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GEOPOLYMER CONCRETE-FUTURISTIC CONSTRUCTION MATERIAL: A REVIEW

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Abstract: Concrete is the second widest material used all over the world. For preparing the concrete, Ordinary Portland cement is fundamental ingredient which act as a binder for concrete. Mass Production of cement causes CO2 emission which is responsible for global warming. There is need to ascertain the environmental friendly material that can be used as binder for concrete. Geopolymer concrete is futuristic construction material which is formed by using trash materials from industries like Fly-ash, rice husk ash and its binding properties are activated by geopolymerization process. Geopolymerization is process of forming a binding material by chemical reaction of alkaline activator (liquid or dry form) and Aluminosilicate materials. This process requires high temperature curing which give limitation for its use. This review study aims to summarized the research work done on formation of geopolymer concrete using different raw materials and alkaline activator in liquid or dry form for temperature curing and ambient curing. The conclusions of this review will specify the feasibility of various source materials and alkaline activators to produce the maximum strength with temperature curing and ambient.
Keywords: Geopolymer concrete, Geopolymerization, alkaline activator, Aluminosilicate materials

I. Introduction

Concrete is the basic construction material that is used worldwide in which primary binding material used is cement. For the development of infrastructural facilities worldwide consumption of concrete increasing day by day which encourages the demand of cement due to its different physical, mechanical and durability property. As the population all over the world increasing day by day, infrastructural demands are also increasing. To fulfill these demands of the construction of infrastructures, use of conventional construction material rapidly increasing. This rapid increase in demand of construction materials puts very harmful effect on the environment. In this developing era, one of the most utilized construction material is cement. Manufacturing process of cement has very damaging effect on the surroundings. For the production of every tonne of cement, which involves the crushing, heating and grinding of the limestone over three-quarters of the tonne of carbon dioxide is released into our planet's atmosphere [2] which is examine as a fundamental reason to stimulate the global warming. Considering all these aspects, there is need of producing environmentally-safe construction material.
Additionally, this Growing industrialization releases some waste by-products such as fly ash, rice husk ash, ground granulated blast furnace slags.etc. Discarding these waste by- products in appropriate way is very important aspect. As these materials are pozzolanic in nature so can be

Partial Replacement of Cement with Marble Dust Powder in Concrete.

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Abstract: *Concrete is the most widely used construction material in civil engineering industry because of its high structural strength and stability. Leaving the waste materials to the environment directly can cause environmental problem. Hence the reuse of waste material has been emphasized. Waste can be used to produce new products or can be used as admixtures so that natural resources are used more efficiently and the environment is protected from waste deposits. Marble stone industry generates both solid waste and stone slurry. The concrete industry is constantly looking for supplementary material with the objective of reducing the solid waste disposal problem. Marble Waste i.e. Marble sawing powder, pieces of irregular size and marble sludge or slurry is a widespread by product of marble processing industries. All these wastes are thrown away in the areas near the factories and cause severe environmental problems. The main objective of this study is to explore the possibility of using marble powder waste as partial replacement of cement in concrete. Since this concrete is prepared with marble powder as a partial replacement of cement in different proportions i.e. 0%, 5%, 10% and 15%. Concrete of different mix is prepared and tested for the period of 7days , 21days and 28days days curing. This compressive strength is compared with the conventional concrete i.e. concrete prepared without marble powder.*

Keywords: **Marble powder , Portland Pozzolana Cement, Sand, Concrete, Compressive strength.**

1. INTRODUCTION

It has been estimated that several million tons of Marble dust Powder (MDP) are produced during quarrying worldwide. Hence utilization of marble powder has become important alternative materials towards the efficient utilization in concrete for improved harden properties of concrete. Marble is a metamorphic rock resulting from the transformation of a pure limestone. The purity of the marble is responsible for its color and appearance it is white if the limestone is composed of calcite (100% CaCO3). Marble is used for construction and decoration; marble is durable, has a noble appearance, and is consequently in great demand. Chemically, marbles are crystalline rocks composed predominantly of calcite, dolomite or serpentine minerals. The other mineral constituents vary from origin to origin. The main impurities in raw limestone (for cement) