. Prior to planning [illegible] strategy, damage scenario plays vital role in deciding various components of strategies. Based on damage scenario study, planners and community can plan for seismic risk mitigation. It emphasizes on extent of physical damage to residential buildings, casualties and injury, other functional losses associated.

In current research methodology, the emphasis has been given for developing workable framework for implementation of seismic risk mitigation at grass root level. The adopted procedure is amalgamation of scientific and social theories applied to disaster mitigation. The study has been carried out for seismic prone area of Nashik district (Figure 3 of) Maharashtra. The study area comprises of 15 taluka, most affected by low earthquake tremours.

II. METHODOLOGY FOR DEVELOPING SEISMIC RISK MITIGATION PLAN

In view of frequent seismic tremour and probable large extent of damage, the area was selected for detail study about existing hazard and vulnerable elements. Principally, the risk mitigation plan methodology is compartmented into four major issues i.e. seismic hazard assessment, Vulnerability assessment, and Risk analysis and strategy formulation for seismic risk reduction. Since, the study area is lying over active seismic fault and no such severe threat of climatic and atmospheric hazards exist in the area, the study has been mainly focused on seismic hazard assessment and related risk mitigation strategies.

III. DISASTER MITIGATION STRATEGIES: CULTURAL THEORY PERCEPTION

Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening or