

ELECTRONIC DIFFERENTIAL SYSTEM FOR ELECTRIC CAR

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Abstract— In automotive technology, the electronic differential may be type of differential which provides required torque to each wheel and differentiate both wheel speeds. It is used in situ of the mechanical differential in multi drive systems. While turning, the rear inner and rear outer wheels rotate at different speeds, as inner rear wheels observes or experiences smaller turning radius than the outer rear wheel. The electronic differential uses wheel speed signals to manage the power to each rear wheel so that each wheel will get the required torque. This project presents model of Electronic Differential System (EDS) for the dual rear wheel independently driven Electric Vehicle (EV). To overcome drawbacks of mechanical differential like heavy and bulky system, losses due to power trains etc. Electronic differential is widely used in EVs. In electronic differential project, an EDS for rear wheels of an EV with wheel motor is modelled rather than front wheels. The speed of rear wheel is estimated by using equation derived from Ackermann Jeantand model. Consistent change of the vehicle speed and steering angle of EV, rear wheel speeds is estimated. It is observed that the modelled EDS is acceptable for EVs with separate wheel motors.

Keywords— Electronic Differential System for electric car, Steering angle detection, Differentiate rear wheels speed, Atmega328, DC motor with speed sensor, ESP12E, Android Application, Smartphone.

I. INTRODUCTION

An electric vehicle (EV) which uses one traction motor driving two wheels employing differential system, mass of EV increases because of batteries. To reduce mass of an EV motors are fitted into the wheels to get fast response from motor and supply independent torque control to every wheel. [3, 4].

Differential systems in automobile is used in sloping and slippery roads to distribute torque and power equally to the traction wheels. Internal combustion engine vehicles consisting of a mechanical differential using a differential gear. Once a wheel accelerates just in case where not using differential gears, the wheels slips because of braking to decelerate the another one. It may result into unsafe and hazardous driving, more wear of tyre and more fuel consumption. Hence, inner wheel speed has got to differ from the outer wheel speed for a vehicle which drives on a curved road [5]. On the opposite hand for electric vehicle EVs, an EDS is employed because of independent directly driven wheels rather than a differential standard system. Therefore, drawbacks like, maintenance, mechanical losses and gears repair cost caused by the powertrains can be eliminated.

II. LITERATURE REVIEW

The studies examined in this literature shows that EDS simulation and modelling of EV having two motor wheel drive are shown by logic control symbolic method for estimating every wheel slip rate [3].

Azeddine Draou conducted experiment for two in built wheel hub motors drive in EDS speed control for which Matlab/Simulink results were used to verify designed EDS. The system consists of control of direct torque for permanent magnet synchronous motor (PMSM). The simulation was done for curved and straight road, they observed that vehicle stability was well provided for curved road.[6]

In [7], Analysis of speed and observer for torque was run for DC motor with presentation of an electrical differential system of EV consisting two independent rear wheels of EV. Real wheel torque algorithm of vector was done on basis of Ackermann Jeantand for implementation and design for

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PLC BASED AUTOMATIC CAR WASHING

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Abstract-Currently necessity of main is to live life in automatic way so as to perform task at higher speed. Technology is best interconnecting channel in each part of world with the means of transportation or communication or business which lead to highly increase in the number of cars. time management is directly proportional to reduction of cost for maintenance. The project helps us to use proximity sensor to detect the car. Customer parks the car in particular specified washing area. The main objective of this project is to perform exterior car washing automatically using programmable logic controller integrated with PLC send information like arrival or departure of vehicle. Car washing technique is collection of various things as spraying solution of detergent, cleaning with water then completing task with force air draying fan. the main thing is that in our project the going to used sand filter. again we will use that same water. so that water will be saved.

Keywords- PLC, Nozzles, Solenoid Valve, Pump, Sensors, Relay.

INTRODUCTION

There are many type of car washes like manual car wash were the vehicle is washed by employee, secondly self-service car wash were the customer has to perform the washing and 3rd chemical car wash which use chemical to wash and polishing the car surface etc. in all automobile industry manual car washing need more labor to carry out work which effects in time consumption and also the result may or may not be satisfactory to the customer that depend. So as to overcome these issues, car washing can be done automatically using programmable logic controller (PLC).

PLC is specialize computer used for the control and operation manufacturing process and machinery which function using a programmable memory to store

many instructions and execute function including timing counting, ON/OFF control, data handling, sequencing and arithmetic most of the company in industry used programming as updating or change as per need in programming can be made easy as per requirement many electromechanical relay are observed in current existing system which were replace by programming logic controller. Hence according to it the user can be informing efficiently in case of completion of the process or any emergency. Car washing required components like relay for switch, pipes for spraying water as well as foam water, sprayers which are drive by dc motors, solenoid valve, nozzle, sensors. Control of all this part is made through programming logic control i.e. PLC.

METHODOLOGY

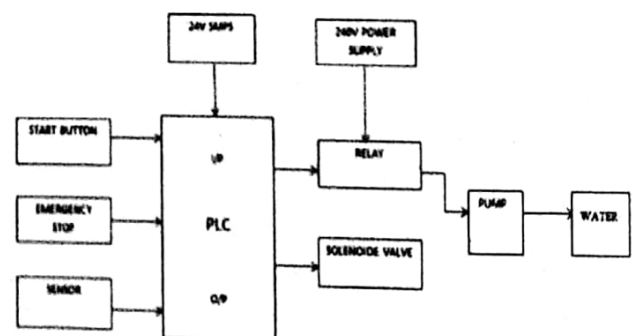


FIG. Block diagram of Automatic car washing using PLC

As seen in the above figure, all the components like Shower, Cleaner, Dryer are connected to the PLC. These components are getting signals from the PLC. Also a start and stop switch is given as an input to the PLC. A Proximity sensor which senses. If the vehicle is in place or not is also connected to the PLC.

Smart Weighing Scales in Shopping Malls: A Critical Review

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Abstract - The electronic weighing scale available is in price computing scale mode along with camera and printer. The fruit and vegetable departments of large supermarkets offer an overwhelming choice of fresh products. Consumers benefit from this broad selection, as most fruits are now available year round. Another advantage of self-service supermarkets is that consumers can check and choose the fruit and vegetables themselves. A compact, integrated camera helps self-service scales automatically recognize individual products. The analysis process starts automatically as soon as a presented for selection in large, coloured fields. The computer vision strategies used to recognize a fruit rely on four basic features which characterize the object: intensity, colour, shape and texture. This seminar proposes an efficient fusion of colour and texture features for fruit recognition. The consumer can now choose the desired type, and the scale prints the label. Due to various disturbance factors, a fully automatic system cannot be implemented, as highly fluctuating light conditions or covered areas in the image affect the analysis. If conditions are good, however, the camera system achieves a high accuracy even if the weighed products are in plastic bags. weight is placed on the scale. The scale's operating panel displays: "Recognition in progress." First, the scale checks whether the image captured by the camera changes; for example, because the user's hand was in the field of view. As soon as the image

remains still, the system starts analyzing. This takes about a second. Then four possible matches are

Keywords – electronics weighing scales, self-service super markets, colour fusion, texture.

INTRIDUCTION

The electronic weighing scale available is in price computing scale mode along with camera, printer. The analysis process starts automatically as soon as a weight is placed on the scale. The scale's operating panel displays: "Recognition in progress." First, the scale checks whether the image captured by the camera. The computer vision strategies used to recognize a fruit rely on four basic features which characterize the object: intensity, colour, shape and texture. This paper proposes an efficient fusion of colour and texture features for fruit recognition. A number of challenges had to be overcome to enable the system to perform automatic recognition of the kind of fruit or vegetable using the images from the camera, many kind of fruits are subject to significant variation in colour and texture.

The major advantage of electronic weighing scale is accuracy, precision and reliability. electronic scale finds more popularity in vegetable shops, health industries and especially to identify the measurement of the tiny things. The prominent features of the system are low cost, easy maintenance, flexible

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Solar Parameter Simulation

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Abstract – The aim of this paper is to measure a solar panel parameters by using solar simulator. In this, a solar panel is used which keeps monitoring the sunlight. Here different parameters of the solar panel like light intensity, voltage, current and temperature are monitored. Solar panel is also known as photovoltaic cell device. The measured current and voltage (I-V) characteristics of photovoltaic (PV) device basically measured with respect to standard reference conditions, that is by a spectrum, intensity, temperature and area. This paper proposes a method of simulation of photovoltaic cell. The main objective is to find the I-V characteristics by adjusting the curve at points: open circuit, maximum power, short circuit, etc.

Keywords- Solar photovoltaic, solar cells, Solar simulator.

INTRODUCTION

A solar cell produces small power, in the range of less than a watt to few watts. However, for our application we need the power in ten of watts, kilowatts and sometimes megawatts. In order to generate large power using solar cell, many solar cells are connected together to make a PV module. The most common technology for solar PV modules uses crystalline Si solar cells. A photovoltaic system directly converts sunlight into electricity. The basic device of a PV system is the PV cell. Cells may be grouped to form panels or arrays. The voltage and current available at the terminals of a PV device. PV devices present a nonlinear I-V characteristic with several parameters that need to be adjusted from experimental data of practical devices.

Growing energy demand and soaring prices of fossil fuels along with concern about degrading. Environment have generated enormous amount of interest in the utilization of renewable energy sources. Power generation from photovoltaic has been a rapid growth in the last few years leading to extensive research on using solar energy.

The first purpose of this paper is to present a brief introduction to the behavior and functioning of a PV device. The introduction on PV devices is followed by the simulation of PV parameter, which is the main subject of this paper. A PV device may be any element that converts sunlight into electricity. The elementary PV device is the PV cell. A set of connected cells form a panel. Panels are generally composed of series cells in order to obtain large output voltages. Panels with large output currents are achieved by increasing the surface area of the cells or by connecting cells in parallel. A PV array may be either a panel or a set of panels connected in series or parallel to form large PV systems.



Probability Analysis of Vehicular Traffic at City Intersection

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Abstract. Nowadays, congestion in traffic is a serious issue all over the world. The traffic congestion is caused because of large red light delays. The delay of the respective light is coded hardly in the traffic light and also it is not dependent on traffic density. The existing system varies the particular light delay time by taking the vehicle count using IR sensors which has several disadvantages. This project presents the system based on raspberry pi. It includes a high-resolution camera. It captures images of vehicles. It performs the blob detection of a vehicle. It gives a separate count of vehicles and people too. This recorded vehicle count data is used in the future to analyze traffic conditions at respective traffic lights connected to the system. For appropriate analysis, the raspberry pi will work on the information to send correct signal into the LED lights. However, to solve the problem of emergency vehicles stuck in the overcrowded roads, a portable controller device is designed. The system will give the vehicle count by the deep neural technique. After vehicle detection and its count, the system will apply conditional probability to glow the green signal for a specific time period on a particular side according to the vehicle count.

Keywords: Traffic control · Raspberry pi · Image processing · Vehicle counting · Python

1 Introduction

The second more popular country in the world is India. It is the fast growing economy. Infrastructure growth is slow as compared to the growth in number of vehicles, due to space and cost constraint. The Indian traffic is also chaotic and non-lane based. This traffic congestion affects the transportation system in cities. Rapidly increasing the number of automobiles and the constantly rising number of road users are not accompanied with promoted infrastructures with sufficient resources. Some of the solutions were offered by constructing new roads, implementing flyovers, and bypass roads and establishing road rehabilitation. The traffic lights consist of three universal

Prioritized ViU Departure at Traffic Intersection Using Internet of Things



Vijay D. Chaudhari and Anil J. Patil

Abstract If the emergency vehicles such as police van, ambulances, fire extinguishing pumps get stuck in extremely busy traffic, may cause loss of estate along with property as well as human lives. Traffic congestion may be root reason behind a series of significant issues. The continuous increase in vehicle traffic in every urban area can cause drastic traffic congestion at intersections. Most of the traffic signals seem fixed green light glow sequence and is determined without taking into consideration the presence of the vehicle-in-urgency into account puts adverse impact on the economy as well as on human lives. Inefficient traffic regulation system leads to loss of lives due to ViU get stuck in heavy traffic. In emergency situations, when any ambulance could thoroughly break the wall of road traffic congestion and taking out the patient safely to the destination will be a great surprise, isn't it? Here we have tried to implement dynamic traffic signaling. We proposed timing difference method to give priority when two ViUs are arriving at the same time. The system can able to give priority to one of the ViU (e.g., ambulance or fire brigade) arrived at the same time at lanes of an intersection.

Keywords Priority · Traffic intersection · Traffic density · Vehicle-in-Urgency · Internet of Things

1 Introduction

Due to the increasing urbanization, industrialization, and population, the traffic management has become a difficult task: jams, accidents, and traffic rule violations, etc. After studying the various objectives of earlier systems, it is observed that the system that analyzed the occurrence of two emergency vehicles at the same time on

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Hostel Rooms Power Management and Monitoring Using Internet of Things



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Abstract Power saving is the important issue nowadays, and it is more critical in hostels because of some irresponsible students who leave the room without switching OFF the tubes lights and fans. So, for controlling this wastage of electricity in hostels, we have tried here to develop this system that helps in monitoring and managing the electrical power requirement. In this system, IR sensors sensed the presence of students in the room with the help of counter. When it counts one, it means students enters the room, this counter increases and so on. When the student leaves the room, it decreases the count and when it reaches up to zero, this indicates that no one is present in the room. At this time, after few seconds, the switches will automatically turn OFF, if it is ON, and this information will be sent to the server/cloud where the authorized person can see or watch all the activities in the room. Here, we need only Internet for watching the online process. This will be in the form of notification where it will show the room number, OFF time. The other feature of this system is, when such notifications will be seen on the screen, one SMS will be sent to the student about Rs. 100/- penalty or punishment. Internet of Things plays a vital role in this system. This promotes students to become responsible about careful utilization of electricity.

Keywords ATmega 328p · ESP8266EX · Optocoupler · IR sensor · Electrical power · IoT

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Implementation of E-Health Record with Biometric Authentication

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Abstract. In the health care sector, when the question arises about the patient's safety and security, the most important point on that we have to focus is patient reorganization and patient data truthfulness. Pharmaceutically the fingerprints of any individuals are uncommon and remain unchanged indefinitely. The fingerprint technology used to provide a reliable and accurate method to identify the patients efficiently. The popular point in the fingerprint biometrics technology is that protecting the patient's information, it also preserves against cheating and minimizes human intercession. Using this technology the user enters the information of the patient only one time which minimizes the efforts to add the same data again and again only the further new information related to health, any changes in treatment will get added into the previous record when patient comes into the hospital for the next visit. This helps the doctors to easily study the patient's previous and current health records. The patients get filed quickly at the entrance point simply, by putting down a finger on a self-service terminal or other data collecting device like the emergency department, inpatient areas or outpatient locations.

Keywords: Raspberry pi · Biometrics emergency · Patient's record · E-Health

1 Introduction

The human life is changing nowadays one step ahead due to the IoT, that is, Internet of things. With the new and advanced technology level, IoT is changing the normal simple human life to genius life. In recent years, the use of computer technology strengthening the health care services has received significant outcomes, it also helps to provide online healthcare services. A patient's medical record includes identification, history of medication diagnosis, previous treatment history, patient's body temperature, blood pressure, pulse rate, allergy, dietary habits, genetic information, psychological problem, etc. The above security problems are overcome by using biometrics technology. Our study analyzes the safeguarding and privacy issues that occurred in e-Health. The quality and service of healthcare is boosted by e-Health with the help of making patients' health information easily available to patients' relatives, as well as doctors, improving efficiency and reducing the cost of health service handing over. There are good reasons for



IoT Capable Mechanism for Crowd Analysis

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Abstract. This paper describes a crowd analysis of different activities using surveillance videos is an important topic for communal security. This paper also describes the detection of dangerous crowds if the weapon is present in the crowd. In our study, we are using raspberry pi 3 board for the development of a system that consists of ARMv8 CPU that detects the human heads and provides a count of humans in the region using Open CV-Python. The direction of the movement of the person can be achieved by human tracking. Generally, there are three different stages algorithm for computer-based crowd analysis, (1) people counting, (2) people tracking, and (3) crowd behavior analysis. This project is made for security purposes where there is a possibility of a dangerous crowd, for example, mall, railway station, shopping center. In our method, we are used CNN to trained dangerous weapons and DNN used for human detection. This method not only detects the direction of the crowd but also detects if the crowd is dangerous or not. In this method, also count the total number of human and it also gives confidence score that means, in how many percents it is related to original people. In this way, we could have prevented many deaths and injuries.

Keywords: Video surveillance · Crowd density · Dangerous weapon detection · Crowd tracking

1 Introduction

Nowadays, managing the crowd in crowded areas properly is very important. Also, we are detecting weapons if anyone is carrying a weapon in a crowded area. The human eye cannot observe multiple cameras at the time. Sometimes, during an election, a celebration of the festival and in-mall situation goes out of control at that time the human eye cannot predict properly. Hence, we are using a camera to monitor the crowd. Thus, for continuously monitoring the crowd for a long period we must use an automated technique. Previous paper can make system for a small group of objects. In the present work, we made a system for unlimited crowd with high accuracy and propose algorithms for their application to a variety of problems. There are different methods used for moving object detection. The general method is background elimination under the situation of fixed cameras. Generally, crowd analysis is done by four steps, crowd behavior, crowd estimation, crowd tracking, and crowd motion detection. This is shown in Fig. 1. Videos of crowd scenes present difficult problems in computer



Automation in Hydroponics Farming Ecosystem

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Abstract. Hydroponics means growing plants without soil. As the quality of production in farming is decreases day by day, everyone demands nutrient rich food, but this demand cannot be fulfilled by using our traditional farming method. This method undergoes many problems. Some of them are availability of land and labor; another one is increased use of fertilizers which can affect quality of crop that in turn can affect the ability of soil fertilization. With poor soil fertility, the farmer can face many problems. He did not get production in huge quantity also the crop we will get is not nutrient rich. Other problems in traditional farming are frequent weather changes, rise in temperature, water pollution, etc. Under this condition, it will be very difficult in the future to grow a crop that will feed the entire population using traditional agriculture. We are using IOT technology which is very helpful to connect objects to the Internet for automation in farming. Hydroponics is an interesting new platform that requires less area for plantation and can produce more product than the conventional farming.

Keywords: Smart farming · Hydroponics · IOT

1 Introduction

Hydroponics is a method of farming in which we are using water to grow plants. It is a method of growing plants or vegetables in water mixed with mineral nutrient solutions instead of soil. Since, we are using water-based solution to grow plants, we have to control electrical conductivity of solution, pH, humidity, etc., for more production and nutrient rich food. Plants need air, water, sunlight, and nutrients. Soil cannot provide the nutrients required for proper growth of plants; it only works as structure to hold the plants. Hydroponics is ideal in any weather conditions because controller itself can control air, water, light, temperature, and humidity of plants. So the hydroponics

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Study Of CAN Bus In Autonomous Of All Terrain Vehicle

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Abstract – The mechanical control system of the all-terrain vehicle (ATV) is converted to an electronic control system and is interfaced to a wireless radio system. In order to improve the control system design and reduce the wiring, a Controller Area Network (CAN) control system has been implemented which is very flexible and reliable. A CAN control system contains electronic control units (ECU) which communicate over CAN protocol. CAN protocol is a serial communication protocol which is internationally standardized by ISO and it creates a two line differential bus for communication. It is a widely used real time communication protocol designed mainly for in vehicle networking but also gained popularity in many embedded applications.

Networked Electronic Control Units (ECUs) are increasingly being deployed in automobiles to realize various functions and Controller Area Network (CAN) is deployed for the communications among ECUs. Our primary objective is to build both hardware and software that interface and communicate directly with CAN network and extract CAN messages for reliable car communications. The hardware is a circuit board that is capable of capturing CAN signals released from an automobile. The software will be both the firm-wares programmed for the two microcontrollers found on the circuit board, as well as the Graphical User Interface on the PC that enables users to control

the functionalities of automobile via a few simple clicks of the buttons.

Keywords – All Terrain Vehicle, CAN, Networked Electronics Control Unit

INTRODUCTION

(ECUs) are increasingly being deployed in automobiles to controls one or more electrical subsystems to realize The recent technology trends in the automobile industry are bringing more safety and comfort in a vehicle by incorporating automation techniques like collision avoidance, air bag deployment and entertainment devices. In the process of making an automated vehicle, there was a rapid increase in the use of electronic control units (ECU) in the vehicle. Therefore, there was a need for a special communication system for achieving the communication between the ECUs in a vehicle. Initially, multiplexed communication was implemented which decreased the interconnections (cables) between the ECUs. The main problem with the multiplexed communication system was it could not communicate data in real time. In 1980's, BOSCH Corporation designed a multi master serial communication protocol called Controller Area Network (CAN) protocol for robust and real time for in-vehicle networking.

In recent years, control systems of cars have moved from the analog to the digital domain. In

Survey Paper on Bimodel Biometric Authentication System

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ABSTRACT:

A new technique for human identification using fusion of both face and speech in which the improve the rate of recognition as compared to the single biometric identification for security development. In this paper we proposed to uses Principle Component Analysis (PCA) as feature extraction techniques in which last/ past year mostly 2D and 3D some use face recognition system. Now we have to use methods as Mel-frequency Centrum Coefficients (MFCC) feature extraction techniques are used for speech recognition and the hidden Markov model (HMM) is used to calculate the likelihoods in the MFCC extracted features to make the decision about the spoken words.

Keywords : Biometrics, PCA-Principle component Analysis, MFCC-Mel-Frequency-Ceswtrum Coefficient, HMM-Hidden Markov Model, ASR-Automatic speaker recognition system.

INTRODUCTION

The Biometric identity authentication system is based on the biological characteristics of a person, such as face, voice, fingerprint, iris, gait, hand geometry or signature. Identity authentication using the face or the voice information is a challenging research area that is currently very active. We study the fusion of speech and face in a recognition system for taking a final decision (i.e. accept or reject identity claim). We evaluate the performance of each system differently then we fuse the result and compare the performances.

LITERATURE SURVEY

1. **Survey and review on Face recognition system – A challenge, published by Dr. Pramod Kumar, Mrs. Monika Agarwal, Miss. Stuti Nagar.**
 The 2D and 3D dimensional picture fail the reason is that-
 - (i) 2D picture to compare it with the image sorted in database, but these programs did not the succeed only.
 - (ii) If the person is looking just to the camera of course any one suspect will be warned that he/she will see a camera in place.
 - (iii) There lies the problem where this fails by depending on the 2D system.
 And that about 3D system-
 - (i) The 3D system for face recognition based on the pattern of three-dimensional (3D).
 - (ii) Where special cameras win captured images of three-

- (iii) dimensional views of the suspected person.
- (iii) Using the special main features of each face that are not changed significantly with time, such as eye hole, distance between the eyes, nose shape and other[1]
2. **Survey and review 2D and 3D face recognition publish by . Andrea F. Abate, Michele Nappi, Daniel, Gabriele Sabatino.**
 In this paper it was inferred that the automatic face recognition, the old and the new in this pattern recognition problem, which is very hard to solve due to its non-linearity. We can think of it as a template matching problem, where recognition has to be performed in a high-dimensional space. Since Higher the dimension of the space is more the computation we need to find a match a dimensional reduction technique is used to project the problem in a lower dimensionality space indeed. [2]
3. **Survey and review on face recognition techniques. Publish by – Rabia Jafri and Hamid R. Arabnia**
 In this paper we shows that the face recognition from intensity images, there are some types featured-based, Holistic, Statistical, multiple classifier systems, face recognition from video sequences, face recognition from other sensory inputs like 3D model based and intra-red. These are different on face recognition technique. [3]
4. **Survey and review- All Embedded HMM based approach for face detection and recognition. Published by – Ara V. Nefian and Manson H. Hayes III.**
 In this paper the face recognition system work on embedded HMM (Hidden Markov Model). The embedded HMM model, the two dimensional data better than the one dimensional HMM and is computationally less complex than the two-dimensional HMM.[4].
5. **Survey and review – A New face recognition method based on SVD Perturbation for single Example Image per person. Published by – Daoqiang Zhang, Songcan Chen and Zhi-Hua-Zhou.**
 In this paper the use of new face recognition SVD perturbation is elaborated. There are two algorithms, in first algorithm; the original image is linearly

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Survey On Fractal Antenna For Wireless Communication

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Abstract – Fractal Antenna are simple, light weight and compact in size. In modern wireless communication system multiband and compact antennas are required. The proposed antenna will be fractal antenna so making this survey on fractal antenna have many future applications. This proposed antenna will be multiband and compact Fractal Antenna with rectangular shape for wireless communication with operating frequency 2.41GHz of basic patch antenna.

Keywords- Fractal, Multiband, Compact.

INTRODUCTION

According to Webster's dictionary a Fractal is defined as being " derived from the Latin 'Fractus' meaning broken, uneven any of various extremely irregular curve or shapes that repeat themselves at any skill on which they are examine "[1]. Day by day, in communication development significance usage is found on phones, tablets, GPs radio navigators and laptop and other wireless devices. Hugely, use of communication devices to getting high performance demands in small size antennas [2]. In study of antennas fractal antenna theory is a relatively new area .Currently, wireless communication has an developing need for more closely and easily carried of communication system. And its characteristics like conformal nature, low manufacturing cost, light weight and easy printed circuit process. It can be comfortably mounted to any kind of surfaces. Fractal antennas are based on concept of a Fractal [3]. Mostly are self similarly or dissimilar concept and the can

achieve multiple frequency bands because of different part of the antennas are similar to each other at some different scale [4]. Fractal Antenna can take on various shape and forms [5]. The fractal antenna not only has a large effective length but the contours of its shape can generate or capacitive or inductive that can help to match the antenna to the circuit [10].

LITRACTURE SURVEY

- 1] Punte et.al (1996) demonstrated multiband behavior for fractal sierpinski gasket. They observed that this behavior depends on the self-similarity properties of this gasket which may propose on alternative way for the designing of new type of frequency independent and multiband antennas [7].
- 2] Douglas H. Werner and Suman Ganguly (2003) presented the overview of fractal antenna engineering research. They described the combination of fractal geometry with electrodynamics and have elaborated the mathematical formulation [4].
- 3] Wen-Ling Chen et.al (2009) suggested a wide fractal shaped slot for enhancement of bandwidth using micro strip feeding technique. They experimentally studied the relation between the iteration order, iteration factor and bandwidth of the fractal shape. Experimentally results show that it achieved 9.2dB gain bandwidth of 1.59 GHz which indicates that the impedance bandwidth of this proposed fractal can attain an operating bandwidth of 2.4GHz having operating frequencies which is nearly 3.5

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Survey on Printed Antenna for Wireless Communication

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Abstract – Now a day there are vast development in wireless communication technology so size of antenna is reduced by day by day. In past year mostly yagi uda antenna was used. But convectional antenna has less advantages and prospects as compared to printed antenna. In this paper we are making survey to design proposed antenna for the frequency bandwidth 207MHz to 211MHz.

Keywords- Printed antenna (microstrip patch antenna), Microstrip Feed line

INTRODUCTION

The communication is the process of transferring the information from one point to another. The information which is to be transferred over a distance is commonly achieved by superimposing or modulating the information on to a electromagnetic wave which is act as carrier signal. At the destination this signal is received and original signal is extracted from this signal by using demodulation process. For the communication, antennas are most important components which are used to creat the communication link. Antenna is the transducer designed to transmit or receive electromagnetic waves. Printed antennas are the most common option for communication. Printed antenna have several advantages over the convectional microwave antennas. Printed antenna fabricated using microstrip technique on a printed circuit board. It is mostly used at microwave frequency. We can design printed antenna in various shapes like circular, rectangular, elliptical, dipole etc. in this paper we have design rectangular printed antenna. Some printed antenna do not use a dielectric substrate and instead are made of a metal patch mounted above a

ground lane using dielectric spacer. Printed antenna in its simplest configuration is as shown in fig 1

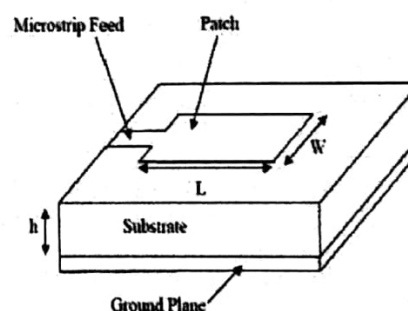


Fig 1. Printed antenna

LITERATURE SURVEY

1. Survey and review on gain enhancement methods of microstrip patch antenna:- Published by Anilkumar patil , Dr. B. Surykant

We know that microstrip patch antenna is widely used because of its low profile but simultaneously it is having some disadvantages such as lower bandwidth and lower gain. In this paper there are different technique used for enhancing bandwidth and gain of microstripn patch antenna[1]

2. Designing of S shaped microstrip patch antenna for broadband application using slotting technique:- Published by Menaka R., Nishandhi S., Sivaranjani S

In this paper they made a microstrip patch antenna of 4.5GHz frequency with 4.485% BW which is 1.595% more as compared his reference antenna[2]

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A Survey on Robotics in Medical Field

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Abstract – Robots have taken a great consideration in the medical field. The term medical robotics has often been construed to refer strictly to surgical procedures. However, due to its accuracy, repeatability, and indefatigability, robotic technology is increasingly affecting the entire healthcare sector through advances in diagnosis, preoperative planning, surgery, postoperative evaluation, acute rehabilitation, and chronic assistive devices. Information and communication technology (ICT) and mechatronics play a basic role in medical robotics and computer-aided therapy. The basic concepts of computer-integrated surgery, surgical CAD/CAM, and surgical assistants, it discusses some of the major design issues particular to medical robots.

Keywords – Robotics, ICT, Computer-integrated Surgery, Surgical CAD/CAM

INTRODUCTION

During the last 45 years, robotics research has been aimed at finding solutions to the technical necessities of applied robotics. This evolution has been dominated by human necessities. Medical robotics is a promising field that really took off in the 1990s. Medical robots assist in operations on heart-attack victims and make possible the millimeter-fine adjustment of prostheses. There are, however, many challenges in the widespread implementation of robotics in the medical field, mainly due to issues such as safety, precision, cost and reluctance to accept this technology. The field of medical robotics is expanding rapidly and results are impressive as a large number of commercial devices are being used in hospitals. Robotics systems for surgery are computer-integrated surgery (CIS) systems first, and "medical robots" second. Robot and Robotics technologies represented a practical application of physics, computer science, engineering and mathematics.

It provides a very powerful and flexible approach to demonstrate a variety of engineering concept. "An electrical or mechanical or electromechanical, programmable or non-programmable multifunctional manipulator designed to move material, parts, tools, or specialized devices through various programmed motions for the performance of a variety of tasks." Isaac Asimov popularized the term robotics. Asimov is a visionary who envisioned in the 1930's the positron brain for controlling robots. He invented the three laws of robotics: (1) A robot may not harm a human through action or inaction, allow a human to come to harm. (2) A robot must obey the orders given by human beings, except when such orders conflict with the First Law. (3) A robot must protect its own existence as long as it does not conflict with the First or Second Laws. The evolution of robotics research in the last half century as a response to the evolution of human social needs, from the industrial robotics that released the human operator from dangerous or risky tasks to the recent explosion of field and service robotics to assist the human. During the last 45 years, robotics research has been aimed at finding solutions to the technical necessities of applied robotics. Robots were initially used in the automation sector to handle repetitive and simple tasks reliably, with the objective of cost reduction per product. Along with the increased speed of embedded microcontrollers, the service robotic sector has started to grow.

RELATED WORK

Technology invented by author is the use of Medical Robotics in Computer-Integrated Surgery. The problem is being to use which design issues in medical robotics, computer-integrated surgery, surgical CAD/CAM, and surgical assistants.[14]

The solution obtain is to focus on the role of medical robots within the context of their role in CIS systems. The systems into two broad families: surgical

Thermal Imaging in Electronics: A Review

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Abstract - Thermal imaging was made possible by the discovery of infrared energy over two centuries ago. Thermal imagery is the use of specialized equipment to detect infrared energy and create images out of tiny differences in that heat. As the security industry continues to advance, many avenues now require more sophisticated methods in order to provide a higher degree of surveillance. And this includes the ability to see in areas containing very little or no light, or areas of extreme contrast that make it very difficult to distinguish between good and bad.

Keywords – thermal imaging, infrared energy, surveillance, contrast

INTRODUCTION

Thermal imaging is a technique which is used to measure the working temperature of electronic device. There are two methods of measuring thermal resistance. First, there is an increased awareness of the importance of thermal design brought about by increased power densities and secondly the development of relatively cheap computers that can be used in the process of data acquisition, processing and display.

LITERATURE SURVEY

The technology of thermal imaging of electronic devices with low surface emissivity which uses an infra-red scanning imager to map the surface

temperature of electronic devices and circuits . Technique of measurement is to mount the device to be tested on a temperature controlled heat sink and measure the radiation emitted from the surface at one or more elevated temperature. These data are used to produce an emissivity map of the surface. The sample is then cooled to an appropriate temperature and energized and then a further measurement is performed. This final measurement and the emissivity map are then used to work out the temperature over the device surface. In this technology system has software to allow the two dimensional Fourier transformation of the results, low pass spatial filtering, which is followed by the inverse process. All the measurements are displayed as isometric projections[1].

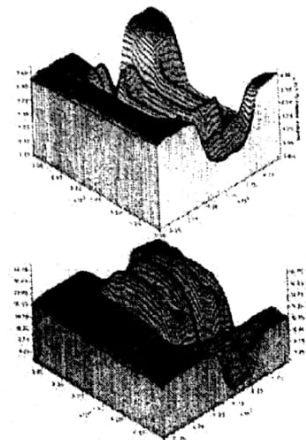


Fig. 1 Emissivity of gallium arsenide MOSFET

Fig. 2 Measured thermal distribution for the factor $F = 0$

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ADAPTIVE GREEN SIGNAL TIME USING MACHINE LEARNING

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Abstract—

Long queues at traffic lights could be a thing of the past. Vehicle travel is on the rise across the world, particularly in metropolitan cities. As a result, simulating and optimizing traffic control algorithms is required to better handle this growing demand. In this work, we investigate the simulation and optimization of traffic light controllers in a city and provide a machine learning-based approach. There are four processes in this study. The first is data collection. Next, a simulation is built. Then, a machine learning model is trained and tested in the model. Last, the results are compared between the different machine learning algorithms including LDA, KNN, CART, LR, NB and SVM. The results obtained in this study are queue length of vehicles in front of traffic light and delay time of vehicles is decreased with machine learning model. From the result, the environment that applied with machine learning agent has shorter time delay and queue length of vehicles.

Keywords—machine learning, LDA, KNN, SVM, NB, CART, LR

1. INTRODUCTION

With enormous increase in population, traffic congestion is becoming highlighting issue of today's era. Congestion on roadways are never been real worse, and with increasing traffic accidents our roads are life threat of everyday routine. Plus lack of traffic sense and not following traffic rules are always helping people to get into near death trouble. We waste a lot of time sitting in our vehicles and honking for thousands of valuable hours a day. This threat is increasing every year hence problem will be worse in future, our next generation will be gasping for a whiff of fresh air. Traffic jams are the result of competition for a scarce and highly valuable resource. Living in 21st era of driverless vehicles we still race for basic need for up gradation for a controlled traffic system. Traffic congestion are controlled effectively via traffic signals, it's a reliable way to control intersection of everyday traffic world. Hence in this work we are mainly focusing on traffic signal perceiving live traffic data and via help of AI proposing a solution on runtime.

During this work we have evaluated the performance of various machine learning algorithms for computing green signal time. We have prepared the dataset of different number of vehicles and green signal time according to vehicle count and vehicle speed. Different machine learning algorithms are trained using this traffic dataset and performance is evaluated using MSE, MAE, precision, recall, F measure, recall and Accuracy.

2. Existing System

During earlier research we have proposed adaptive green signal timing based on number of vehicles and vehicle speed to cross the signal. Traffic signal image was captured using camera and using vehicle detection and count module, we count the number and type of vehicles in the image. Based on number and type of vehicles and average timing of vehicles to cross the signal, green signal time was calculated dynamically.

3. Hardware And Software Requirements

Table 1. Hardware Requirements

SR. No.	Hardware	Description
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ELECTRONIC DIFFERENTIAL SYSTEM FOR ELECTRIC CAR

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Abstract— In automotive technology, the electronic differential may be type of differential which provides required torque to each wheel and differentiate both wheel speeds. It is used in situ of the mechanical differential in multi drive systems. While turning, the rear inner and rear outer wheels rotate at different speeds, as inner rear wheels observes or experiences smaller turning radius than the outer rear wheel. The electronic differential uses wheel speed signals to manage the power to each rear wheel so that each wheel will get the required torque. This project presents model of Electronic Differential System (EDS) for the dual rear wheel independently driven Electric Vehicle (EV). To overcome drawbacks of mechanical differential like heavy and bulky system, losses due to power trains etc. Electronic differential is widely used in EVs. In electronic differential project, an EDS for rear wheels of an EV with wheel motor is modelled rather than front wheels. The speed of rear wheel is estimated by using equation derived from Ackermann Jeantand model. Consistent change of the vehicle speed and steering angle of EV, rear wheel speeds is estimated. It is observed that the modelled EDS is acceptable for EVs with separate wheel motors.

Keywords— Electronic Differential System for electric car, Steering angle detection, Differentiate rear wheels speed, Atmega328, DC motor with speed sensor, ESP12E, Android Application, Smartphone.

I. INTRODUCTION

An electric vehicle (EV) which uses one traction motor driving two wheels employing differential system, mass of EV increases because of batteries. To reduce mass of an EV motors are fitted into the wheels to get fast response from motor and supply independent torque control to every wheel. [3, 4].

Differential systems in automobile is used in sloping and slippery roads to distribute torque and power equally to the traction wheels. Internal combustion engine vehicles consisting of a mechanical differential using a differential gear. Once a wheel accelerates just in case where not using differential gears, the wheels slips because of braking to decelerate the another one. It may result into unsafe and hazardous driving, more wear of tyre and more fuel consumption. Hence, inner wheel speed has got to differ from the outer wheel speed for a vehicle which drives on a curved road [5]. On the opposite hand for electric vehicle EVs, an EDS is employed because of independent directly driven wheels rather than a differential standard system. Therefore, drawbacks like, maintenance, mechanical losses and gears repair cost caused by the powertrains can be eliminated.

II. LITERATURE REVIEW

The studies examined in this literature shows that EDS simulation and modelling of EV having two motor wheel drive are shown by logic control symbolic method for estimating every wheel slip rate [3].

Azeddine Draou conducted experiment for two in built wheel hub motors drive in EDS speed control for which Matlab/Simulink results were used to verify designed EDS. The system consists of control of direct torque for permanent magnet synchronous motor (PMSM). The simulation was done for curved and straight road, they observed that vehicle stability was well provided for curved road.[6]

In [7], Analysis of speed and observer for torque was run for DC motor with presentation of an electrical differential system of EV consisting two independent rear wheels of EV. Real wheel torque algorithm of vector was done on basis of Ackermann Jeantand for implementation and design for

A Comprehensive go-through in Road Traffic Regulation Intelligent System and Scope Ahead

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Abstract: Traffic congestion is a major problem in all major cities in developing countries. Conventional systems have many limitations like uniform time allocation to the traffic light duration, no free corridor for emergency vehicles and no provision for passing of HLVs and LHLVs effectively. The purpose of this paper is to go-thorough comprehensively in traffic control and management systems which are developed by the researchers throughout the world. The timely improved hardware systems and the intelligent and creative control logic that are till now simulated, developed, tested and validated are mentioned here. Generally vehicular traffic intersects at the junctions of the road and controlled by the traffic signals. Traffic signals need an honest coordination and control to make sure the graceful and safe flow of the vehicle traffic. During the push hours, the traffic on the roads is at its peak. Also, there's an opportunity for the emergency vehicles to stay within the holdup. Therefore; there's a requirement for the dynamic control of the traffic during rush hours. Finally the new essential and possible way of intelligent traffic control is proposed. Thus, if we try to get the probability of occurrence of HLVs/logistics at the intersection as per their engine CC, we may predict the switching time interval and specific sequence of switching the traffic light signals. This may help to uniformly divide the signal timing at consequent phases and try to distribute the stringent congestion to smoothen the road traffic. For this we are trying to use Two-Intersection configuration only which is designed in SUMO platform.

Keywords: Road Traffic Regulation, SUMO simulation, Intelligent Systems, HLV, LHLV

1. INTRODUCTION

Traffic load is very hooked in to parameters like time, day, season, weather and unpredictable situations like accidents, special events or construction activities. If these parameters are not taken into account, this creates bottlenecks and delays in traffic monitoring. A control system that solves these problems by continuously sensing and monitoring traffic conditions and adjusting the timing of traffic lights consistent with the particular traffic load is called an intelligent traffic control system.

Conventionally, sensors are used alongside the road which are low in sensor range covering and costly too in maintenance. In general traffic can be counted using two methods: the non-intrusive (e.g. video camera and Radar/Ladar/LiDAR) and intrusive (e.g. inductive and capacitive/magnetic devices, got to be buried within the road), as traffic sensors.

Traffic control systems may also be classified as saturated or unsaturated, depending on whether they were designed for a saturated or unsaturated network. In an unsaturated network, it's desired to attenuate the mean delay of drivers, while during a saturated network it's desired to function many drivers as possible, or in other words, to maximize traffic capacity of the intersection. The problem of capacity maximization is the same as the queue minimization problem. Unlike earlier method, vehicle weights parameter were used determine the count of vehicles near the intersection while current traffic systems react to motion where the infrared object detector picks up the presence of a vehicle near intersection. An adaptive control system must have the power to diagnose saturation

Analysis of Rectangular Microstrip Array Antenna Fed Through Microstrip Lines with Change in Width



Tarun Kumar Kanade, Alok Rastogi, Sunil Mishra, and Vijay D. Chaudhari

Abstract This paper deals with a detailed investigation of a microstrip array antenna with step discontinuities at its feed line has been presented. In the proposed configuration, antenna arrays at 2.45 GHz are designed, simulated, and fabricated to demonstrate the concept of step discontinuities in the feed lines. A four-element rectangular patch array is fully characterized, and its performance is critically assessed for no step, single step, and double step microstrip feed lines. The return loss S_{11} [dB] is better for microstrip array antennas with double step feed lines than array antennas with no step and single step feed lines. Impedance matching and higher isolation between the patches and feed lines were appropriate using step discontinuities at the feed lines. FR4 substrates were used to design, simulate, and fabricate the microstrip array antennas. The simulated S_{11} [dB] for no-step feed lines, single-step feed lines, and double-step feed lines for rectangular microstrip array antennas are -8.78 dB, -16.48 dB, and -17.15 dB, respectively. Prototypes of these antennas are then fabricated and measured to validate the analysis and design experimentally. The simulated and measured results agree with each other.

Keywords Rectangular patch · Array · 2.45 GHz · Microstrip feed lines · Dual-polarized antenna · Narrowband antenna

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A survey on various traffic management schemes for traffic clearance and emergency vehicles

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Abstract - Due to growth in a number of vehicles on roadways Traffic congestion on city road networks is one of the main issues to be addressed by today's traffic management schemes causes heavy traffic congestion on the road. Traffic congestion on roads may cause the delay for emergency services (i.e. Ambulance, Firefighter, Police, etc.). Neither manual control by police officers nor using predefined timers has proved effective, but they are still being used in many places. Due to this, these emergency vehicles are not able to reach their destinations in time, resulting in a loss. A traffic light plays an essential role in traffic management. Under the normal state traffic light duration for the path is almost fixed and same for the entire path and emergency vehicle are not considered. A various paper present different schemes that determine traffic volume and set the green light duration for the path. This paper presents a survey on various traffic management schemes for traffic clearance and path clearance of the emergency vehicle. Researchers have used several techniques such as Embedded Systems, Wireless Sensors Network, Intelligent Ambulance and Image Processing for traffic management. These techniques have been discussed thoroughly and comparative analysis has been made.

Key Words: GSM, RFID, IR sensor, IOT.

INTRODUCTION

The number of vehicles is increasing exponentially, but the infrastructure for transportation we have is not sufficient to satisfy their needs. Due to this, valuable time of public is being lost every day. This also leads to huge economic problems. The main problem occurs when this traffic congestion costs the life

of someone. This mainly has a major impact on the vehicles dealing with an emergency situation. It should not be surprising that traffic congestion affects almost all emergency vehicles, which can be too much hazardous to affected people. There isn't any quick solution for this. The government can't continue making roads everywhere. There should be a technical solution to get away with this. There should be a solution by which these emergency vehicles can get their way in midst of traffic and traffic signals. No doubts, the ambulance could not have to be waiting on the traffic junction even when the traffic signal is red. But traffic on road doesn't give a path for an ambulance.

A literature survey has been done according to techniques researchers have used. The techniques described in this paper are Embedded System, Wireless Sensor Networks, algorithmic method, Active RFID and GSM Technology, Intelligent Ambulance and Image Processing. Not only description, but comparative analysis has been done in this paper



Fig. 1 Traffic Congestion in Roadways

LITERATURE SURVEY

In real world there are many traffic management schemes established already and various solutions

A Survey on Speaker Identification System

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Abstract: - The speech processing for providing vast security is more popular day by day. For the purpose of authentication of speech by speaker is widely used. Speaker recognition is the process which can verify and identifies a human from features of voice. The speaker recognition has made great process. But in real life or real situation the environment noise is effected for the performance of speaker recognition systems. This paper studies the performance of speaker recognition system in noisy surroundings. And now a days (in the present) this system is using MFCC (Mel frequency cepstrum coefficients) techniques. The MFCC feature is used along with the VQLBG (Vector Quantization – Limba, Buzo and Gray) differentiate between silence and voice activity and significantly improve the performance of SRS (speaker recognition system) under the noisy conditions. The requires measurement were performed in MATLAB which proving speech signal image recognition in a simple and easy way to used.

Keyword:- MFCC (Mel Frequency Cepstrum Coefficient), VQLBG (Vector Quantization-Limba, Buzo And Gray), SRS (Speaker Recognition System).

INTRODUCTION

Speech is one of the most important way of human communication like finger print, it carries the similarity of the speaker as voiceprint. The Human delivery is a signal inclusive combined types of information, Including words, feelings, language and identity of the speaker.[10] This can be done by developing an automatic speech recognition (ASR) system which allows a computer to recognize the words that a person or a human beings speaks into a mice i.e microphone or telephone and translate it into a written text format. As a result it has possible of being of important mode of interaction between the human and computers.[9] This research works discuss the difficulties of speaker verification. And it can be determining the given speaker

with the help of training set of samples. The main steps of speaker recognition start with the preprocessing of voice signal, perform sampling and quantization, and then feature extraction. At the last step the extracted features are given to a classifier. This field is still under the research at which the allow able feature set that consists with the best special characteristics of each voice which is investigated by the appropriate classifier for every feature set. In this work, the MFCC (Mel frequency cepstrum coefficients) feature are used to design a text dependent speaker identification system. MFCC's are obtained in training and testing phase. Speaker Uttered same words once in a training phase as well as testing phase. Depending on the various function, speaker recognition could be classified into two parts as a identification and a verification of a speaker. [9] To identifying which one of N known speakers is the very analogous to the input voice such called as speaker identification.

The following definitions are the basics needed for understanding speech recognition technology.

Utterance:-

An utterance is the vocalization (speaking) of a word or word that represent a single meaning to the computer. Utterances can be a single word, a few words, a sentence, or even multiple sentences

Speaker Dependence:-

Speaker dependent system are designed around a specific speaker. They generally are more accurate for the correct speaker , but much less accurate for other speaker. They assume the speaker will speak in a consistent voice and tempo. Speaker independent system are designed for a variety of speakers. Adaptive systems usually start as speaker independent systems and utilize

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Biometric Authentication By Using Face Recognition

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Abstract: Currently there are vast development in biometric authentication technology so password hacking is reduced by day by day. In past year mostly thumb scanning was used. Face recognition technology is used to automatically identify a person like as he open account by using his own password. In this paper we are focus to directly capture information about the face shape using face recognition. Face recognition is used for highly secured system. In this paper we proposed the technique for human identification which can substantially improve the rate of recognition as compared to the other biometric identification. we propose the best, highly secured device, does not hack, all this features are developed by face recognition.

Keywords- face features, feature selection, local binary patter, camera, moduls of proposed system.

INTRODUCTION

In general, face recognition problem can be briefly defined as the process of matching a new input face to the existing known individuals in the database. In machine learning practice, it is a supervised learning problem. More specifically it is a multi valued classification task with as many classes as there are individuals whose faces are stored in the face database. Face recognition can be applied for a wide variety of problems like image and film processing, human-computer interaction, criminal identification etc. This has motivated researchers to develop computational models to identify the faces, which are relatively simple and easy to implement. The model developed in [1] is simple, fast and accurate in constrained environments. Our goal is to implement the model for a particular face

and distinguish it from a large number of stored faces with some real-time variations as well. The scheme is based on an information theory approach that decomposes face images into a small set of characteristic feature images called 'Eigen faces', which are actually the principal components of the initial training set of face images. Recognition is performed by projecting a new image into the subspace spanned by the Eigen faces ('face space') and then classifying the face by comparing its position in the face space with the positions of the known individuals. Recognition under widely varying conditions like frontal view, a 45° view, scaled frontal view, subjects with spectacles etc. are tried, while the training data set covers a limited views. Further this algorithm can be extended to recognize the gender of a person or to interpret the facial expression of a person. The algorithm models the real-time varying lighting conditions as well. But this is out of scope of the current implementation.

LITERATURE SURVEY

M Vadiraj described that in each and every organization attendance monitoring is made as one of the most important task. Many traditional methods have been proposed for the same. This paper provides an efficient method for marking attendance which is based on facial recognition of an individual. In this method the images of the students are captured in a group and the faces which are detected are segmented. Then the segmented images are verified with the database of the class. Using a GSM technology, notification of absence will be sent through SMS for the particular student [1]

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Comprehensive Survey on Thermal Challenges In Electronics Circuits

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Abstract – Electronic devices and their applications have been among the fastest advancing fields, with the characteristic dimensions of devices shrinking past the micro scale and into the nanoscale within the matter of just two decades. Today, many modern electronic devices operate with critical dimensions in the tens of nanometers. Moreover, minimum feature sizes of 14 nm and below are being targeted for next-generation technology nodes. At the same time, new approaches at the die and package integration levels such as many-core architectures and three-dimensional (3D) chip stacking are emerging as potential means of increasing computing performance without relying on reduced feature scaling alone. In addition, the rise of mobile devices and touch screen applications has driven new research and development efforts into devices and materials compatible with transparent and/or flexible substrate design requirements. However, these exciting technological advances and emerging applications are also creating thermal challenges that may serve to ultimately limit their effectiveness, scope of implementation, or overall feasibility. During a power amplifier design phase, an important item for a designer to consider is the management of performance over temperature. One of the main parameters that affect performance is the quiescent current. The challenge for designer is to maintain constant quiescent current over a large temperature range. The problem becomes more challenging in a multistage IC (integrated circuit). To overcome this difficulty, Free scale has embedded a quiescent current thermal tracking circuit in its recently introduced family of RF power integrated circuits.

INTRODUCTION

Over the past half-century, the drive for faster, cheaper computing and its long-associated requirements of increasing device density and progressive device miniaturization have served to push scientists and engineers to continually develop new and ever-improving materials, tools, processes, and design methodologies. As a result, electronic devices and their applications have been among the fastest advancing fields, with the characteristic dimensions of devices shrinking past the micro scale and into the nanoscale within the matter of just two decades. Today, many modern electronic devices operate with critical dimensions in the tens of nanometers. Moreover, minimum feature sizes of 14 nm and below are being targeted for next-generation technology nodes.

At the same time, new approaches at the die and package integration levels such as many-core architectures and three-dimensional (3D) chip stacking are emerging as potential means of increasing computing performance without relying on reduced feature scaling alone. In addition, the rise of mobile devices and touch screen applications has driven new research and development efforts into devices and materials compatible with transparent and/or flexible substrate design requirements. However, these exciting technological advances and emerging applications are also creating thermal challenges that may serve to ultimately limit their effectiveness, scope of implementation, or overall feasibility. During a power amplifier design phase, an important item for a designer to consider is the management of performance over temperature. One of the main parameters that affect performance is the quiescent current. The challenge for designer is to maintain constant quiescent current over a large

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Edge Mesh: A New Paradigm to Enable Distributed Intelligence in Internet of Things

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Abstract – There has been a paradigm shift in Internet of Things (IoT) of centralized cloud computing to edge computing (or fog computing). developments in ICT have made increment of communication and computation abilities of embedded systems. But they do not use low-level devices for any decision making process. In this paper we propose a new computing paradigm, named Edge Mesh, which classifies decision making tasks among edge devices in the network rather than sending all the data to a centralized server. All the computation task are shared using mesh network of edge devices. Edge mesh gives many advantages like distributed processing, low latency, fault tolerance, better scalability, better and privacy. These advantages are used for critical applications, which needs high reliability, real-time processing, mobile support, and context awareness. we give overview and details of edge mesh. Then we describe details including the proposed framework, research challenges and benefits of Edge Mesh and its various application scenarios, including smart home, intelligent transportation system, and healthcare.

Keywords- Edge devices, Internet of Things, distributed intelligence, distributed computing, mesh network.

INTRODUCTION

Internet of Things (IoT) envisions to revolutionize our life by connecting everything around North American nation with one another. IoT has modified the approach we expect regarding our encompassing. IoT affects the majority aspects of our life together with our homes, offices, healthcare, transportation, power grid, logistics, industries, and lots of a lot of areas. Most IoT systems use finish devices for sensing the environment while communication and networking responsibilities square

measure undertaken by gateways and routers. Computation is sometimes done at a centralized server and also the data generated by process is used by some elite devices that act as actuators. Sensing, communication and networking have always been the main target of attention for researchers, however, researchers have currently conjointly started considering problems connected to computation and intelligence. because the variety of devices continues to extend within the returning future, a significant issue can web of Things (IoT) envisions to revolutionize our life by connecting everything around North American nation with one another. IoT has modified the approach we expect regarding our encompassing. IoT affects the majority aspects of our life together with our homes, ofces, healthcare, transportation, power grid, logistics, industries, and lots of a lot of areas. Most of the, wherever there are four main elements i.e. Sensing, Communication, Computation, and feat. IoT envisions embedding of sensing/communication/computation/actuation capabilities in common objects, however, in existing systems, a single device sometimes doesn't supports all the capabilities. Most IoT systems use finish devices for sensing the environment while communication and networking responsibilities square measure undertaken by gateways and routers. Computation is sometimes done at a centralized server and also the data generated by process is used by some elite devices that act as actuators. Sensing, communication and networking have always been the main target of attention for researchers, however, researchers have currently conjointly started considering problems connected to computation and

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ELECTROMAGNETIC INTERFERENCE IMPROVEMENT IN ELECTRONIC CIRCUITS

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Abstract – EMI caused by generation & radiation of unwanted RF signals that pollute carefully managed radio spectrum. Increasing data-rates and tougher EMC standards make EM radiation a highlighted concern. Recent digital ICs like microprocessor and DSPs include an increasing number of elementary logic gates which absorb/drive pulsed currents driving EM emissions. EM field directly radiated by package frame and circuit routed at silicon level are referred as IC radiated emissions. The pulsed currents conducted off chip by the IC pins feeding PCBs traces and cables which act as emitting antennas are referred as IC conducted emissions. An attempt has been made here to review the problems associated with interference issues results in RF disruption or intermittent failure of electronic, communication and information system. The signal with sharper rising/falling edge is comprised of higher order Harmonics. The Harmonics-included in actual digital signal are the principle cause of EMI emission from electronic simulator simulates noise suppression filters and chip capacitors in single end line and differential line. EMC means that the device is capable with its EM environment & does not emit the EM energy that can cause EMI in other IT, industrial & healthcare devices in the vicinity

Keywords: EMIFIL, BLM-NFM series filters, EMC standards, Conducted Emission

INTRODUCTION

1.1 EMI Fundamentals:

Electromagnetic Interference: An EM disturbance which may degrade the performance of a device, system / sub-system or an equipment or causes unwanted response / malfunction of an electronic or

electrical equipment. [5] Radio Frequency (RF): The frequency range in which coherent EM radiation is useful for communication purposes - roughly from 10KHz to 100GHz. This energy may be generated internationally, as by a radio transmitter or unit nationally as by electronic devices operation. RF energy is transmitted through two basic modes: Radiated Emission (RE): The component of RF energy that is transmitted through a medium as an EM field. RF energy is usually transmitted through free space. Conducted Emission (CE): The component of RF energy that transmitted through conductive medium as an EM field, generally through a wire or interconnect cables referred to be CE. Line conducted interference (LCI) refers to RF energy in a power cord.[3]

Electromagnetic Compatibility

EMC is a near perfect state in which a receptor (a device, or equipment, or a system/sub-system) functions satisfactorily in common EM environment, without introducing intolerable EM disturbance to any other devices/ equipment / system in that environment. An Electromagnetic disturbance which may degrade the performance of a device, system / sub-system or an equipment or causes unwanted response/malfunction of an electronic or electrical equipment or IT equipment. EMI noise problems [8] since the design have many ICs which make the process of EMI emission very complicated [9]

Optimal and Higher Order Sliding Mode Control for Systems with Disturbance Rejection



Ishwar S. Jadhav and Gajanan M. Malwatkar

Abstract This paper presents the higher order sliding mode control for a typical unstable process to maintain the system's stability with disturbance rejection. The control of uncertainty and disturbance rejection is a difficult task in control engineering applications. The literature found that non-linear uncertain systems have been studied by different researchers in the control engineering field. In this paper second-order integral sliding mode control (SMC) surface is chosen to derive the value of switching surface control. The proposed controller design depends on the calculation of poles of the systems irrespective of stable or unstable poles and gives practical value for the control input signal, and it is implemented for the system's nominal model. In the optimal controller, the computed values of gains from systems poles are used to derive the one of SMC law. In the presented work, the system's unstable or stable poles give the proper value for the control input signal. The proposed technique's significant advantages include disturbance rejection, insensitivity to variation in plant variables, and implementation issues. The simulation results show an advantage over the designed SMC approach to stabilize the system and its output responses.

Keywords Disturbance rejection · Higher order SMC · Robustness · Simulation · Uncertain system

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Design Optimization in Patch Feed Line of a Circular Patch Antenna Array

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Abstract: Circular microstrip patch antennas with discontinuities in their feed line is presented in this paper. The antennas are composed of a radiating patch, and step discontinuities are given in its feed lines to improve the performance. The three circular microstrip planar array antennas through various signal excitation lines are computationally designed, and PCB etched, and their performance is analyzed based on various feed lines. The proposed array antenna operates in the ISM band at 2.45 GHz. The HFSS is used to design and perform the simulations. A prototype of an antenna effective at 2.45 GHz has been PCB etched and verified for concept demonstration. S_{11} [dB] at 2.45 GHz is -21.143 dB for straight feed line, -22.0 dB for one step feed line, and -24.72 dB for two-step feed line. The computational and practical outcomes illustrate that the S_{11} [dB] is enhanced for circular microstrip patch array antennas with two-step feed lines. The simulated and measured scattering parameters and radiation patterns show that they are in good agreement.

1. Introduction

Microstrip patch array antennas which operate in the microwave and mm-wave band are appropriate for 4G and 5G communication systems [1]-[3]. Microstrip patch antenna has been emphasized in electronics microwave communications due to its benefits of an easy pattern, low cost, and power requirement at microwave and mm-wave frequencies. The configurations of patch antennas can be attuned to attain bandwidth improvement, optimum gains, and reflection coefficients, for example, by using the patches of different shapes, the patches with different types of shapes, and the patches with various types of modified feed lines. In addition, these antennas can be fabricated using the PCB process. Numerous design methods came into existence to increase the bandwidth of patch antennas by manipulating shape and feeding mechanisms. The most commonly used feed mechanisms at microwave frequencies include microstrip line, coplanar waveguide, coaxial probe, and inserting discontinuities in a feed line that stimulates the patch antenna to enhance the bandwidth [1]-[4]. Previous research studies have proposed many methods to enhance gains or return loss of patch antennas. This paper studies how an array of circular microstrip patches can enhance its broadside gain and appropriate return loss while keeping a low profile. This paper has developed a 2 X 2 circular patch array antenna at 2.45 GHz, with three different types of microstrip lines. Simulations were conducted using the HFSS software, and the patch array antenna was fabricated and experimentally tested. The scattering parameters, gain, and radiation patterns nearly agree with the computational and measured results. The fundamental array elements are shown in Fig. 1. This paper is ordered as follows: Section II briefly reviews the Antenna Array Design. In Section III, Simulation results and experimental validations are compared, and the roles of discontinuities are proposed. Finally, section IV concludes the paper.



Fig. 1. Microstrip patch array antenna

2. Antenna Array And Feed line Design

Wireless communication networks are emerging quickly, and current wireless services apart from voice and text include multimedia communications, requiring a high bandwidth and data rate. In the case of single patch antennas, characteristics such as high gain, beam scanning, appropriate return loss are possible only when individual patch radiators are combined to form an array [5]-[7]. The patch elements are distributed in a single dimension to form a linear array, in two dimensions to form a planar array, and in three dimensions to form a volume array, and the radiation pattern can be determined from this distribution. The radiation elements' excitations are an essential factor that must be carefully designed for required gains and beam directions. Commonly used feeding methods are parallel and series. The input port and multiple feed lines form parallel feed mechanisms, and every feed line is ended at distinct radiating elements. The series feed consists of continuous transmission lines from which small portions of energy are gradually coupled into the separate element connected along the line by various means of coupling. The feed networks contain specific undesirable characteristics that must be carefully examined to diminish adverse effects on array performance.

The feed line itself is radiated, proper optimization of the feed line is required to achieve appropriate reflection

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Design optimization in patch feed line of a circular patch antenna array

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Abstract:

Circular microstrip patch antennas with discontinuities in their feed line is presented in this paper. The antennas are composed of a radiating patch, and step discontinuities are given in its feed lines to improve the performance. The three circular microstrip planar array antennas through various signal excitation lines are computationally designed, and PCB etched, and their performance is analyzed based on various feed lines. The proposed array antenna operates in the ISM band at 2.45 GHz. The HFSS is used to design and perform the simulations. A prototype of an antenna effective at 2.45 GHz has been PCB etched and verified for concept demonstration. S_{11} [dB] at 2.45 GHz is -21.143 dB for straight feed line, -22.0 dB for one step feed line, and -24.72 dB for two-step feed line. The computational and practical outcomes illustrate that the S_{11} [dB] is enhanced for circular microstrip patch array antennas with two-step feed lines. The simulated and measured scattering parameters and radiation patterns show that they are in good agreement.

Keywords: antenna feeds, antenna radiation patterns, etching, microstrip antenna arrays, planar antenna arrays, design optimization, patch feed line, radiating patch, step discontinuities, circular microstrip planar array antennas, ISM band, HFSS, frequency 2.45 GHz

Plant Nurturing and Disease Detection System

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Abstract -This system has developed an automated system to determine whether the plant is normal or diseased. The normal growth of the plants, yield and quality of agricultural products is seriously affected by plant disease. This paper attempts to develop an automated system that detects the presence of disease in plants. An automated disease detection system is developed using sensors like temperature, humidity and color based on plant leaf's health conditions variations. The values based on temperature, humidity and color parameters are used to identify the presence of plant disease.

Keywords- Plant, detection, sensor, temperature, humidity, color.

I- INTRODUCTION

India is a land of agriculture. Two-third of population relies upon agriculture for their livelihood. It is the basic foundation of economic development of the country. The agriculture also provides employment opportunities to very large percentage of population. Plant health condition plays a vital role to earn good profit for the farmers. Proper monitoring of plant health is required at

different stages of plant growth in order to prevent disease affecting plants. Existence of pests and disease affect the estimation of crop cultivation and minimizes crop yield substantially. Present day system depends on naked eye observation which is a time consuming process. Automatic detection of plant disease can be adopted to detect plant disease at early stages. Various disease management strategies have been used by farmers at regular intervals in order to prevent plant diseases. In the present work, this issue is addressed using sensor based technology. This being the motivation, the problem entitled "Leaf Disease Detection using IoT is proposed to assist the farmers technologically. In the proposed work, focus has been on early detection of disease infection on plant leaves.

II- LITERATURE REVIEW

The relationship between the plants and the environment is multitudinous and complex. They help in nourishing the atmosphere with diverse elements. The relationship between the plants and the environment is multitudinous and complex. They help in nourishing the atmosphere with diverse elements. Plants are also a substantial element in regulating carbon emission and climate change. But in the past, we have destroyed them without

Object Based Vehicle Track Navigation System

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Abstract An Intelligent object and tracing autonomous vehicles are required in various applications such as space, transportation, industry, and defence. Mobile robot vehicles can also handle material handling, disaster relief, patrolling, and rescue operations. Therefore, a simple and reliable vehicle is required to travel freely in a static or dynamic environment. Smooth and safe navigation of mobile vehicles through the cluttered environment from the start position to the goal position with following a safe path and producing optimal length is the main aim of tracking object navigation. Regarding this matter, researchers have explored several techniques for navigation path planning, out of which this sensor and tracing of already decided track navigation is adopted here in the implementation. This system has tried to develop navigation techniques that are well-suited for static and dynamic environments and can be implemented for the real-time navigation of mobile vehicles.

Keywords- Navigation, track, object, vehicle, path.

I -INTRODUCTION

The vehicle can transport the load to a pre-decided location using navigation and delivering the material. The system introduced here has a specialty as it can track and man oeuvre the path given to it, i.e. it is a self-guided vehicle. As it has the self-guiding ability, it can be implemented in industry to complete the specified task without manual intervention, i.e. a person doesn't have to keep watch on the activity. If suppose one task

of sending one object from one place to another is specified, it will do with utmost accuracy if the path is set to it. The heart of the system is a microcontroller capable of efficiently performing complicated tasks. This vehicle uses two motors for the left and right side for effective manoeuvring for sideways turning and forward and reverse direction movement.

II -LITERATURE REVIEW

This literature presents a new approach to integrating semantic information for vision-based vehicle navigation. Although vision-based vehicle navigation systems using pre-mapped visual landmarks can achieve submeter-level accuracy in large-scale urban environments, a typical error source in this type of system comes from visible landmarks or features from material objects in the background, such as cars and pedestrians. We propose a gated factor graph framework to use semantic information associated with visual elements to make decisions on outlier/ inlier computation from three perspectives: the feature tracking process, the geo-referenced map-building method, and the navigation system using pre-mapped landmarks. The visual feature's class category is extracted from a pre-trained deep learning network trained for semantic segmentation. Our implementations demonstrate the feasibility and generality of our approach on top of two vision-based navigation systems.

Raspberry Pi Based Assistive System for Bedridden Persons

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Abstract - In recent year many assistive systems for disabled have been developed. In this paper we present a unique assistive system for bedridden persons they cannot move anywhere which work on Human machine interface using raspberry pi. Tetraplegia and quadriplegia is a paralysis condition where a patient cannot move parts below neck. Such persons may face some problem like dumb, deaf etc. The proposed assistive system is to enable communication between tetraplegia patient and caretaker. The proposed system work on voice based command and performs the action against the input. The patient can also use this system for device automation, for controlling fan, light and other devices. HMIs to monitor and configure set points, control algorithm send commands and adjust and establish parameters in the controller. Used python programming language.

Keywords- Raspberry pi, Human Machine Interface, Voice Command Algorithms

I-INTRODUCTION

Tetraplegia or Quadriplegia is a paralysis condition caused by illness or injury that results in the partial or total loss of body. The patient may also lose some difficulties like deaf, dumb, blindness etc. Because of this persons cannot perform voluntary action and becomes a bedridden. The persons have to be taken care of someone always like family members. It is difficult for the patients to make caretaker or someone who take

care of patient understand what they need. And even the patient face major problem like they won't be able to communicate with the world. There are many systems developed and introduced for the tetraplegia patients to communicate with the outside world. Such as Brain wave technique and Electro-oculography as well as eye waver technology. In these techniques, electrodes are pierced through the epidermis of skin and in eye detection system incorporate with different technologies such as eye blink detection, eye center localization and conversion of the eye blink to speech, That system uses an efficient method which is depends on image processing techniques for detecting human eye blinks and generating inter-eye-blink intervals.

The proposed system works on voice based command and perform the action against the input command, this is done by using Human machine interface module through raspberry pi kit.To monitor and configure set points, control algorithms, send commands, and adjust and given parameters in the controller for these action use HMIs (Human Machine Interface) module. We are trying to design a standalone speaker dependent speech recognition circuit that may be interfaced to control just about anything electrical, such as; appliances, robots, test instruments, VCR's TV's, etc.

The output of the system is displayed by the microprocessor on the seven segment display. The

Security Monitoring and Self-Control System for Home

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Abstract –In this paper with the increase in energy consumption and population, there is a grave need to conserve energy in every way possible. The inability to access and control the appliances from remote locations is one of the significant reasons for energy loss. The users use a web or an Android application to instruct these systems. This system can use various communication methods such as Wi-Fi, GSM, Bluetooth, and Zig Bee. Different controlling devices and configurations can be found in existing systems. Such systems have already been found in many places for various applications. This project presents a home automation system using Wi-Fi, an Android application and google firebase. It's a real-time database system.

Keywords- Embedded Systems, Remote access Systems, Mobile Applications, Web Applications and Home Automation System

I. INTRODUCTION

The main idea of this design is to develop a home automation system using an Arduino IDE with WIFI being ever controlled by any Android smart phone. As technology is advancing so houses are also getting smarter. Modern houses are gradually shifting from conventional switches to centralized control system, involving remote controlled switches. Presently, the house's traditional wall switches are scattered along various hallways, making it dangerous for a person to approach them and utilize them. Indeed, more it becomes more delicate for the senior or physically hindered people to do so. Remote controlled home automation system provides a most modern result with smart phones. In order to achieve this, a WIFI microcontroller is programmed with the Arduino IDE. At the receiver end while on the transmitter end, a GUI application on the cell phone sends ON/ OFF commands

to the receiver where loads are connected. By touching the specified position on the GUI, the loads can be turned ON/ OFF ever through this technology. The loads are operated by relay through optoisolators and ULN2003 relay driver.

II. LITERATURE REVIEW

Existing home automation systems have traditionally relied on manual control methods, requiring homeowners to operate various devices individually [1]. This limitation prompted the development of wireless sensor networks to automate and enhance home security [2]. A paper proposes the use of IoT-enabled devices and wireless communication networks to create a comprehensive home automation system [3]. This system allows homeowners to control various aspects of their homes, such as lighting, temperature, and security, remotely through mobile applications. Another study explores the integration of artificial intelligence (AI) technologies into home security systems [4]. By incorporating AI algorithms, the system can analyze and identify potential threats, such as unauthorized access or suspicious activities, and notify homeowners or security personnel accordingly. The advancement of smart home technologies has led to the development of voice-controlled home automation systems [5]. Through natural language processing and voice recognition, homeowners can interact with their smart devices and control home functions simply by issuing voice commands. Paper [6] proposes the utilization of video surveillance systems and motion detection sensors to enhance home security. These systems can detect intrusions, monitor activities, and provide real-time alerts to homeowners or security services. The emergence of smart locks and biometric authentication

Embedded Sensors in Work Clothing to Provide Health Data of Workers

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Abstract - Our work is related to a person safety using Arduino Uno. The person or mine worker are installed with sensors and WI-FI module. Gas sensor, temperature sensor, carbon dioxide sensor, and buzzer circuit also added in this project. The gas sensor is used to find the carbon level in the mine exhaust of the atmosphere and temp. sensor is using to find the operating condition are good or not for workers. If both are sensor value is not normal means the normal condition worker can work. Sensor is found in the position of the device, if the sensor value is abnormal or very high, means the value are sent local host at the same time buzzer will blow. Monitoring system the method and one thing we uploaded all values in local host.

Keywords: embedded sensors, work clothing, worker's health, Arduino Uno

I- INTRODUCTION

This consists of the safety purposes of the mine worker and here the sensor is used to monitor the atmosphere in mines. Abnormal values will activate the buzzer and the sensor value will be uploaded to the local host. Person tracking devices is not merely a decoration for safely purpose these days; it has emerged as indispensable requisite to safeguard against probable tribulations. Anyone who gives his life to risking for his work should assist personal assistance or for safety of his own environment, one is always burdened with uncertainty related to safe transit of persons/ passenger working in hazardous condition and hesitation about for long performance. This gave a jump start to introduce this wearable System which purposefully caters to

individual and organizational needs for mine safety of workers, monitoring and enabling to optimize workers performance in transit to work and save each life's resulting as a safety solution for everyone for reducing carbon footprints on earth.

II-LITERATURE REVIEW

Important process variables can be monitored from a distributed control system, as proposed in Tan, Lee, and Soh's (2002) study [1] [6]. This system would be hosted online (DCS). In order to get efficient remote access to the DCS's process variables, this study suggests hardware and software design considerations. Using one's voice to command one's household appliances to carry out a certain task [2][8] was proposed by Potamitis, Georgila, Fakotakis, and G. Kokkinakis, 2003. The methodology is slanted toward enabling persons with disabilities to carry out functional tasks at home by using their voices to control equipment. Through analysis of the speaker's voice, a voice separation approach is chosen. Using a system called "A System for Smart-Home Control of Appliances Based on Time and Speech Interaction," [3][9] developed by S. M. Anamul Haque, S. M. Kamruzzaman, and Md. Ashraf Islam in 2006, it is possible to manage your home's electronics from your computer. To create this system, we used Visual Basic 6.0 as our primary programming language and the Microsoft Voice Recognition SDK and Voice Editing SDK to implement our speech recognition functionality. Timers and voice commands both work for operating appliances. This paper presents the design and implementation of SMS-based control for monitoring systems [4][7], by Ciubotaru-Petrescu, Chiciudean,

Comprehensive Literature Review on Raspberry Pi Based Text Reading System for Visually Impaired Persons

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Abstract- Speech and text is main medium for human communication. a person needs eyesight access the knowledge during a text. However people that have very poor eyesight can collect information from voice. The proposed system can help the visually impaired persons to read any printed text in vocal form. A specs inbuilt camera is employed to capture the text image from printed text and thus the captured image is analyzed using Tesseract-Optical Character Recognition (OCR). The detected text is then converted into speech employing a compact open source software synthesizer, speak. Finally the synthesized speech is produced by the headphone by provides an interface between camera, sensor & image processing results, while also performing functions to manage the peripheral units. The programing language is employed is python.

Keywords- Raspberry pi 3, Optical character recognition, Open CV, Text to speech conversion, Python programming.

I - INTRODUCTION

Text to speech technology is the process where in the computer is made to speak. It uses the concepts of natural language processing. In Text reading applications, there are many different techniques available such as label reading, voice stick, brick pi reader and pen aiding but these methods can perform text to speech by creating datasets. In order to address this problem, finger reading technique has

been developed, it eliminates the datasets created and stored previously and provide a previous response of reading any text given as input captured image. [4]The speech synthesizer converts the audio input into the text form and processes the text to further learning modules. Despite the advancement of technology that allows for storing information electronically, textual information still remains the most common mode of information exchange. Virtually people who could restore normal vision with eye glasses or contact lenses are around 20% from the survey of ABF (www.abf.com) who could lead their normal lives. Apart from them 90% of world's visually impaired people who live in low, middle and even in most developed countries, cataract remains the leading cause of blindness.

In this system, we wanted the device to be able to detect the text from printed text image and read it efficiently. Inspired by the methodology utilized by Apps like "Cam Scanner". Optical character

Recognition (OCR) is a conversion of scanned or printed text images, handwritten text into editable text for further processing.[1] In this paper, we have presented a robust approach for text extraction and convert it to speech. This device was tested on raspberry pi platform. The Raspberry pi is initially connected to the internet through Wi-Fi. The software is installed using command lines. The first setup is to transfer the installation script, second command is to convert it to executable form and the last command starts the script which does the rest of the installation work. Device got wind of is finished as in The digital camera is

Crowd Analysis and Mask Detection using Raspberry Pi-3

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Abstract - Now a days all world suffering from a pandemic issue of COVID-19 to control these situation and to maintain the safety of ourselves we all have to take care of the two things like do not make a crowd and wear the mask properly. And to achieve this requirement of safety this paper works with the help of fog node and camera. Managing the crowd requires an intelligent monitoring technology. In this project, we propose a method to manage the crowd by counting multiple humans in the scene by head detection. In our study, we develop a system using Raspberry Pi 3 board that detects the human heads and provide a count of humans in the region using Open CV-Python. A Haar cascade classifier is trained for human head detection.

This work also proposes a fog computing-based face mask detection system for controlling the entry of a person into a facility. The proposed system uses fog nodes to process the video streams captured at various entrances into a facility. Haar-cascade-classifiers are used to detect face portions in the video frames. Each fog node deploys two Mobile Net models, where the first model deals with the dichotomy between mask and no mask case. The second model deals with the dichotomy between proper mask wear and improper mask wear case and is applied only if the first model detects mask in the facial image. This two-level classification allows the entry of people into a facility, only if they wear the mask properly. The results of the analysis will be helpful in managing the crowd and mask detection in the area with the help of camera.

Key words- Haar-cascade-classifiers, Adobos algorithm, head detection, mask detection and tracking.

I -INTRODUCTION

This paper introduced the crowd analysis by counting the number of head enter in the areas. Also this paper will helpful to take care from the pandemic issue COVID-19 by detecting the mask wearing person and improper mask wearing person with the help of IOT and Camera which is used in the project. In this project we use Haar cascade amplifier for mask detection and for head detection. This study focuses on training a cascade classifier for human head detection by taking positive samples and negative samples. The trained cascade is then used to process the video frames in which the human heads are detected and the count of the humans in the scene is provided. Haar-cascade-classifiers are used to detect face portions in the video frames. Each fog node deploys two MobileNet models, where the first model deals with the dichotomy between mask and no mask case. The second model deals with the dichotomy between proper mask wear and improper mask wear case and is applied only if the first model detects mask in the facial image. This two-level classification allows the entry of people into a facility, only if they wear the mask properly.

Gesture Controlled Mouse Using Arduino

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Abstract – In today's era human-machine interaction is becoming widespread. So, with the introduction of new technologies the gap between machines and humans is being reduced to ease the standard of living. Gestures have played a crucial role in diminishing this gap. This project deals with design and implementation of an accelerometer based hand gesture controlled robot controlled wirelessly using a small low cost, 3-axis accelerometer. A novel algorithm for gesture identification has been developed to replace the approach of conventional controlling mechanism of robots via buttons etc. by an innovative hand gesture based controlling. Using a microcontroller system the program has been written & executed. In the existing system, human hand movements are sensed by the robot through sensors and it follow the same. As the person moves their hand, the accelerometer also moves accordingly sensor displaces and this sensor senses the parameter according to the position of hand.

Keywords – Low-Cost Automation (LCA), combination sorting, PLC, ladder diagram

I-INTRODUCTION

Computer technology has tremendously grown over the past decade and has become a necessary part of everyday live. The primary computer accessory for Human Computer Interaction (HCI) is the mouse [1]. The mouse is not suitable for HCI in some real life situations, such as with Human Robot Interaction (HRI). There have been many researches on alternative methods to the computer mouse for HCI. The most natural and

intuitive technique for HCI, that is a viable replacement for the computer mouse is with the use of hand gestures.[2] This project is therefore aimed at investigating and developing a Computer Control (CC) system using hand gestures.

II- LITERATURE SURVEY

The main goal of gesture recognition research is creation of a system that can identify specific human hand gestures and use them to convey information or for device control as well as applications control. Hand Gesture Recognition System is a branch of Human Computer Interaction in which Human hand gestures are recognized by the computer system and then perform pre-defined task as per the application for controlling software as well as hardware.

2.1 Problem Statement

Mouse free: An appealing option for replacing primitive human computer interaction (HCI) with the use of touchpad or mouse is the Vision-Based Human Computer Interaction through Real-Time Hand Tracking and Gesture Recognition Vision-Based interaction. The proposed system makes use of the webcam for tracking the user's hand and to recognize the gestures for the purpose of interaction with the system. The contributions of our work will be to implement a system for hand tracking and simple gesture recognition in real time. Many researchers in the field of robotics and human computer interaction have tried to control mouse

IOT Based Smart Agriculture System

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Abstract- In this paper a new kind of device is proposed to an area of farming which is a smart agriculture system using IOT, in a existing system, our farmers uses a traditional methods like manual distribution of seeds, manually gives the water to seeds and also there are the chances of theft, all this leads to low productivity of products. So by using this proposed system our farmers can increase the productivity, avoid the theft chances and increases the quantity and quality of agricultural products. This system uses the various sensors like temperature sensor, moisture sensor, Motion sensor and water level sensor. The data collected from these sensors are provided to the controller, in control section, the received data from various sensors is compared with the threshold values in the program and based on that the controller will take the required action and updating the status of water pump and soil moisture will take place and information will be displayed.

Keywords - Temperature Sensor, Moisture Sensor, Motion Sensor, Water Level Sensor, Atmega328P Controller

I - INTRODUCTION

Agriculture plays a very important role in the growth of our country, in the recent time it has observed that we need to double our food productivity, thus it is required to place a new technologies to improve the food production. This system proposed a smart farming method in a limited area by using sensor nodes like temperature & humidity sensor and soil moisture sensor. we have developed this system by keeping in mind minimum cost and provide a platform

through which we can monitor the different parameters of the field through the internet over IOT.

This proposed system consists of various sensors like temperature sensor, moisture sensor, motion sensor and water level sensor based on the data given by these sensors to controller, if moisture level is low then the controller switches on water pump to provide water to the plant. When the soil moisture sensor sense enough moisture in the soil then water pump gets automatically turn off and a message will send to the genuine person through IOT module and the status of a water pump and soil moisture get automatically updated.. This system also consists of theft detection facility by using Motion detector sensor that will detect the entering of any unknown person if the person enters into the field.

II -LITERATURE REVIEW

The existing method and one of the oldest ways in agriculture is the manual method of checking the parameters. In this method the farmers they themselves verify all the parameters and calculate the readings. [1] a paper in which makes use of wireless sensor networks for noting the soil properties and environmental factors continuously. This concept is created as a product and given to the farmer's welfare. [2] a paper in which the Microcontroller transmits that information on the internet through a network of IOT in the form of Wi-Fi module. This enhances automated irrigation as the water pump can be switched on or off through information given to the controller. [3] A paper in which proposed wireless robot is equipped with various sensors for measuring different

Real Time Street Light Automation Using Arduino

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Abstract- Now-a-days the amount of power consumed by lighting and streets shares a major energy demand. The Street light Automation system helps in reducing the energy consumption. Generally, street lights are switched on for whole night and during the day, they are switched off. But during the night time, street lights are not necessary if there is no traffic. Saving of this energy is very important factor these days as energy resources are getting reduced day by day. To overcome from this problem, a proper energy saving methods and lighting control to be implemented. The proposed work is to have two controls like, one is to switch OFF/Dim lights during no vehicle moments in streets and automatically switch it ON when vehicles arrive and the other modes are to give less intensity light for pedestrian and to switch on bright mode during vehicle moments at sides on the roads. In this work the LED lights are used for street arrangement, LDR is used as decide day night time and IR sensor used vehicle movement. It automatically switches the lights ON when the sunlight goes below the visible region of our eyes. This is done by a sensor called Light Dependent Resistor (LDR) which senses the light actually like our eyes. It automatically switches OFF/ Dim lights whenever the sunlight comes visible to the sensor. The control signals of sensors have been fed to Arduino Nano board (ATMEGA328). In the Arduino Nano board the control logic is implemented to control lights based on vehicles and pedestrian moments with bright and dim mode of operation and to switch DIM lights during no vehicles.

Keywords – Light Dependent Resistor (LDR), Arduino ATMEGA328, Street Light Automation, RTC

I - INTRODUCTION

Form olden days we're using non-renewable sources of energy in excess amount for our needs. As this type of minerals like coal etc. are exhausting so we have to depend on the renewable sources of energy like solar, wind, etc. For smaller application it is better to use renewable energy. As this project is based on streetlight automation and required AC supply. So for this particular application we are using solar panels to charge the DC battery and the power from the battery can be used for this application. Advertising hoardings, commercial sign boards, and street lights are generally switched on at 6:30 pm and switched off at 10:00 am because nobody is available at the place in the morning to switch it off. But actual required time is 6:30pm to 11:30pm and 4:30am to 6:30am. Meantime i.e., from 11:30pm to 4:30am is not required, because the public flow on the roads is almost nil in this time. And from 6:30am to 10:00am is also not required as the sun light is available during this time. That means every day around nine hours of power is wasted. This project gives the best solution for electrical energy wastage. Also the manual operation of the lighting system is completely eliminated. The Project ATMEGA328 Microcontroller Based Energy saver for Commercial Lighting system with RTC DS3231 Interfacing is an interesting project which uses ATMEGA328 microcontroller as its brain. This project is very useful for commercial sign boards, advertising boards, street lights for automation lighting system. This system switches on the lights only at preprogrammed timings. As the DS3231 Real Time Clock chip with battery back-up is used, there will be no disturbances for the programmed on/off timings even in power failures. Control switch set is provided for entering

A Review on Home Security Embedded Systems Using IoT

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Abstract- Internet of Things (IoT) is used to create the notion of remotely connecting and monitoring actual world objects (things) via the Internet. When it comes to our house, this idea can be aptly included to make it smarter, safer and automated. This IoT venture focuses on building a smart wireless home security machine which sends signals to the owner by the use of Internet in case of any trespass and raises an alarm optionally. Besides, the equal can also be utilized for home automation with the aid of making use of the equal set of sensors. The advantage obtained via preferring this system over the similar form of present structures is that the indicators and the repute despatched by means of the Wi-Fi connected microcontroller managed system can be acquired by using the consumer on his telephone from any distance irrespective of whether or not his mobile smartphone is related to the internet.

IoT refers to the infrastructure of connected physical gadgets which is growing at a speedy charge as massive range of units and objects are getting associated to the Internet. Home security is a very beneficial software of IoT and we are the use of it to create an less expensive security gadget for properties as well as industrial use. The device will inform the proprietor about any unauthorized entry or each time the door is opened by sending a notification to the user. After the consumer gets the notification, he can take the vital actions. The security gadget will use a microcontroller recognised as Arduino Uno to interface between the components, a magnetic Reed sensor to

monitor the status, a buzzer for sounding the alarm, and a WiFi module, ESP8266 to join and speak the usage of the Internet. The main benefits of such a gadget includes the ease of placing up, decrease charges and low maintenance.

Keywords- Home Security, IoT, Arduino, ESP8266, Smart Wireless

I - INTRODUCTION

Wireless Home security and Home automation are the twin components of this project. The presently constructed prototype of the gadget sends alerts to the proprietor over voice calls using the Internet if any sort of human motion is sensed near the entrance of his residence and raises an alarm optionally upon the user's discretion. The provision for sending alert messages to involved security personnel in case of essential scenario is also built into the system. On the different hand if the owner identifies that the person getting into his residence is no longer an intruder but an unexpected visitor of his then as a substitute of triggering the safety alarm, the user/owner can make preparations such as opening the door, switching on a range of appliances internal the house, which are also related and controlled by means of the micro-controller in the machine to welcome his guest. The same can be performed when the person

INDUSTRIAL PARAMETER MONITORING AND FAULT DETECTION FOR SAFETY USING IOT

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Abstract— Automation has changed the way we live. There were tasks that used to take a lot of our time and efforts that are now being done by machines. But it can be proven to be a cursed time when it crosses their operating limits, hence monitoring and controlling is called as a heart of industrial parameter. Industrial parameter monitoring is the process of real time monitoring of parameters and its control using programming. This project presents the implementation of real time embedded system for industrial automation applications. Recently, PLCs have dominated industrial automation implementations but however, they do present some challenges especially in meeting real time constraints due to its centralized control and cyclically scanned program execution mechanisms. This project proposes a practical way to precisely monitor physical parameter like voltage, current, temperature, humidity and light intensity for the safety of industrial processes and its monitoring using IoT.

Keywords— *Industrial Automation, Internet of Things, ARM7, Sensor, Parameter Monitoring.*

I. INTRODUCTION

The end of the 20th century has brought important new trends in all industries particularly in terms of engineering. The main consequences to apparel manufacturing have been a constant increase of individual production orders, product and materials variety and much smaller order quantities. This fact posed new requirements on the production systems and equipment: both have to be flexible and reliable. In the case of the equipment, this means that quicker set-up times are required whenever process changes and that quality assurance has to be much more efficient. Managing this situation with the traditional machine set-up and process planning methods is difficult. Better control and predictability of the processes are required.

Automation is essential and well proposed system in 21st century. The industrial world is facing many technological changes which increased the urgent demand for the premium quality products and services that can only be supplied by a high level of productivity. This requirement needs process engineering systems, automated manufacturing, and industrial automation. Hence, industrial automation plays a key role in solving the requirements of companies. On the other hand, many people losing their lives in industrial accidents due to presence of black holes while implementation of automation in industries. When we talk about industrial automation is all

about working smarter, faster, and proficiently we need to monitor some critical parameters like temperature, voltage, current, humidity, pressure etc. This is one of the most upcoming issues in the industrial sectors. If the parameters are not monitored and controlled properly due to unavoidable manual error, it leads to a harmful situation. Sometimes, if this control process may not handle properly, it results in occurrence of major accidents. With the embedded technology, it is very easy to overcome the greater issues in industrial automation monitoring and controlling. Embedded System is the combination of both Hardware and Software. Embedded system allows the flexibility to user to design the automation system with greater power efficiency. The operations performing in industries are very fast and they are not possible to monitor for normal human eye. Hence, various types of sensors can be used for monitoring purpose which is available in market. Embedded system allows interfacing these sensors using computer program for greater efficiency and fault detection capability, which also ensure the safety of industry premises. Embedded system also allows interfacing of internet with hardware using IoT and IoT provide the flexibility to monitor and detect faults present in system from remote location using "User Name" and "Password".

II. RELATED WORK

The concept of industrial automation was first introduced by Jacques de Vaucanson and he was invented first automated loom. [4] Author does the survey on implementation of real time system for industrial automation. In this paper author explain how the PLCs are dominated industrial automation implementation but the use of PLC system requires more cost for implementation. [3] Author does the survey on recent trends and application of an embedded system. In this paper author explained what embedded system is and how it can be applicable for industrial solutions. About all the microprocessor and microcontrollers are manufactured using automated process and as it can be easily programmed with high level language, they are very popular in industry. [2] Author does the survey on Internet of Things from market perspective. In this paper author states that Internet of Things is dynamic global information consisting of internet connected objects that are becoming the integral component of Internet. This survey is intended to serve as a guideline and conceptual framework for context-aware product development and research in IoT paradigm. [19] Author does the survey on data acquisition system. This paper is about how the data acquisition system

IoT Based Intelligent Medicine Tray for ICUs in Multispecialty Hospitals

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Abstract—Medical Sciences has invented many new technologies and are still doing researches in many ways. But integrating Medical Science with Engineering has made a boom in R&D field. These days Automation is going towards the peak point. Thus, when this automation comes into picture in Medical field, this makes the scenario perfect. All parameters of a patient are monitored on its own and so slowly it's becoming no man technology. Only we need to take care of its presence of incharge Doctor or nurse in case of emergency. We have here tried to implement this idea practically by some extent and well this can be brought to betterment in future by applying much advanced technologies.

Keywords—*Arduino; Intelligent Medicine Tray (Trolley); IoT; ICU; Heartbeat; Body Temperature; Emergency*

I. INTRODUCTION

Human tendency is to earn well so that he can secure his future and make his present better day by day. But we humans are so much involved in our life betterment that we ignore our health issues but if ignored this leads to major health issues. Heart related problems are growing tremendously. When we compare our population, the no. of beds in hospitals and the no. of Doctors' present altogether, obviously what we see is our population is too much high. People when run to hospitals in emergency, no vacant beds are seen to get admitted or have to wait for long to get the proper treatment. Here we are trying to say that these many problems can be reduced to some extent with the help of automation. Many researchers are already working on it; likewise we have put on some of our long term efforts to ease this situation.

Need of Intelligent Medicine Tray for ICUs

The main objective behind this need is to give a very time efficient treatment to patient in need in the ICU. It has been seen that in some hospitals, the ICUs are many times filled with the patient's relatives. But they worry if their patient is given proper treatment or not; if any nurse or Doctor is continuously looking after their relative or not. But being an Intensive Care Unit it should always be maintained clean, dust proof and sound proof. Thus if automation grows in these units of hospitals then number of nurses to be present in ICU always will be reduced and relatives won't have to keep

worrying. By implementing IoT here, Doctors need not visit patient frequently and check patient's health status from his cabin. Even if the Doctor is out of station, he can check the patient's health status from his android mobile or laptop or PC just with the help of IoT concept.

II. LITERATURE REVIEW

According to the study on existing systems, we come to know that researches have done a great job in this field. Many systems have worked on a concept called medicine box that are stationary and tells us about the availability of medicines in the box. With some of our more efforts into the same field but on a track little different from this, we have tried our best to develop a medicine tray which will be intelligent enough to convey the emergency signal to hospital staff passing outside ICU. The system in [1] is the literature review for our system. Our main idea of an Intelligent Tray comes from [2] [11] Intelligent Medicine Box concept where Medicines that are finished or about to get finished will be known to concerned hospital staff well before time. We have used Arduino in our system as it is inexpensive, easily available but Raspberry would also have done as in [3] [8] with integration of IoT. [3] [4] [5] have all made use of IoT in different manner for Health Monitoring whereas [5] has used RFID along with IoT which was a good concept to know if we can emerge RFID into our work. [6] Gave us an idea to make use of Heart rate and Body Temperature as basic monitoring parameters and additionally we have made use of Saline Level Indicator for our work. Intelligent Medicine Box and IoT are integrated with Bio sensors in [7] but being on small scale we have not made use of Bio sensors as they are expensive. We have made use of Arduino by studying it thoroughly and referring [9] [10] [12] which were very appropriate for implementing our idea practically. [13] This system helped us in knowing that how can we make a system which will automatically remind the concerned person about an emergency via SMSs. [14] This is a basic survey showing integration of Bluetooth with health parameters. But Bluetooth being not able to cover larger area was the limitation for us and thus preferred Wi-Fi over it that comes many advantages.

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Intelligent Medicine Tray for ICUs in Hospitals: A Literature Review

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Abstract – We reside in a fast growing nation where one can progress only when one gets his basic needs fulfilled. But these basic needs will be enrooted properly only when public health is proper. Due to the rapid development, people keep working hard without caring for their own health. Main reason behind this is the lack of time and also health is considered to be a secondary factor when earning is compared. We earn enough to survive. But again they need to worry about securing their earnings. Thus we need to focus on health and security. Health Monitoring and Home Automation systems mainly focus on medical and home security fields. The new era can be facilitated with Health Monitoring and Home Automation systems using Wireless Technologies as Wired being more complex and bulkier. Due to rapid rate of growth in human development, people forget to look after their health leading to unhealthy lifestyle which further takes turn to various sudden health issues which need to be treated as soon as detected. If these issues are not resolved, it will deteriorate human health. This topic is itself a novel approach to monitor patient health and provide proper timely treatment using an intelligent medicine tray.

Keywords- Medicine Trolley, Arduino, Sensors, Health Monitoring, IoT

INTRODUCTION

This survey paper proposes architecture for an Intelligent Trolley System (ITS) that can be used by hospital care staff, nurses and physicians to identify the patients who need an immediate or urgent attention. The

system mainly focuses on hospital bound patients who have limited mobility and reduced ability to call for help when needed. The system will be helpful in chronic

medical conditions such as doctor away from ICU, Chronic Obstructive Pulmonary Disease (COPD) and Heart Disease.

The smart sensors can monitor patient information like heart rate (HR), Body temperature, and level of saline bottle. Moreover, in recent cases the symptoms diary is maintained through a personal digital assistant (PDA) but in our project we read all these parameters using sensor and show on remote desktop PC using IoT (internet of things). The data from the sensor network and PDA are automatically uploaded to a remote server using Wi-Fi. The server shows the patients information and extracts the non-trivial information from the patients' histories, symptoms diaries and management strategies. This system uniquely generates alert signals to provide timely treatment to patients' chronic medical conditions. A survey has been done by studying various methodologies used by researchers and a comparative study has been done to determine the best suitable technique. In short, this survey focuses on four main objects:

1. Intelligent Medicine Trolley
2. Sensors to keep monitoring parameters like body temperature, Heart rate and the level of saline bottle with respect to each patient.
3. Alert Panel with buzzer and indication.
4. IoT for remote access.

Thus this system may prove very time efficient and error free. Also group of nurses need not to be always present in the ICUs and only one person may be enough in ICU to look after patients. This will help in avoiding the chaos in ICUs that take place due nurses and relatives present in ICUs. Currently we are trying to implement only four patient beds in ICU with four patients. This number of beds and patients is not limited to four and

Investigation of Microstrip Circular Patch Antenna and Step Discontinuities in Feed Line

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Abstract – This paper presents the study and investigation of microstrip circular patch antenna and its feed line. Planar antennas such as microstrip and its modifies versions have an attractive features of low profile, miniature size and conformability to mounting hosts and are flexible component for designing purpose. Due to its versatility researchers from RF and Microwave field have attracted towards the compact and broad band design techniques for planar antennas. Microstrip patch antenna has found its wide range of applications in communication devices for wireless local area network (WLAN) systems in 2.45 GHz (2400-2484 MHz). The performance of microstrip patch antenna mainly depends on its return loss S_{11} (dB), Gain, NearETotal field and E & H field. The performances of microstrip patch antenna were considerable modified by introducing some discontinuities in a feed line. In this paper a microstrip circular patch antenna with single and double step discontinuities were investigated and the performance of circular patch antennas were found to be increased by using double step discontinuities.

Keywords- Circular microstrip patch antenna, step discontinuities, feed line, return loss, Gain and E & H field

INTRODUCTION

Microstrip patch antenna are flat in appearance and have a low profile, recently received much attention for application in cellular communication systems, such as global system for mobile communication (GSM), the digital communication system (DCS), satellite communication, wireless local area networks and many

more. Novel designs of planar antenna for applications such as internal mobile phone antennas, base station antennas, WLAN or Bluetooth antennas, required for achieving broadband circular polarization (CP) and dual-polarized radiation to enhance system performance. Planar antennas are also extremely smart for purpose in communication devices for wireless local area network (WLAN) systems in the 2.4 GHz (2400-2484 MHz) and 5.2 GHz (5150 – 5350 MHz). The most commonly used planar antenna is rectangular microstrip patch antennas, in which the characteristics of the antenna depends on the length and breadth of the metallic patch and substrate. The substrate should have low dielectric constant for higher radiation efficiency and thickness to increases the impedance bandwidth [1]-[3].

In addition to the rectangular patch, the subsequently most popular configuration is the circular patch or disk. The modes that are supported principally by a circular microstrip antenna whose substrate height is small ($h \ll \lambda$) are TM_z^n , where z is taken perpendicular to the patch. In a rectangular microstrip patch antenna, the order of the modes can be changed by changing the relative dimensions of the width and length of patch (width-to-length ratio). On the other hand, for the circular patch there is only one degree of freedom to control i.e. radius of the patch, which does not modify the order of modes but transform the absolute value of resonant frequency. The commonly used analytical methods to study circular patch antennas were full-wave analysis and cavity model. In a cavity model there are two perfect electric conductors at the top and bottom to represent patch and ground surrounded by perfect magnetic conductor [4]-[7]. In a low profile single and

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LITERATURE SURVEY OF INDUSTRIAL MONITORING & FAULT DETECTION

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Abstract – Monitoring and controlling is the heart of industrial automation applications and thus, a time response mechanism is required to be able to implement such systems. This project presents a survey of Implementing Real Time Systems for industrial automation applications. Recently, PLCs have dominated industrial automation implementations but however, they do present some challenges especially in meeting real time constraints due to its centralized control and cyclically scanned program execution mechanisms. This paper proposes an alternative implementation approach using FreeRTOS platform that can act as a benchmark for time bound services. This would help in having a hybrid system that can work with PLCs and/or where possible replace PLCs for deterministic service delivery. In this system we have monitor some parameter which is difficult to measure by an instrument manually like Temperature, Humidity, Voltage, Current, Light Intensity etc.

These all parameter are measured by an precise sensors and comparator using microcontroller. All sensors output is connected to the microcontroller (ARM) I/O port where they receive the data and perform the control action on output devices.

Keywords- ARM, Sensors, Industrial Parameter Monitoring, IoT etc.

INTRODUCTION

In recent few years, science has made great progress. Automation makes many industries more dynamic and the Internet of Things (IoT) has brought about a radical change in world, still industrial

monitoring field requires more manual power to monitor and control the industrial parameters such as temperature, humidity, voltage, current, pressure etc. at present. This is one of the most upcoming issues in the industrial sectors. If the parameters are not monitored and controlled properly due to unavoiidle manual error, it leads to a harmful situation. Sometimes, if this control process may not handle properly, it results in occurrence of major accidents. With the embedded technology, it is very easy to overcome the greater issues in industrial automation monitoring and controlling.

In industrial automation parameters can be monitor by the use of various sensors such as temperature sensor, voltage and current sensor, humidity sensors and the sensed values processed by microcontroller (here ARM LPC2148 microcontroller is used). The processed values can be displayed through Monitor of PC or Mobile Display or using IoT at remote location to take an immediate control action.

In this system we have monitor some parameter which is difficult to measure by an instrument manually like

- a) Temperature
- b) Humidity
- c) Voltage
- d) Current
- e) Light Intensity

These all parameter are measured by an precise sensors and comparator using microcontroller. All sensors output is connected to the microcontroller (ARM) I/O port where they receive the data and perform the control action on output devices. The whole system can be monitor on display OR PC OR mobile easily and can access at remote location using IoT.

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Nano Structured Solar Cell: A Review

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Abstract:- Here, different types of nano-structured solar cells are studied. The solar cell parameters vary with the change of material in the fabrication of solar cell films. The comparative study of various parameters like open-circuit voltage (V_{oc}), short-circuit current density (J_{sc}), fill factor (FF) & power conversion efficiency (η) is presented for different types of nano-structured solar cells. Depending on all the parameters discussed above nm-scale texture based Si solar cell have achieved highest efficiency of 14.9%, J_{sc} 30.49 mA/cm² & FF 73% among all the nanostructured solar cells investigated.

The RF magnetron sputtering method allows to deposit hydrogenated nanocrystalline silicon (nc-Si:H) at high rates & low temperature (50°C) with high crystalline volume fraction (80-90%) [1]. Using the MIG method, nc-Si:H films were formed, which avoids high temperature processing. It is a low temperature & low cost method for fabrication of nc-Si:H [2]. The metal induced growth (MIG) process is used to develop Si nanostructures & wires in both vertical & lateral directions. In this process, a nanocrystalline Si thin film with a 100nm scale continuous & columnar structures was formed. It forms a novel device to generate photocurrent & give antireflection [3].

INTRODUCTION

The use of nanotechnology into the photovoltaic films shows special promise to both enhance efficiency and lower total cost. Now days, many nano-structured materials are being investigated for their applications in photovoltaics. Nano-structured layers in thin films offer several important advantages. First, due to multiple reflections, the optical path required for absorption is much larger than the actual film thickness. Second, recombination losses are greatly reduced because light generated electrons & holes need to travel over a shorter path. This results in the absorber layer thickness as thin as 150nm in the thin film solar cells...

To obtain high V_{oc} & high fill factor (FF), the required CdS crystallinity was achieved using novel technology. Also, a 14.8% efficiency of the low environmental -load CdS or CdTe solar cell was achieved [4]. The nc-Si:H films are more stable during light soaking than amorphous Si [5]. The light-soaking degradation of a-Si:H solar cells was overcome using nanostructure tailored Si. Degradation ratio is reduced from 19% to 5%. Also, a light-soaked efficiency of 7.3% was achieved which is more than amorphous solar cell (6.8%) on nanostructured substrate [6].

LITERATURE SURVEY

Nanostructured solar cells offers several advantages for solar cells including, 1) The ability to exceed a single junction solar cell efficiency by implementing new concepts, 2) It provides larger optical path for light absorption, and 3) Recombination losses are reduced.

The use of nanostructures in photovoltaics offers the potential for high efficiency & low fabrication costs, moving to structures or materials which can be fabricated using chemically or biologically formed

A Review Paper on Experimental Investigation of Effect of Absorber Volume on Performance of Vapour Absorption Refrigeration System

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ABSTRACT

This paper focuses on the construction of a vapor absorption refrigeration unit, intended to operate in a 20^oc environment, with a compartment temperature of 3^oc. Gas absorption systems, unlike Vapor-compression systems, use a heat source to facilitate refrigeration. Vapor absorption refrigerators use here electricity to heat the generator by an electric heater and 12 V DC motor pumps for delivering the aqua ammonia solution from absorber to generator. Unlike the vapor-compression cycle, which utilizes pressure gains and drops to produce refrigeration, the vapor absorption cycle uses the principle of partial pressure between two fluids to create the cooling effect. Extensive analysis of thermodynamics, heat transfer, and chemical properties of a two fluid absorption system was conducted to design and construct the structural model. The objective of this work is to design ammonia water refrigeration system and what is the effect of absorber volume on Coefficient of Performance.

Keywords- Ammonia, absorber, coefficient of performance, concentration, vapour

I. INTRODUCTION

1.1 Objective of work

Development of water cooler using a Vapour absorption system based on water-ammonia as refrigerant and 500 watt air heater as heat source [2] that will represent the exhaust gas heat recovery, heat exchanger will be a modified spiral fin heat exchanger using cylindrical flat heat pipes for maximum heat recovery. The main aim is to find out coefficient of performance by preparing proper model of vapour absorption system by using generator, absorber, evaporator, pump, capillary tube etc. Experimental COP will be compared with theoretical. Later, volume of absorber changed and then what effect on COP takes place.

Design of Generator in Vapour Absorption refrigeration System

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ABSTRACT

With the depleting energy resources recycling of waste energy or recovery of energy from the exhaust of processes or engine is vital method and important of energy conservation. Refrigeration another absolute requirement that needs to be catered, conventionally the vapour compression cycle is the preferred method but it comes with an handicap that the non-conventional energy resources cannot be employed to operate the same. The vapour absorption system using ammonia as refrigerant on the other hand is a method which can be used to harness this recovered process heat or heat carried by the exhaust gases of the engine. The project aims at the design development analysis and performance evaluation of one such scaled system for volume size of 5 liters by utilization of vapour absorption system using ammonia as refrigerant. The project work includes the heat load calculation and design selection of components of system to suffice the requirements, The critical components of the system have been designed and developed using Unigraphics software and thermal analysis of the components has been done using Ansys Work bench 16.0.

Keywords: Waste heat recovery, Engine exhaust, Vapour absorption system, Ammonia, Thermal Analysis.

INTRODUCTION

The vapor absorption refrigeration system comprises of all the processes in the vapor compression refrigeration system like compression, condensation, expansion and evaporation. In the vapor absorption system, the refrigerant used is ammonia, water or lithium bromide. The refrigerant gets condensed in the condenser and it gets evaporated in the evaporator. The refrigerant produces cooling effect in the evaporator and releases the heat to the atmosphere via the condenser.

The major difference between the two systems is the method of the suction and compression of the refrigerant in the refrigeration cycle. In the vapor compression system, the compressor sucks the refrigerant from evaporator and compresses it to the high pressure. The compressor also enables the flow of the refrigerant through the whole refrigeration cycle. In the vapor absorption cycle, the process of suction and compression are carried out by two different devices called as the absorber and the generator. Thus, the absorber and the generator replace the compressor in the vapor absorption cycle. The absorbent enables the flow of the refrigerant from the absorber to the generator by absorbing it.

Another major difference between the vapor compression and vapor absorption cycle is the method in which the energy input is given to the system. In the vapor compression system, the energy input is given in the form of the mechanical work from the electric motor run by the electricity. In the vapor absorption system, the energy input is given in the form of the heat. This heat can be from the excess steam from the process or the hot water. The heat can also be created by other sources like natural gas, kerosene, heater etc. though these sources are used only in the small systems.

EXISTING METHOD

The existing methods use an electric heater or fuel burners as the heat source to the generator system. This is extra energy that has to be added to the system that brings down the COP of the system.

PROBLEM STATEMENT

With the depleting energy resources recycling of waste energy or recovery of energy from the exhaust of processes or engine is vital method and important of energy conservation. Refrigeration another absolute requirement that needs to be catered, conventionally the vapour compression cycle is the preferred method but it comes with a handicap that the non-conventional energy resources cannot be employed to operate the same. The vapour absorption system using ammonia as refrigerant on the other hand is a method which can be used to harness this recovered process heat or heat carried by the exhaust gases of the engine.

EXPERIMENTAL INVESTIGATION OF VAPOUR ABSORPTION SYSTEM

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ABSTRACT

With the depleting energy resources recycling of waste energy or recovery of energy from the exhaust of processes or engine is vital method and important of energy conservation. Refrigeration another absolute requirement that needs to be catered, conventionally the vapour compression cycle is the preferred method but it comes with an handicap that the non-conventional energy resources cannot be employed to operate the same. The vapour absorption system using ammonia as refrigerant on the other hand is a method which can be used to harness this recovered process heat or heat carried by the exhaust gases of the engine.

The project aims at the design development analysis and performance evaluation of one such scaled system for volume size of 5 liters by utilization of vapour absorption system using ammonia as refrigerant. The paper includes experimental investigation of vapour absorption refrigeration system i.e. to find coefficient of performance of the system. Work includes the heat load calculation and design selection of components of system to suffice the requirements. The critical components of the system have been designed and developed using Unigraphics software and thermal analysis of the components has been done using Ansys Work bench 16.0.

Keywords: Waste heat recovery, COP, Vapour absorption system, Ammonia, Thermal Analysis.

1. INTRODUCTION

The vapor absorption refrigeration system comprises of all the processes in the vapor compression refrigeration system like compression, condensation, expansion and evaporation. In the vapor absorption system, the refrigerant used is ammonia, water or lithium bromide. The refrigerant gets condensed in the condenser and it gets evaporated in the evaporator. The refrigerant produces cooling effect in the evaporator and releases the heat to the atmosphere via the condenser.

The major difference between the two systems is the method of the suction and compression of the refrigerant in the refrigeration cycle. In the vapor compression system, the compressor sucks the refrigerant from evaporator and compresses it to the high pressure. The compressor also enables the flow of the refrigerant through the whole refrigeration cycle. In the vapor absorption cycle, the process of suction and compression are carried out by two different devices called as the absorber and the generator. Thus, the absorber and the generator replace the compressor in the vapor absorption cycle. The absorbent enables the flow of the refrigerant from the absorber to the generator by absorbing it.

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2.OBJECTIVE

A) To find coefficient of performance of the system.

B) To compare the COP before changing the absorber volume and after changing absorber volume

3.ASSUMPTIONS BEFORE CONDUCTING THE EXPERIMENT

Experimental Investigation and Heat Transfer Analysis of a Dimple Tube and Corrugated Tube Heat Exchanger

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Abstract— Heat transfer enhancement of dimple, corrugated and plain tube is done in this study. Here, voltage is varying from 60-100 v. There is wide increase in heat transfer from corrugated tube after 80 Volts. Hence, we have high heat transfer in the corrugated tube at higher voltages.

Keywords: Heat Transfer Analysis, Corrugated Tube Heat Exchanger, Dimple Tube

I. INTRODUCTION

A. Modes of Heat Transfer

- 1) Conduction
- 2) Convection
- 3) Radiation

B. Heat Transfer by Convection

There are certain situations in which the fluid motion is produced due to change in density resulting from temperature gradients, which is the heat transfer mechanism called as free or natural convection. Natural convection is the principal mode of heat transfer from pipes, refrigerating coils, hot radiators etc. The movement of fluid in free convection is due to the fact that the fluid particles in the immediate vicinity of the hot object become warmer than the surrounding fluid resulting in a local change of density. Contrast to the forced convection, natural convection phenomenon is due to the temperature difference between the surface and the fluid is not created by any external agency. Natural convection flow pattern for some commonly observed situations is given in Figure 1.

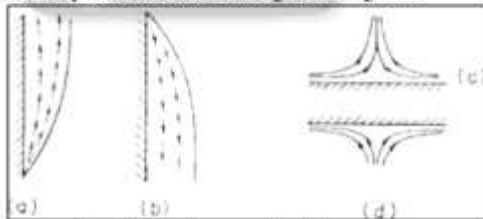


Fig. 1: Natural convection flow patterns

- 1) Heated vertical plate
- 2) Cooled vertical plate
- 3) Upper surface of a heated horizontal plate
- 4) Lower surface of a heated horizontal plate

Convection is the transfer of heat energy through a material by the bodily movement of particles and will occur in fluids (liquids and gases). Convection arises when a fluid is warmed, and thus expanded. The expanded fluid is less dense and therefore rises and is replaced by cooler fluid, which then undergoes the same process. This is called convection current. Convection can be natural or forced. Natural convection is when the fluid movement is caused by the fluid itself, whilst forced convection uses external means (such as a fan) to drive the fluid movement.

The rate of heat transfer due to convection is given by:

$$Q = hA(TS - T_a) \text{ Where:}$$

h : is the convective heat transfer coefficient, in W/m^2K ;

A : is the surface area, in m^2 ;

TS : is the surface temperature, in K ;

T_a : is the fluid temperature, in K . h will depend upon; the relative velocity of the fluid; the temperature difference between the surface and the environment; the direction of heat flow; the surface size and orientation; the fluid properties (density, viscosity, heat capacity etc); Surface roughness.

The resistance of convective heat transfer is given by:

Where;

R_{conv} is the thermal resistance of convection, in m^2K/W .

Therefore; $Q = (T_s - T_a) / R_{conv}$

To lower the heat flow due to convective heat transfer you can reduce the area in contact with the fluid, or decrease the convective heat transfer coefficient.

With the growing sophistication in technology and with the increasing concern with energy and the environment, the study of heat transfer has, over the past several years, been related to a very wide variety of problems, each with its own demands of precision and elaboration in the understanding of the particular processes of interest. Areas of study range from Atmospheric, geophysical and environmental problems to those in heat rejection, space research and manufacturing systems.

C. Applications of Natural Convection

Natural Convection flow encountered in several areas of applied engineering:

$$Nu = 0.36 + \frac{0.518Ra^{1/4}}{[1 + (0.559/Pr)^{1/4}]^{1/4}}$$

$$Nu = [0.60 + \frac{0.387Ra^{1/4}}{[1 + (0.559/Pr)^{1/4}]^{1/4}}]^{1/4}$$

- 1) Extended fins
- 2) Heat exchangers
- 3) Nuclear reactors
- 4) Solar heating systems
- 5) Dry cooling towers
- 6) Cooling of electronic equipments

Equations are developed to define the performance advantage of roughened tubes in heat exchanger design, relative to smooth tubes of equal diameter. Three rough tube applications are presented: 1. To obtain increased heat exchange capacity; 2. To reduce the friction power; and 3. To permit a reduction of heat-transfer surface area.

II. LITERATURE REVIEW

A. Correlations for Natural Convection.

There is lot of literature available on different topics of different modes of heat transfer. However, I have restricted

Experimental Investigation of Effect of Different Tube Geometries on Heat Transfer in Solar Pond

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Keywords: Solar Pond, Upper Convective Zone, Non Convective Zone, Lower Convective Zone, Brine Solution, Heat Exchanger, Heat Transfer Rate, Green House Effect

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HOME - ARCHIVES - VOL.7 NO. 9 (2020) VOLUME 07, ISSUE 09 - SEPTEMBER, 2020 - Articles

Experimental investigation of the performance and emission characteristics of DI diesel engine using blended biodiesel and water emulsion under varying load condition.

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Keywords: Emulsion-fuel, Biodiesel, Emission, Water Concentration, Diesel engine

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Experimental Investigation of Energy and Exergy of Diesel Engine using Hybrid Biodiesel

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Abstract

Hybrid biodiesel is prepared from by mixing the three non-edible oils viz. castor oil, cotton seed oil and Neem oil in optimum proportion. After transesterification reaction, the mixture of this oil is converted into hybrid biodiesel. This hybrid biodiesel and its two blends B5 and B15 is used in the single cylinder 4 stroke diesel engine. The performance of the engine is noted and compared it with mineral diesel and it is found the BSFC of the engine is good for hybrid biodiesel as compared to diesel. Energy and exergy analysis is also done in this study for the two blends and Hybrid diesel and mineral diesel. Exhaust gas analysis is also done in this study.

Keywords: non-edible oils, hybrid biodiesel, transesterification, energy and exergy analysis, exhaust emission.

1. Introduction

The biodiesel can be used in diesel engine by reducing the viscosity of the fuel and it is reduced by mixing it with diesel or preheating the biodiesel [1]. The idea to produce the biodiesel from mixture of three oil is based on the idea of the hybrid biofuel. Hybrid biofuel is produced by mixing the oil with butanol and ethanol in optimum proportion, five different biofuels are prepared by five non-edible oil [2]. Generally, biodiesels are prepared from transesterification method. Also, by methanolysis biodiesel are also made after optimizing the process of methanolysis high purity biodiesel can be obtained.[4]. From microalgae biodiesel are also made and compare with non-edible oils.[8]. By mixing the oils to produce the biodiesel decreases the temperature of the reaction needed for conversion it is also reduces the cost of production [9]. Lower percentage of biodiesel blends reduces the harmful emission and Neem oil biodiesel can be used in diesel engine without any modification [10]. Due to sulphur in the diesel reduces the phase transition temperature [11]. Biodiesels are also prepared by micro emulsion techniques, stability of the emulsion depends upon concentration of water.[13]. With the help of micro emulsion techniques the viscosity of the biodiesel can be reduced.[14] Butanol is used as a surfactant in micro emulsion preparation [15]. Mixing of two oils for making the biodiesel shows intermediate properties [20]. The biodiesels are prepared from non-edible oils are done by transesterification, micro emulsion, addition of surfactants. The biodiesels are used as fuel in an engine by many researchers to improve the performance of an engine. Increase in butanol percentage in the biodiesel increases the BSFC and but some investigators reported that BTE increases and some reported BTE is decreases [7&15]. Addition of alcohol in the diesel improves the perform of the engine [26]. By improving the content of biodiesel energy efficiency also increases [31]. As the biodiesel is made from non-edible oil by transesterification method, same strategy is used in this study. Three oil i.e. castor oil, cotton seed oil and Neem oil are used for preparation of hybrid biodiesel and this hybrid biodiesel and its blends are used in diesel engine as a fuel. Energy and exergy analysis of the engine is done and exhaust analysis is also done in this study.

2. Materials and method

2.1 Reagents and oil sample

KOH, methanol (99.5% pure) is purchase from Jalgaon, the three oils i.e. castor oil, cotton seed oil and Neem oil is purchased from local supplier. These three oils are mixed together at room temperature at magnetic stirrer 500 rpm up to 20 mins for proper mixing. Before, mixing these three oils are filtered to remove impurities. The samples of the hybrid biodiesel are prepared in the lab.

2.2 Transesterification reaction

After mixing the three oils, the mixture is heated up to 70-80°C and stirrer at 600 rpm. After reaching the desired temperature the mixture is allowed to cool down at room temperature. KOH [8-10 g (1%wt)] is dissolved into 40 ml methanol, KOH work as catalyst in the reaction. This mixture is added to the mixture of an oils and it is then heated to 100°C and the vapours of methanol is cool down by using reflux condenser. After, completion of reaction the glycerine and methyl ester are separated in separator. After preparation of biodiesel it is washed using warm water to remove impurity, glycerine amount of soap and non-reacted base [12]. This process of water washing is repeated 3-4 times to obtain the pure biodiesel.

3. Experiment

The engine used in this study was Kirloskar single cylinder four stroke Diesel engine. This engine is coupled with eddy current dynamometer for measurement of brake power. The test set up is as shown in fig.1 below



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An Experimental Investigation for Air Conditioning Condenser to Increase the Heat Transfer Rate by Varying the Tube Arrangement

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Abstract: Refrigeration is the procedure of achieving and maintaining a temperature below that of the surroundings, the aim being to cool some product or space to the required temperature. One of the most important applications of refrigeration has been the preservation of unpreserved food products by storing them at low temperatures. Refrigeration systems are also used broadly for providing thermal console to human beings by means of air conditioning. Whereas Air Conditioning is referred to the treatment of air so as to all together control its temperature, moisture content, cleanliness, odor and circulation, as required by occupants, a process, or products in the space. The subject of refrigeration and air conditioning has evolved out of human need for food and comfort, and its history dates back to centuries. The history of refrigeration is very fascinating since every aspect of it, the availability of refrigerants, the prime movers and the developments in compressors and the methods of refrigeration all are a part of it. In the present work the experimental investigation for air conditioning condenser to increase the heat transfer rate by varying the tube arrangement. In this experiment the Air conditioning cycle test ring is used & the heat transfer rate & C.O.P of air conditioning is measure by varying the tube arrangement of condenser. Air Conditioning is referred to the treatment of air so as to all together control its temperature, moisture content, cleanliness, odor and circulation, as required by occupants, a process, or products in the space. The subject of refrigeration and air conditioning has evolved out of human need for food and comfort, and its history dates back to centuries. The history of refrigeration is very fascinating since every aspect of it, the availability of refrigerants, the prime movers and the developments in compressors and the methods of refrigeration all are a part of it.

Keywords: Air Conditioning, Condense, C.O.P. Compressor, Heat transfer, Prime mover.

1. Introduction

An air conditioner (often referred to as AC) is a home appliance, system, or mechanism designed to dehumidify and extract heat from an area. The cooling is done using a simple refrigeration cycle. In construction, a complete system of heating, ventilation and air conditioning is referred to as "HVAC". Its purpose, in a building or an automobile, is to provide comfort during either hot or cold weather.

A diagram of the refrigeration cycle:

1. Condensing coil,
2. Expansion valve
3. Evaporator coil,
4. Compressor.

In the refrigeration cycle, a heat pump transfers heat from a lower-temperature heat source into a higher-temperature heat sink. Heat would naturally flow in the opposite direction. This is the most common type of air conditioning. A refrigerator works in much the same way, as it pumps the heat out of the interior and into the room in which it stands. This cycle takes advantage of the way phase changes work, where latent heat is released at a constant temperature during a liquid/gas phase change, and where varying the pressure of a pure substance also varies its condensation/boiling point. The most common refrigeration cycle uses an electric motor to drive a compressor. In an automobile, the compressor is driven by a belt over a pulley, the belt being driven by the engine's crankshaft (similar to the driving of the pulleys for the alternator, power steering, etc.). Whether in a car or building, both use electric fan motors for air circulation. Since evaporation occurs when heat is absorbed, and condensation occurs when heat is released, air conditioners use a compressor to cause pressure changes between two compartments, and actively condense and pump a refrigerant around. A refrigerant is pumped into the evaporator coil, located in the compartment to be cooled, where the low pressure causes the refrigerant to evaporate into a vapor, taking heat with it. At the opposite side of the cycle is the condenser, which is located outside of the cooled compartment, where the refrigerant vapor is compressed and forced through another heat exchange coil, condensing the refrigerant into a liquid, thus rejecting the heat previously absorbed from the cooled space. By placing the condenser (where the heat is rejected) inside a compartment, and the evaporator (which absorbs heat) in the ambient environment (such as outside), or merely running a normal air conditioners refrigerant in the opposite direction, the overall effect is the opposite, and the compartment is heated. This is usually called a heat pump, and is capable of heating

A Review on Suspension Operated Air Refrigeration System

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Abstract— We know Pneumatic energy is the readily available and low cost energy. Now-a-days Non-conventional energy system is very essential to the world. So here we are focusing on pneumatic type of energy for this project. The main concept is that the air conditioning effect will get on the basis of suspension system in vehicle. we designed the suspension operated AC system. This system runs on the suspension of the vehicle and will make the air is compress that store is in the receiver. We began to the project by first attempting to come up with an original idea to fit the problem. After coming up with an idea, to increase the efficiency of vehicle, various design processes finalize our project. For this project the conversion of the force energy in to air. The control mechanism carries the air cylinder (vehicle suspensor), quick exhaust valve, Non-return valve and spring arrangement. We have discussed the various applications and further extension also. The initial cost of this arrangement is high. The conventional vehicle suspension dissipates the mechanical energy i.e. potential energy and kinetic energy. In spring potential energy is stored and kinetic energy is wasted. The aim of paper is this wasted energy is compressed by using single acting cylinder by proper an arrangement. The main aim of this paper is the compressed air production using vehicle suspension is given to the air conditioning system. The pushing power is converted into compressed air energy by proper arrangement. A pneumatic single acting cylinder is used for this project to compress the air. The output air from the pneumatic cylinder is collected through quick exhaust valve and non-return valve and this compressed air stored inside the storage tank. After this research we concluded in car there is a lot of fuel burn only for working of A.C.

Keywords: pneumatic energy, suspension, air conditioning system, non-return valve, single acting cylinder, kinetic energy, potential energy

I. INTRODUCTION

In automobile the suspension system is essential to absorb shocks, vibration and bumps etc. Vehicle is run on different type road conditions such as even, uneven, rough etc. The automobile frame and body are mounted on front and rear axle through springs and shock absorbers. This is essential to damp out road shocks transmitted to the frame by the wheels when they roll over uneven road. This creates discomfort to the passengers and produces stresses in the frame and other parts of the automobile. The passenger experiences the jolts by the forward movement of the vehicle and jerks due to uneven road conditions. Even under good road condition the passenger are also subjected to bounce and roll when cornering and pitch when the front wheels are suddenly lifted or dropped in relation to rear wheels that means suspension system work continuously.

In the past, we pay little attention to energy loss of vehicle suspension. However, how much energy dissipated by the shock absorber of vehicle suspension? According to

reference, only 10-20% the fuel energy is used for vehicle mobility. The linear motion of suspension system is also use for compress the air by using piston cylinder arrangement. By using this compress air we can run A.C. system in the car and save fuel. "Energy in motion when it is suddenly applied with a sort of obstacle means according to Newton's law for every action there is an equal and opposite reaction. Utilisation of this reaction is the basic reason behind the selection of this project work." In the past around 4000 years from now, people in India and Egypt are known porous pots outside the home during the night period. The evaporation of water in almost cool dry air and radioactive heat to produce ice by keeping water in the transfer between the water and the deep sky that is at a very low temperature (much below the freezing point of ice) caused the formation of ice even though the surrounding air was at a higher temperature than the freezing point of water. There are a few accounts in China about the use of ice around Indians were producing ice by dissolving salt in water. For specific applications, efficiencies of both living and nonliving beings depend to a great extent on the physical environment. The nature keeps conditions in the physical environment in the dynamic state ranging from one extreme to the other. Temperature, humidity, pressure and air motion are some of the important environment variables that at any location keep changing throughout the year. Adaptation to these many a times unpredictable variations are not possible and thus working efficiently is not feasible either for the living beings or the non-living ones. Thus for any specific purpose, control of the environment is essential. Refrigeration and air conditioning is the subject which deals with the techniques to control the environments of the living and non-living subjects and thus provide them comforts to enable them to perform better and have longer lives.

II. PROBLEM STATEMENT

When the suspension system of a vehicle comes into work some kinetic energy is generated. This kinetic energy is normally wasted as there is no system which can make use of this energy. So, for proper and effective utilization of this suspension energy we introduce an air conditioning through vehicle suspension system. We must achieve following conditions in vehicle cabinet: -

- Requirement of Air temperature should be 18- 22 degree Celsius in the cabinet of any automobile vehicle.
- Requirement of Air pressure in cabinet should be 1 to 1.5 bar.

III. LITERATURE REVIEW

Abhijit Lendhe et al (June 2015) have studied to save the waste energy which can be compressed using single acting cylinder by proper arrangement and the compressed air production using vehicle suspension is given to the air conditioning system. This paper has explained the different

A REVIEW ON THERMAL ANALYSIS OF SOLAR AIR HEATER USING DIFFERENT SHAPE ROUGHENED PLATES

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ABSTRACT

As the population as well as demand of energy in world increasing day by day, new developments in energy generation by renewable sources is the need of today's world. Since the sun is most suitable and useful source of energy, the focus has always given to the systems works on solar energy. The Solar Air Heater (SAH) is also one of the energy generating device which converts the solar energy into the heat for heating the atmospheric air in winter season. The performance of SAH is important for maximum conversion of solar energy into useful heat. The paper presents a short review on performance of SAH and its development for energy maximization. Certain literature have been discussed and scope of this work has been identified. The conclusion has been made based on theoretical and literature work.

Keywords: Energy Maximization, Renewable Energy, Solar Energy, Solar Air Heater, etc.

I. INTRODUCTION

Due to the limitations on conventional energy sources, the researcher are attaining to renewable energies in recent decades. The 3.85×10^{24} Joules of solar energy per year is absorbed by the earth elements like atmosphere, oceans and masses. This represented high energy consumption in one hour than in one year of world in 2002. The solar energy reaching to the earth's surface is so high that nearly in year it is twice than that of non-renewable sources of earth. The applications using solar energy are abundant and safe. The solar techniques are usually classified into two categories, passive and active. The passive systems includes designing the systems according to natural circulation of thermal system. While the active solar technique uses panels, blowers to obtained useful output from solar energy. Solar Air Heaters (SAH) are the solar systems that utilize solar radiation for heating of atmospheric air to increase its temperature. Such technique is useful in winter season to increase the temperature of room or building space. These systems are simple and constructed inexpensively. Generally, the SAH system consist of transparent cover made of glass, absorber plate having good absorptivity, and insulating material as shown in Figure 1. The air enters in SAH through a gap between the transparent cover and absorber plate. The Solar Radiations (SR) are absorbed by the absorber plate and heat transferred to the air flowing through the channel increasing the temperature of air. The heated air now can be useful in many applications including agricultural purposes, room heating in winter season and many purposes.

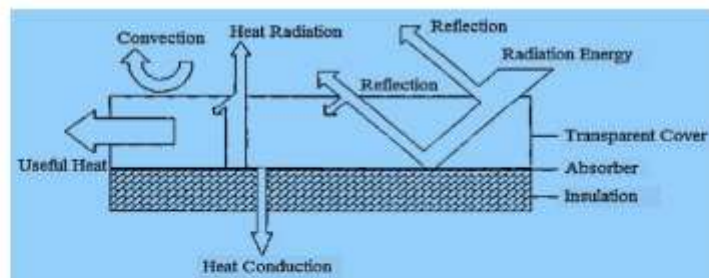


Figure 1: Typical Diagram of Solar Air Heater (SAH)

The SAH system passes many advantages including simple design and easily maintain. Once the setup ready, SAH has no any fuel expenses. There is no leakage and corrosion as compared to the systems which are using liquid as working substance. It is an ecofriendly system, since the system, does not rejects any pollutant and hazardous emission gases. Along with this, the primary disadvantage is that, SAH has low heat transfer coefficient. The result of low heat transfer leads to the low heat transfer from absorber plate to the air. Thus, the temperature of the air will minimum and no desired effect will observed representing the low thermal

Review on Performance Investigation of an Automotive Car Radiator Operated with Nano fluids based Coolant

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Abstract — In this paper, we will review the performance investigation of an automotive car radiator by using nano fluids based coolant. This work will investigate the use of aluminium oxide (Al₂O₃) and copper nanoparticle(CU) nanoparticles. There are two occurrence happening in a heat exchanger: fluid flow in channels and heat transfer between fluids and channel walls. Thus, enhancement to heat exchangers can be achieved by improving the processes occurring during those phenomena. Nanofluids, display much superior heat transfer characteristics compared to traditional heat transfer fluids. The investigation is planned to be conducted for wide ranges of Peclet numbers, and volume concentrations of suspended nanoparticles. The outcome expectation is to measure the significance of Peclet number on the heat transfer characteristics[4]. This review is to investigate the concept of using nanofluid in heat exchangers. The optimal volume concentrations in which the heat transfer characteristics become the maximum enhancement is also addressed. Finally, the structure of different nanofluidis will be compared.

Keywords-Nanofluids, Automotive Car Radiator, Heat Transfer Enhancement, Aluminum oxide, Copper Nanoparticle.

1. INTRODUCTION

It has been theoretically approved that using Nano particles can update the performance of the heat transfer. This investigate the concept of using Nano fluid in heat exchangers experimentally. Nano fluids are engineered infusion made of a base fluid and nanoparticles (1-100 nm) [5]. Nano fluids have elevated thermal conductivity and single-phase heat transfer coefficients than their base fluids. The concept of Nano fluids refers to a new kind of heat transmission fluids by draping Nano scaled metallic or non-metallic particles in base fluids. Energy transmission of the Nano fluid is affected by the properties and dimension of nanoparticles also solid volume[21]. We are seeking to practically prove what has already been done theoretically, which is that Nano fluids would increase the efficiency of a system with a slight or no pressure drop. This will mean that Nano fluids can be used in industrial settings to rise the efficiency of the systems for nominal costs. This project is a continuance of all the other theoretical studies that have been done on the subject. We will experimentally prove that Nano particles in fluids will enhance efficiency without compromising pressure. This would mean that the technology would be a step closer to being used in industrial settings. The major application of this project is in industrial heat transfer settings like power plants, desalination plants, and maybe even in the Radiators of trucks. The project is meant to increase the efficiency of current systems without significant investment, and reduce the cost of future systems by increasing the efficiency of smaller parts to do the job.

2. SYSTEM DESIGN

One of main problems is controlling the flow of the nanoparticles that we have to overcome as illustrated in the next chapter. The relationship between the amount of nanoparticles in the water flow and heat transfer efficiency is directly proportional, however, its behavior reverse at a specific point and the pressure drop is inversely proportional to heat transfer efficiency, [1]. Accordingly optimization between these parameters should be conducted, meaning to reach the highest possible efficiency with the least possible pressure drop.

Moreover, as engineers we consider engineering standards, environmental, economic, manufacturing, and safety issues. As a result, we have taken into consideration the engineering standards for parts and equipment selection. The main equipment in our prototype are a fan, ultra sound, car radiator, electric water pump, heater, and a water container, tubes, valves, pressure gage, and temperature sensors. Most of the parts and some of the equipment are locally made following the SASO standards. The car radiator, the fan, and the water pump we have used are South Korean made, which follows the national standard KATS (The Korean Agency for Technology and Standards), [2].

Figure (3.1) illustrates the project architecture. It shows the function of the system with the devices and the way the whole system operate. The approach of the system design started with finding a heat exchanger and we chose a car radiator with a fan. However, the water pump used in cars are mechanical (it connects to the engine) which cannot be properly worked in the experiment. This caused us to try an electrical pump with features that. In addition, we planned to use woody frames for the fan

Preparation of Biogas by Using Multiphase Flow Digester

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Abstract— Traditional anaerobic digestion technic has disadvantage of low gas production and long cycle of digestion. To maintain constant temperature during winter season and to improve the production rate of biogas a 3 m³ capacity a multiphase flow digester is developed in this study. Experiments were conducted on biogas production rate at different temperature of the system. 50 days trials on dynamic and static digestion shows that higher production rate of biogas in dynamic digestion compared to static digestion. It found that heat transfer rate and temperature of the digested slurry increased. The optimization of the system is depending on the slurry temperature and biogas production rate. The optimized digestion temperature is proposed and find in this study. Insulation thickness have effect on the digestion temperature. It is calculated in this study.

Keywords: Multiphase Flow Digester, Biogas, Slurry Temperature, Dynamic Digestion

I. INTRODUCTION

Due to increment in emission of livestock manure and straw production there is increase in environment pressure. The environment friendly technology for digestion is the anaerobic digestion which is used in many countries for the production of biogas [1]. There are certain disadvantages in case of without mixing like uneven material distribution less fluidity and low heat and mass transfer [2-5]. Digestion efficiency and bio gas production rate can be improved by dynamic digestion technic. Now, three different methods of mixing are present these are mechanical mixing, slurry recirculation and gas recirculation [7]. The quality of the biogas and production of bio gas can be improved by many different technologies. The success of an AD for more investments as the feedstock cost is low and varieties of biogas. Combination of methane which is 2/3rd and rest is carbon dioxide including hydrogen sulphide traces constitutes Biogas. From the produced biogas remaining slurry is used in agriculture as manure for crops which promotes sustainable biomass production throughout the world. For power supply application biogas can be used in rural and urban areas as it is beneficial for cost. Due to increasing demands of conventional fuels and greenhouse effect in the environment many researchers are working to produce fuel from bio source. Currently the demand of energy throughout the world is 88% is met by fossil fuel. As per the study up to 2050 the demand of fossil fuel is increased to 50%. In the environment the greenhouse gas amount is also increasing where the main contributor is carbon dioxide. In the Asian region developing countries such as Afghanistan, Nepal, Bangladesh, and Pakistan are energy stressed. Due to increasing population and gap between demand and supply led to load shedding session. Due to this increasing demand and less supply in last three decades there was stagnant economic growth [3]. Biogas produced by anaerobic digestion of organic materials which consists of methane and carbon dioxide. Some trace components such as water vapor, hydrogen sulphide, siloxanes, hydrocarbons, ammonia,

oxygen, carbon monoxide, and nitrogen are present in biogas. To substitute for fossil fuel there is necessity of optimization of biogas production and to upgrade the biogas quality [4]. waste activated sludge (WAS) is the main by-product of any biological wastewater treatment. More amount of wastewater is treated thought the world results in increased amount of WAS. Hence, it is important to innovate new technic to manage the generated sludge. For stabilization of sludge anaerobic digestion is more common digestion technic it can reduce the number of volatile solid (VS) and increases the biogas production at a similar time. Digestion is the single stage process at conditions like mesophilic or thermophilic with limited efficiency. In 10 to 20 days retention time which is under mesophilic temperature organic matter content which are available in WAS is destroyed only up to 30% to 40% [4]. Cell bound organic matter is the single factor which affect the efficiency of the WAS anaerobic digestion. In anaerobic digestion process the rate of limiting stage is the hydrolysis of the organic matter [5]. In biogas plant or commonly it is known as biogas digester in which the digestion process takes place of organic matter and the resulting gas is known as biogas. To realize the maturity of the sector, developing the domestic biogas plant because it is important to check the current diffusion of the biogas. The actual diffusion of the biogas and its related information should be provided by government. Domestic biogas production is promoted in many countries and government implemented national programme to increase the biogas production. This programme includes the training campaigns and financial scheme and it is also providing the technical support. The main organization who are working throughout the world are German GIZ (Society for International Cooperation, formerly GTZ) and the Dutch SN. These two-organization helping in advancement of biogas production and they also provide technical service and necessary document on this issue. Some countries like India, Nepal, and China host much more domestic biogas plants than others. It is noted that 250,000 domestic biogas plants are developed in last 20 years in Nepal and 125,000 in Vietnam. Furthermore, 125,000 biogas plants are planned in various countries throughout the world.

II. LITERATURE REVIEW

The emission caused due to the livestock manure and straw production hence, environmental pressure is increases to avoid this the environment friendly technology is needed for the anaerobic digestion. Without mixing technic has some disadvantages such as low heat transfer less fluidity and distribution of material is not proper. As, we know bio gas is produced from pig manure, cow dunk kitchen waste etc. many researchers work on this produce the bio gas. Some of the researchers find out the optimum condition for product of bio gas by using various biogas model. The benefit of mechanical mixing is high rate of heat and mass transfer and decreases hydraulic dead state. It maintains the reproduction and metabolism of anaerobic bacteria. By using viscous fluid De Jesus et al. evaluated the hydrodynamic mass transfer of

A Review: Experimental Investigation of an Air Conditioning System by Using Different Alloy Material for Condenser

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Abstract – Energy saving is the practice of decreasing the quantity of energy used. It may be achieved through efficient energy use or by reducing the consumption of energy services. Air conditioning units are usually used for small and medium scale residential buildings. The amount of energy consumed by air conditioners, refrigerators and water heaters is increasing rapidly, since the consumed power by air conditioners occupies about 20% of the total power consumption. The improvement of refrigeration cycle performance can be done by lowering the compressor power consumption, increasing the condenser heat rejection capacity or reducing the difference between condenser and evaporator pressures. The aim of this project is to experimentally improve the coefficient of performance of air conditioning system by using different alloying material for condenser.

Keywords- Condenser, Material considered aluminum LM 304 and LM311 for copper L100.

I- INTRODUCTION

Reduction of energy consumption is a major concern in vapour compression cooling systems, especially in

areas with very hot weather conditions. In hot weather conditions, performance of these systems decrease sharply and electrical power increases considerably. Evaporative condensers enhance the heat rejection process by using the cooling effect of evaporation and therefore improve energy-usage efficiency. This paper presents an extensive review of the state of the art of evaporative condensers used in residential cooling systems: refrigeration, air-conditioning, and heat pump systems. The paper primarily concentrates on the energy consumption of residential cooling systems worldwide and its related problems. In addition, the paper covers the operation principles of evaporative-condensers, theory of heat rejection, and water evaporation rate. Finally, comparison between different types of condensers is presented. It is found that by using evaporative-cooled condenser instead of air-cooled condenser, the power consumption can be reduced up to 58% and the coefficient of performance can be improved by about 113.4% with systems of different cooling capacities ranging from 3 to 3000 kW.

II- LITERATURE REVIEW

Forced Convection Solar Dryer System

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Abstract – This paper presents the design and construction of a solar dryer for drying agriculture product such as banana. In many countries of the world, the use of solar thermal systems in the agricultural area to conserve vegetables, fruits, coffee and other crops has shown to be practical, economical and the responsible approach environmentally. Solar heating systems to dry food and other crops can improve the quality of the product, while reducing wasted produce. Under the module of Advance topics in mechanical engineering projects.

Keywords- Solar Heating System, Solar Dryer System

I - INTRODUCTION

Drying is a process of dehydration of food products which means reducing the moisture content from the food to improve its shelf life by preventing bacterial growth. We have introduced a high efficiency low cost vegetable dryer for our advance topic in mechanical engineering module. This dryer has been designed to construct from material available in the market at low cost. This especially to overcome the problems encountered in the sun drying such as many disadvantages such as spoil products due to rain, wind, dust, insect infestation, animal attack and fungi. This dryer consists of main parts namely Solar collector, Solar chamber, Chimney, Trays.

II - LITERATURE REVIEW

[1] Bukola O. Bolaji et al :- Designed, constructed and tested the solar wind-ventilated cabinet dryer in Nigeria on latitude 7.5° N. Comparatively, drying with the solar

cabinet dryer showed better results than open air-drying. During the period of test, the average air velocity through the solar dryer was 1.62 m/s. The maximum drying air temperatures was found to be 64°C inside the dryer.

[2] M. Mohanraj, P. Chandrasekar :- The performance of an indirect forced convection solar drier integrated with heat storage material was designed, fabricated and investigated for chili drying. The drier with heat storage material enables to maintain consistent air temperature inside the drier. The inclusion of heat storage material also increases the drying time by about 4 h per day. The chili was dried from initial moisture content 72.8% to the final moisture content about 9.2% and 9.7% (wet basis) in the bottom and top trays respectively. They concluded that, forced convection solar drier is more suitable for producing high quality dried chilli for small holders.

[3] Diemmodeke E. Ogheneruona, Momoh O.L. Yusuf :- Designed and fabricated direct natural convection solar dryer to dry tapioca in rural areas. A minimum of 7.56 m² solar collector area is required to dry a batch of 100 kg tapioca in 20 hours (two days drying period).

III - METHODOLOGY

The solar food dryer is generally constructed by wood because it is easily available and light in weight and cost. Since the entire casing of wood only the top of air heater chamber is made, the major construction works of solar dryer is carpentry works.

Forced Convection Solar Dryer System

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Box Transport Mechanism

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Abstract – This project aims for the utilization of kinematic synthesis (type, dimensional and number) to fabricate a working physical model of an eight link transport mechanism. The mechanism to be developed in its simplest form would perform the function of transporting boxes/articles which are being fed onto two rails and are moved ahead one by one. The eight bar mechanism allows moving more than one article as compared to its four bar counterpart. Transport mechanisms generally move material and their application lies in various industries- manufacturing, assembly, packaging etc.

In this project we apply the path generation synthesis and coupler curve synthesis and study to fabricate our model. It is an eight link transporter mechanism. The synthesis would use of Robert's - Chebyshev theorem for cognate linkages and parallel motion generation. The final model will be constructed by modeling in CAD software that will eliminate the errors that might have crept in graphical synthesis.

Keywords- Box Moving Mechanism, Conveyer System, Single Slider Crank Mechanism., CAD software, synthesis.

I-INTRODUCTION

There has been a serious demand for intermittent movement of packages in the industries right from the start. Though the continuous movement is more or less important in the same field the sporadic motion has

become essential. The objective of our project is to produce a mechanism that delivers this stop and move motion using mechanical linkages.

The advantage of our system over the conveyor system is that the system has a time delay between moving packages and this delay can be used to introduce any alterations in the package or move the package for any other purpose and likewise. While in conveyor system such actions cannot be performed unless programmed module is used to produce intermittent stopping of the belt which basically is costly. The prototype design requires electric motor, shafts and the frame of which the frame and platform on which the packages are moved is fabricated. All the links are being made of bright metal which reduces the weight of the whole system including the head which has a direct contact with the boxes being moved. The system is expected to move as heavy packages as 2 - 3kgs approximately.

II- AIM

The aim of this project is to fabricate the box moving mechanism, which can make easier to move boxes from one section to the other while processing in the factories. In a workstation, an assembly line in order to obtain the required production rate and to achieve a minimum amount of idle time.

Design and Development of Solar Grass Cutter

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Abstract –Due to the continuous increase in the cost of fuel and the effect of emission of gases from the burn fuel into the atmosphere, this necessitated use of the abundant solar energy from the sun as sun of power to drive a lawn mower .a solar powered lawn mower was designed it rechargeable battery, Solar panel, Stainless steel blade and control switch. Moving is achieved by the D.C Motor which provides the required torque needed to drive the stainless steel blade which is directly coupled to the shaft of the D.C Motor. The solar powered lawn mower is operated by the switch on the board which closed the circuit and allows the flow of current to the motor which in turn drive the blade used for moving. The battery recharges through the solar charging controller. Performance Evaluation of the developed machine was carried out with different type of grasses. The main objective in pollution control is attained through this unskilled operation easily and maintain the lawn very fine and uniform surface look.

Keywords: Smart Grass Cutter, Solar Grass Cutter, Smart Solar System.

I- INTRODUCTION

Grass cutter or lawn mowing with a standard motor powered lawn mower is an inconvenience, and no one take pleasure in it. Cutting grass cannot be easily accomplished by elderly, younger, or disable people. Motor powered push lawn mower and riding lawn mowers create noise pollution due to the loud engine, and local air pollution due to the combustion in the engine.

Also, a motor powered engine requires periodic maintenance such as changing the engine oil.

II- LITERATURE REVIEW

For the manufacturing of a solar grass cutter we referred various literature, papers etc. The review of previous method used given below: In this lawn mower uses an solar based energy source, which is easier to use, more advantageous comparing to other energy source especially for gas based source of power .But our lawn cutter is based on solar because this energy is a renewable energy source and it is easy to work. So we made solar powered lawnmower. In today's climate of growing energy needs and increasing environmental concern, alternatives to the use of non-renewable and polluting fossil fuels have to be investigated. One such alternative is solar energy. In this solar based lawn mower, the advantage of powering a lawn mower by solar rather than by gasoline is mainly ecological. We manufactured this lawn cutter because it is very easy method and many overcome produced from this type lawn cutter.

The self-powered objective is to come up with a mower that is portable, durable, easy to operate and maintain. It also aims to design a self-powered mower of electrical source; a cordless electric lawn mower. The heart of the machine is battery powered dc electric motor. It is also useful method for our lawn mower. It is similar to our lawn cutter using display and keypad. The present technology commonly used for trimming the grass is by using the manually handle device. In this project we have automated the machine for trimming the

PEDAL OPERATED WATER PURIFIER

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ABSTRACT

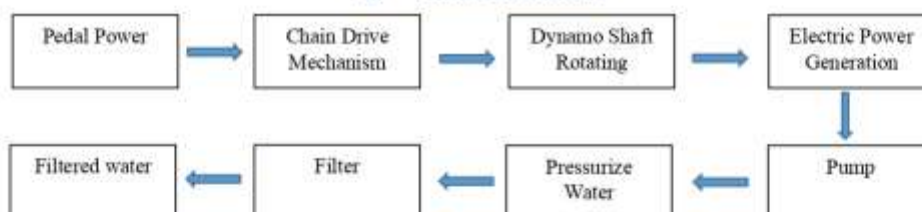
In This research paper we describe the construction and the design of pedal operated water purification system. Purpose of that system is to provide the pure water with the help of pedal and chain drive mechanism. This system is specially aimed for rural or urban areas for providing clean and drink able water. Pedal operated water purification system is water filtering apparatus which can filter the water by using muscle power via pedal mechanism. It Works on the chain drive system with power generator dynamo and along with the supporting frame and filters. The main aim of this project is to solve the purifying unclean water with minimum cost and easier to use.

Keywords: Analysis, Filter, Drinkable Water.

I. INTRODUCTION

In that system for providing filtered and clean water we used mechanical energy as a power source of the system. in that system without use of external electricity we run the pump with the help of dynamo. In running days we see most of the people are suffering the problems of dirty and contaminated water but, they can't afford costlier filter system so that we decided to provide such a system which is affordable for general people. It works mainly on mechanical energy so we do not use any external electricity for producing the British filtered water which make it very useful for the areas where electricity is not available and free from pollution so this system is totally ecofriendly also due to peddling the system over exercise also done which is very good for our health. In this system we used reverse osmosis process which remove fluoride, sodium, total dissolved solids or chemical likes nitrates and arsenic. The water purification system can be operated by many different ways like electrical energy, solar energy, thermal energy but we used mechanical energy.

II. METHODOLOGY



In first step we producing power by pedal which is connect with sprocket mechanism which connect with dynamo shaft due to rotating shaft of dynamo electricity will be generated and this generated electricity is used to run the submersible centrifugal pump and it will pumped the water from ground level and supply to the three filters system first is pre-carbon second is post-carbon and third is sediment. pre-carbon and post-carbon contain activated carbon. Pre-carbon used to remove bad smell and odour of water and the function of post-carbon filter is to increase the pH value of water also remove different types of chemicals and sediment filter is for remove dust, rust and other contaminants presents in water. Finally, we got purified clean and safe drinkable water.

Experimental Investigation and Heat Transfer Analysis of a Dimple Tube and Corrugated Tube Heat Exchanger

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Abstract— Heat transfer enhancement of dimple, corrugated and plain tube is done in this study. Here, voltage is varying from 60-100 v. There is wide increase in heat transfer from corrugated tube after 80 Volts. Hence, we have high heat transfer in the corrugated tube at higher voltages.

Keywords: Heat Transfer Analysis, Corrugated Tube Heat Exchanger, Dimple Tube

I. INTRODUCTION

A. Modes of Heat Transfer

- 1) Conduction
- 2) Convection
- 3) Radiation

B. Heat Transfer by Convection

There are certain situations in which the fluid motion is produced due to change in density resulting from temperature gradients, which is the heat transfer mechanism called as free or natural convection. Natural convection is the principal mode of heat transfer from pipes, refrigerating coils, hot radiators etc. The movement of fluid in free convection is due to the fact that the fluid particles in the immediate vicinity of the hot object become warmer than the surrounding fluid resulting in a local change of density. Contrast to the forced convection, natural convection phenomenon is due to the temperature difference between the surface and the fluid is not created by any external agency. Natural convection flow pattern for some commonly observed situations is given in Figure 1.

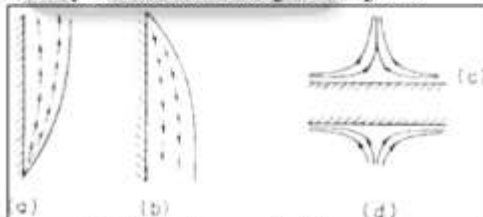


Fig. 1: Natural convection flow patterns

- 1) Heated vertical plate
- 2) Cooled vertical plate
- 3) Upper surface of a heated horizontal plate
- 4) Lower surface of a heated horizontal plate

Convection is the transfer of heat energy through a material by the bodily movement of particles and will occur in fluids (liquids and gases). Convection arises when a fluid is warmed, and thus expanded. The expanded fluid is less dense and therefore rises and is replaced by cooler fluid, which then undergoes the same process. This is called convection current. Convection can be natural or forced. Natural convection is when the fluid movement is caused by the fluid itself, whilst forced convection uses external means (such as a fan) to drive the fluid movement.

The rate of heat transfer due to convection is given by;

$$Q = hA(TS - T_a) \text{ Where:}$$

h : is the convective heat transfer coefficient, in W/m^2K ;

A : is the surface area, in m^2 ;

TS : is the surface temperature, in K ;

T_a : is the fluid temperature, in K . h will depend upon; the relative velocity of the fluid; the temperature difference between the surface and the environment; the direction of heat flow; the surface size and orientation; the fluid properties (density, viscosity, heat capacity etc); Surface roughness.

The resistance of convective heat transfer is given by;

Where;

R_{conv} is the thermal resistance of convection, in m^2K/W .

Therefore; $Q = (T_s - T_a) / R_{conv}$

To lower the heat flow due to convective heat transfer you can reduce the area in contact with the fluid, or decrease the convective heat transfer coefficient.

With the growing sophistication in technology and with the increasing concern with energy and the environment, the study of heat transfer has, over the past several years, been related to a very wide variety of problems, each with its own demands of precision and elaboration in the understanding of the particular processes of interest. Areas of study range from Atmospheric, geophysical and environmental problems to those in heat rejection, space research and manufacturing systems.

C. Applications of Natural Convection

Natural Convection flow encountered in several areas of applied engineering:

$$Nu = 0.36 + \frac{0.518Ra^{1/4}}{[1 + (0.559/Pr)^{1/4}]^{1/4}}$$

$$Nu = [0.60 + \frac{0.387Ra^{1/4}}{[1 + (0.559/Pr)^{1/4}]^{1/4}}]^{1/4}$$

- 1) Extended fins
- 2) Heat exchangers
- 3) Nuclear reactors
- 4) Solar heating systems
- 5) Dry cooling towers
- 6) Cooling of electronic equipments

Equations are developed to define the performance advantage of roughened tubes in heat exchanger design, relative to smooth tubes of equal diameter. Three rough tube applications are presented: 1. To obtain increased heat exchange capacity; 2. To reduce the friction power; and 3. To permit a reduction of heat-transfer surface area.

II. LITERATURE REVIEW

A. Correlations for Natural Convection.

There is lot of literature available on different topics of different modes of heat transfer. However, I have restricted

Solar Powered Sand Filter and Separator Machine

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Abstract: Here we demonstrate the design & fabrication system. Sand is used in construction, manufacturing and many industries. Sand needs to be filtered and separated from unwanted particles, stones and other large particles before it is put to use. Our system puts forward a fully automated sand filtering and separator system that automatically filters sand poured on it. Here we use a motorized shaft that is mounted horizontally using mounts. The shaft is connected to a filter frame with mesh below and enclosing frame on the sides. We now have a rod connected from the shaft to the filter frame in a way such as to achieve the best horizontal motion. Also we have a frame to hold the filter frame in place while ensuring proper horizontal motion at the same time. On switching on the motor using our motor controller circuit, the system allows to operate the motor. This allows us to operate the sand filter motion for appropriate sand filtering needs..

Keywords: Solar, Sand Filter

I. INTRODUCTION

Sieving machine serves is to remove large grains with a small grain through a sieve. Separation occurs when the sand is placed on top of a filter having holes size. The first sieving is done to get rid of the sand with a larger than standard withholding sand filter and the second sieving is done to get rid of the sand with a size too small means that the sand filter is ignored. A sieve is a device for separating wanted elements from unwanted material or for characterizing the particle size distribution of a sample, typically using a woven screen such as a mesh or net or metal. Sand substance is one of the most important thing in industrial world. Nowadays the industry need the sand sub stand that are already been process known as sand product. As we know the sand sub stand are mixture with variety other component such as dirt and metal. As we know the way sand is been collected still used the conversional way such as sieving using hand or machine. And human energy is needed to run the process. So to make the process more efficient new technology is needed to help increase the productivity so the human power can be reduce and also can cut the cost of the process.

II. METHODOLOGY

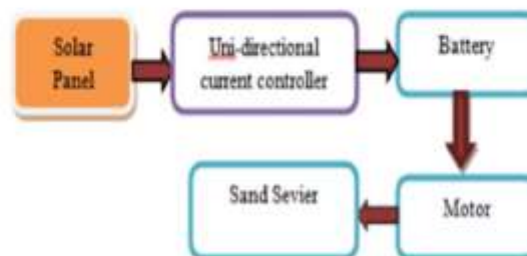


Fig .Methodology

A REVIEW ON SOLAR BIOMASS HYBRID DRYER

Mr. Kishor M. Mahajan¹, Dr. Vijaykumar H. Patil², Mr. Tushar A. Koli³

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Abstract

Open-sun drying is a primitive food preservation technique. Also, solar dryers of various designs, capacities, and sizes have been developed by the agricultural processing industry. There are some limitations for the solar dryers, like intermittent solar radiation throughout the day, unavailability at night, and seasonal variation in intensity; hence, continuous drying is not possible with them. Continuous drying of agricultural produce can be achieved through a combination of solar and auxiliary heating sources in a mixed-mode system. Biomass is the most widely used auxiliary heating source due to its availability and low cost in rural areas of developing countries. Until now, many researchers have designed, constructed, and examined the Solar Biomass Hybrid Dryers (SBHD). The solar biomass hybrid dryer is one of the most noticeable dryers used to dry agro products. Different designs for drying different products have been developed and tested experimentally by the researchers, and the results have been validated with software like CFD (Computational Fluid Dynamics) and Ansys. Mathematical models like the page model and modified page model have been developed for predicting the drying results. The purpose of this paper is to review the design features, construction, and experimentation carried out over SBHD by different researchers, and summarize their findings to provide a basis for new developers.

Keywords: Solar assisted, Biomass, Hybrid dryer, Turmeric Rhizomes¹PhD Scholar, Department of Mechanical engineering, GF's GCOE, Jalgaon KBCNMU, 425003, India²Professor, Department of Mechanical engineering, GF's GCOE, Jalgaon, 425003, India³Assistant Professor, Department of Mechanical engineering, GF's GCOE, Jalgaon, 425003, IndiaEmail: ¹mahajankishor87@gmail.com**DOI: 10.31838/ecb/2023.12.s3.814**



A Review Paper On Thermal Analysis Of Cavity Design Wall By Using Insulating Material

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Abstract

Energy conservation has become a policy objective throughout the world to protect the environment and conserve natural resources. Energy use in buildings for heating and cooling is considered a major source of energy consumption in many volatile and developing countries. Environmental impact and what energy costs are on hillside living and comfort Today our drivers of green buildings have become friends of paramount importance to commercial institutional and residential building owners. Thermal insulation is an important but largely neglected factor in achieving thermal comfort in buildings, and insulation can reduce unwanted and costly heat gain or loss and reduce the energy demand of cooling and heating systems[1]. An energy-efficient and environmental property. Legal regulations and increasing public awareness have led to the need to reduce energy demand and associated costs. An important factor in the struggle against excessive energy consumption in residential buildings and public utility facilities is suitable insulation material to work in specific conditions. It is possible to reduce energy consumption through effective thermal insulation of all building partitions, but this would be virtually impossible without the right materials[3]. Different types of insulating materials in use today include rigid polyurethane. From polyurethane spray to glass wool to expanded and extruded polystyrene rock wool Additional thermal insulation can include designs and techniques to address the main modes of heat transfer, conduction radiation, convection, and evaporation condensation[2].

Keywords: cavity design, insulation.

1. INTRODUCTION

Protection against harsh weather conditions has always been a concern of residents around the world. Thermal insulation is an important technology to reduce energy consumption in buildings by preventing heat gain/loss through the building envelope[6]. The low temperature in winter and high temperature in summer creates thermal discomfort inside. Thermal insulation is a building material with low thermal conductivity, often less than 0.1W/m K[7]. Several methods and adaptation methods to maintain internal thermal comfort found in the traditional architecture of the north and south of Algeria confirm this desire. These materials have no other purpose than to save energy and provide protection and comfort to the occupants. Among the many types, sizes, and applications of thermal insulation, this review paper focuses on external and internal insulation products that are commonly used in building envelopes the cavity and is also a maintenance problem.

1.1 cavity wall

A cavity wall is a type of wall that has a hollow center. They can be described as consisting of two "skins" separated by a hollow space (cavity). The skins typically are masonries, such as brick or cinder blocks. Masonry is an absorbent material that can slowly draw rainwater or even humidity into the wall. Cavity wall insulation is used to reduce heat loss. In composite walls, a cavity is filled with the material that inhibits heat transfer

A review paper on Investigation of Box Type Solar Cooker Combined With Water Heater.

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²HOD, Assistant Professor, GF's Godavari College Of Engineering And Polytechnic, Jalgaon, Maharashtra

Abstract-A practical and widely used heating gadget known as a solar cooker is out there. To increase the effectiveness of traditional sun cookers, these paper box type solar cookers incorporate copper tubes connected to water tanks. We evaluate the performance of a solar cooker with a copper tube and a water heater to the performance of a box-style solar cooker, and the difference is found to be significant. For cooking purposes, solar cookers offer renewable sources. Their biggest flaw is that they can't be used when there isn't enough sunlight.[6]The use of thermal energy storage (TES) can significantly get around these restrictions. Solar energy is now used for a variety of purposes as a result of the reduction of fossil fuels and the rise in fuel prices. Flat reflectors are typically used in box-style solar cookers. The temperature within the solar cooker has been raised, and efforts have been made to improve the effectiveness of the water heater-heated box cooker. [11]However, the method of heat transfer into the storage medium affects the shape of the storage units. The power of the cookers was significantly influenced by the thermal diffusivity of the storage media and the design parameters of the cookers.

Key Words: Box Solar Cooker, Solar Energy

1. INTRODUCTION

One of the many options for domestic and institutional cooking is solar cooking. Environmental pollution is decreased and conventional fuel (firewood and fossil fuels) are saved, both of which have ecological advantages. In order to permit cooking indoors and away from the sun, several of these efforts included adding thermal energy storage (TES) to solar cookers. The purpose of this study was to determine how TESu configurations and heat storage materials affected cooking performance. We are currently in a period when the global energy crisis is more widely recognized. Cooking is a routine activity all across the world. In order to make food safe, it is crucial to heat it to a high temperature that is sufficient to destroy microorganisms that can cause diseases. [5]According to the World Health Organization, diseases associated with indoor cooking cause around 4 million deaths annually. When placed in the sun, a cooker's interior temperature can rise from 100 degrees Celsius to 140 degrees Celsius in 2 to 3 hours. Therefore, only foods that require light

heating can be prepared with a solar cooker. Because the user has to go outside the kitchen to operate the typical solar cooker, it is not very user-friendly. Many professionals have modified the design of the solar cooker by employing a separate reflector in the outdoor field with focusing in the kitchen in order to overcome this drawback. Numerous professionals have additionally improved the inbox-type design for ease of use and more efficiency. Available solar cookers typically fall into two categories: box type and parabolic reflector focusing type.[9]

1.1 Box type Solar Cookers Features:

A Box the Solar Cooker is essentially a glass-covered, insulated box with a top lid and a mirror on the inside that allows sunlight to enter the box when the lid is left open. The box's interior is painted in a dark color. The box containing the food to be prepared is lined with up to four pots that have been painted black. Rice, lentils, and vegetables are among the things the cooker can prepare in between one and two hours. Simple cakes, roasted cashew nuts, dry grapes, and other foods have all been prepared with the cooker. With the exception of the monsoon and overcast days, most of the year, it is a perfect appliance for household cooking. However, it cannot be used to make chapattis or for frying.

1.2 Advantages:

- There are no ongoing fuel costs when using solar cooking. Solar power is completely cost-free.
- In a few years, the cost of the solar cooker can be readily recouped through fuel bill savings.
- If used frequently, a box solar cooker can save three to four LPG cylinders per year.
- Time is saved. While food cooks in the solar cooker, you are free to engage in other activities.
- There is no concern about burning the meal.
- Due to its slow cooking design, it ensures healthier and more nutrient-dense prepared food.
- It is easy to use and long-lasting.

PEDAL OPERATED WATER PURIFIER

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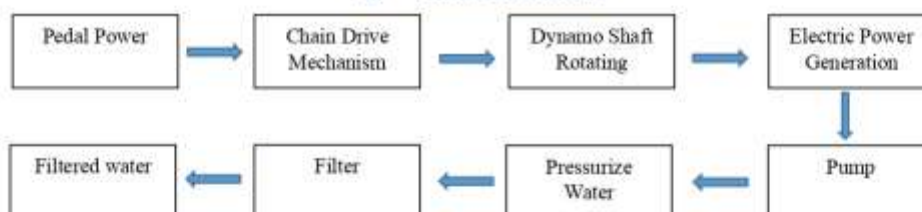
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Keywords: Analysis, Filter, Drinkable Water.

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In that system for providing filtered and clean water we used mechanical energy as a power source of the system. in that system without use of external electricity we run the pump with the help of dynamo. In running days we see most of the people are suffering the problems of dirty and contaminated water but, they can't afford costlier filter system so that we decided to provide such a system which is affordable for general people. Is works mainly on mechanical energy so we do not used any external electricity for producing the British filtered water which make it very useful for the areas where electricity is not available and free from pollution so this system is totally ecofriendly also due to peddling the system over exercise also done which is very good for our health. In this system we used reverse osmosis process which remove fluoride, sodium, total dissolved solids or chemical likes nitrates and arsenic. The water purification system can be operated by many different ways like electrical energy, solar energy, thermal energy but we used mechanical energy.

II. METHODOLOGY



In first step we producing power by pedal which is connect with sprocket mechanism which connect with dynamo shaft due to rotating Shaft of dynamo electricity will be generated and this generated electricity is used to run the submersible centrifugal pump and it will pumped the water from ground level and supply to the three filters system first is pre-carbon second is post-carbon and third is sediment. pre-carbon and post-carbon contain activated carbon. Pre-carbon used to remove bad smell and odour of water and the function of post-carbon filter is to increase the pH value of water also remove different types of chemicals and sediment filter is for remove dust, rust and other contaminants presents in water. Finally, we got purified clean and safe drinkable water.

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MULTIPLE ATTRIBUTE DECISION-MAKING METHODS HELPS IN LOGICALLY SELECTION OF CHAFF CUTTING MACHINE BLADES

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Dr.Nikhil J Rathod⁴**

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Abstract

In order to choose the best material for a given design and manufacturing process, decision-making is crucial. The researchers employed tools to aid in their decision-making because proposing a novel material is usually difficult. The selection of the piston material is handled in the current paper using Multi-Attribute Decision Making (MADM) techniques to ensure the best design process. A comparison of the weights of subjective and objective criteria for a few MADM approaches is conducted. Sensitivity analysis is done to show that the ranking order for performance scores is consistent despite the fact that the weights of the criteria for each alternative differ.

Keywords: Chaff Cutter Blade, Saw,Wpm,Ahp,Mcdm Method

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A Literature Review on Heart and Alzheimer Disease Prediction

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Abstract - Nowadays, heart diseases are very common and one of the major causes of death across the world. This calls for an accurate and timely diagnosis of the heart disease. There is abundant data available with the health care systems; however, the knowledge about the data is rather poor. Data scientists have attempted several methods in order to improvise the examination of large data sets. Previously, various data mining techniques have been implemented in the healthcare systems, however, the hybridization in addition to a single technique in the identification of heart disease shows promising outcomes, and can be useful in further investigating the treatment of the heart diseases. The framework enables the representation, extraction, and mining of high order latent structure and relationships within single and multiple disease sequences. This work attempts to survey some recent techniques applied towards knowledge discovery for heart disease prediction and further proposes a novel prediction method with improved accuracy.

Unfortunately, Alzheimer's disease (AD) cannot be slowed or cured with today's medication. The studies have revealed that - a cognition drop is a precursor of AD, the progression of AD is highly correlated to cognition decline, and AD's early detection and intervention becomes increasingly clear to be the best choice of improving quality of life for persons with probable AD. This survey aims to improve the predictive model by focusing on AD early detection. Compared to models built from traditional approaches such as neuron networks, Bayesian networks, we propose a novel prediction method with improved accuracy.

Key Words: Heart Disease Prediction, Machine Learning, Data Mining, Alzheimer's disease (AD), deep learning, AD early detection.

1.2 Basic terms related to data mining:

1.2.1 Classification

Classification is a data mining (machine learning) technique used to predict group membership for data instances. For example, you may wish to use classification to predict whether the weather on a particular day will be "sunny", "rainy" or "cloudy".

1.2.2 Supervised learning:

Supervised learning is the machine learning task of inferring a function from labeled training data. The training data consist of a set of training examples. In supervised learning, each example is a pair consisting of an input object (typically a vector) and a desired output value (also called the supervisory signal). A supervised learning algorithm analyzes the training data and produces an inferred function, which is called a classifier. The inferred function should predict the correct output value for any valid input object. This requires the learning algorithm to generalize from the training data to unseen situations in a "reasonable" way.

1.2.3 Unsupervised learning:

In machine learning, unsupervised learning refers to the problem of trying to find hidden structure in unlabeled data. Since the examples given to the learner are unlabeled, there is no error or reward signal to evaluate a potential solution. This distinguishes unsupervised learning from supervised learning.

The heart attack occurs when the arteries which supply oxygenated blood to heart does not function due to completely blocked or narrowed.

1.2.4 Prediction:

Models continuous-valued functions, that is predicts unknown or

A Secure Approach for Authenticated and Secure Online Voting System by Using Homo-Morphic Steganography

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Abstract— Many voters would appreciate the possibility of voting from anywhere election and voting well known things in modern days of democracy. Electronic online voting over the Internet would be much more profitable. The Secured online voting system is today's need. We proposed a new secured online voting system by using biometric and steganographic authentication. In proposed model, voter's system generated security Password is verified before the vote is accepted and encrypt vote is stored form in the main database of Election of India. The additional feature of the model is that privacy of casted vote is preserved using homomorphic encryption. Blind signature is used for providing the anonymous voting environment. In this model a person can also vote from outside of his/her allocated electorate or from his/her chosen location. In the proposed system, counting of votes will be done fast and correctly.

Keywords—Homomorphic encryption, blind signature, biometric security, steganography, Web Server, Digital Signature, Internet Voting.

I. INTRODUCTION

Now a day's election process plays a very important role in Indian government. The election is a process to select a perfect candidate for who will lead our nation. In a democracy, people choose there leader by giving their valuable vote. Recently used Indian voting system is an electronic voting system, In that system voter availability, is compulsory, is the drawback of electronic voting system. An online voting system is the solution for this drawback voter can be voting the candidate for everywhere from specified Election Day and date.

Provide security to the online voting system is an important issue in real life. This model proposed helps in achieving the authenticity, non-traceability of vote cast and security with privacy also being imposed. This is handled in the proposed system by combining bio-metric with homomorphic encryption.

Online voting system security is the main concern [2]. Online voting process maintains the strict privacy and uprightness of the vote cast and authentication before the voter is cast their votes. An online voting system authentication is the main problem, only approve someone can give their vote. A person can be authorizing by some methods that can be personal identification number (PIN), secrete message or user identity proof. All authenticated data can be collocated by the user. All authentications are verified by the main database then allow for that voter to vote for a candidate. Authentication is verified by biometric identification process and steganography.

II. LITERATURE SURVEY

I.Pashine, ninave and kelapure [3] proposed an android platform for the online voting system. This application provides a diversion of the long process also provide security to the voter and its voter comfort system voter no need to go polling booth easily vote for the applicant in hometown itself. And also provide the option of gesture recognition but authentication is the problem of the android platform.



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Heart Disease and Alzheimer Prediction based on Hybrid Classification Algorithm

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ABSTRACT: Nowadays, heart diseases are very common and one of the major causes of death across the world. This calls for an accurate and timely diagnosis of the heart disease. There is abundant data available with the health care systems; however, the knowledge about the data is rather poor. Data scientists have attempted several methods in order to improvise the examination of large data sets. Previously, various data mining techniques have been implemented in the healthcare systems, however, the hybridization in addition to a single technique in the identification of heart disease shows promising outcomes, and can be useful in further investigating the treatment of the heart diseases. The framework enables the representation, extraction, and mining of high order latent structure and relationships within single and multiple disease sequences. This work attempts to survey some recent techniques applied towards knowledge discovery for heart disease prediction and further proposes a novel prediction method with improved accuracy.

Unfortunately, Alzheimer's disease (AD) cannot be slowed or cured with today's medication. The studies have revealed that - a cognition drop is a precursor of AD, the progression of AD is highly correlated to cognition decline, and AD's early detection and intervention becomes increasingly clear to be the best choice of improving quality of life for persons with probable AD. This survey aims to improve the predictive model by focusing on AD early detection. Compared to models built from traditional approaches such as neuron networks, Bayesian networks, we propose a novel prediction method with improved accuracy.

KEYWORDS: Heart Disease Prediction, Machine Learning, Data Mining, Alzheimer's disease (AD), deep learning, AD early detection.

I. INTRODUCTION

Mobile Ad Hoc Networks (MANETs) consists of a collection of mobile nodes which are not bounded in any infrastructure. Nodes in MANET can communicate with each other and can move anywhere without restriction. This non-restricted mobility and easy deployment characteristics of MANETs make them very popular and highly suitable for emergency, natural disaster and military operations.



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Improved Genetic and Memetic based Task Scheduling in Cloud Computing Environment

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ABSTRACT: In the current scenario, cloud computing has emerged widely used in companies and enterprises. In this paper, a task scheduling algorithm has been introduced which allocates and executes user's tasks. This proposed algorithm is based on Improved genetic algorithm (IGA) and improved memetic algorithm (IMA). The main goal of this algorithm is to reduce completion time and execution cost of different tasks and maximize resource utilization. Cloudsim Toolkit is used to evaluate the performance of the proposed algorithm.

KEYWORDS: Cloud computing, Task Scheduling, Genetic algorithm, memetic algorithm, Improved Genetic algorithm, Improved memetic algorithm

I. INTRODUCTION

Cloud computing is an on demand service in which shared resources, information, software and other devices are provided according to the clients requirement at specific time. It's a term which is generally used in case of Internet. The whole Internet can be viewed as a cloud. Capital and operational costs can be cut using cloud computing. In case of Cloud computing services can be used from diverse and widespread resources, rather than remote servers or local machines. There is no standard definition of Cloud computing. Generally it consists of a bunch of distributed servers known as masters, providing demanded services and resources to different clients known as clients in a network with scalability and reliability of data center. The distributed computers provide on-demand services. Services may be of software resources (e.g. Software as a Service, SaaS) or physical resources (e.g. Platform as a Service, PaaS) or hardware/infrastructure (e.g. Hardware as a Service, HaaS or Infrastructure as a Service, IaaS). Amazon EC2 (Amazon Elastic Compute Cloud) is an example of cloud computing services.

II. RELATED WORK

Mining Weakly Labeled Web Facial Images for Search-Based Face Annotation

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Abstract: In this paper, we present an automatic web image and video mining framework with the ultimate goal of building a universal human age estimator based on facial information, which is applicable to all ethnic groups and various image qualities. On one hand, a large (391 k) yet noisy human aging image database is collected from Flickr and Google Image using a set of human age-related text queries. Multiple human face detectors based on distinctive techniques are adopted for noise-prune face detection. For each image, the detected faces with high detection confidences constitute a bag of face instances.

Keywords: Image processing, face annotation, weakly labeled facial images, internet vision, Age estimation

1. Introduction

IMAGE-BASED human age estimation has wide potential applications, e.g., demographic data collection for supermarkets or other public areas, age-specific human computer interfaces, age-oriented commercial advertisement, and human identification based on old ID-photos. The previous research for human age estimation can be roughly divided into two categories according to whether the age estimation task is considered as a regression problem or a multi-class classification problem.

The explosive increasing of online sharing media such as image and video sharing websites, e.g., Flickr, Picasa, and image search engines, e.g., Google Image, has shed light on obtaining a large number of training data (e.g., images and videos) for general visual learning tasks.

Note that known as web mining, utilizing the web resources such as images, videos, personal blogs as well as their corresponding tags, surrounding texts and meta-data, have been recently utilized for various computer vision and multimedia tasks. Yanai and Barnard proposed a web image mining method for discriminative visual concept selection. Zheng et al. leveraged the vast amount of multimedia data on the web to build a world-scale landmark recognition engine. Ji et al. [19] reported a city landmarks discovery and personalized tourist suggestion system by mining the images automatically crawled from online sharing personal blogs.

Auto face annotation can be beneficial to many real world applications. For example, with auto face annotation techniques, online photo-sharing sites (e.g., Facebook) can

However, the “model-based face annotation” techniques are limited in several aspects.

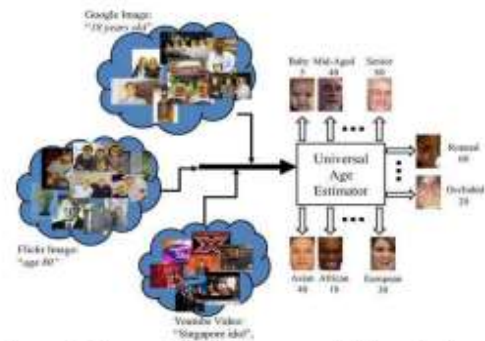


Figure 1: Illustration of the purpose of this study, i.e., to utilize web image and online video resources for learning a universal age estimator.

Noisy image and label filtering: First, we propose to conduct parallel face detection based on multiple face detectors for improving the probability to obtain well-aligned face instances for each image, and then the overlapping face instances from distinct detectors are retained as good samples for model training. Then, principal component analysis is applied for each age label and those face instances with large reconstruction errors are filtered out.

Robust multi-instance regression: Given a set of training face images with multiple face instances within each image as well as a set of label-consistent face pairs, we formulate

University Student Dashboard System

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Abstract- In our Project we have make the software that has been help student for the studies. In that students can get solved answer sheet and get much more study material. In this web application we can add audit points for the audit report and also we can print it. it also help the student to and their suggestions about the various question over the software . This software also helps to finds specific of a question with the help of searching algorithm. Student can also get the syllabus of specific semester on this software.[1]

Keyword- Dashboard, PHP, Database.

INTRODUCTION

This software design specification is made with the purpose of outlining the software architecture and design of the Student detail. The document will provide developers an insight in meeting client's needs efficiently and effectively.

The design and implementation of a comprehensive student information system and user interface is to replace the current paper records. College Staff are able to directly access all aspects of a student's academic progress through a secure, online interface embedded in the website. Each sub-system has authentication allowing authorized users to create or update information in that subsystem. All data is thoroughly reviewed and validated on the server before actual record alteration occurs. In addition to a staff user interface, the system plans for student user interface, allowing users to access information and submit requests online thus reducing processing time. [1]

What is general use?

This system is generally use by students for their studies, this also helps to students to add and read the suggestions about the questions and answers.it also provide facility to search quick answer of any specific question.

Need of these software?

This software is much more needed for students for their daily studies with the help of that they can get the content of any subject at the single platform. It reduces the extra time that can be Need to students to search specific answer over various books. [2]

Problem Statement:-

Retrieving detail and accurate information is very critical especially for public and People that are involved in any web application. The information reflect on a positive or negative way. The current problems that face by the web application are Student dashboard needs a proper medium where they can easily manage and display information about questions paper and syllabus info and also Audit Point. The prospective students are also have difficulties to find information about semester information, question paper set, audit point report should provide the right and detail information for them so they are interested to be a part of the web application.[3]

Prototyping:-

In designing the Student Help Desk System prototyping will be used to demonstrate underpinning concepts of the designing and for user interfaces. This technique will provide the opportunity for the system users to experiment the software to a certain extent during the development process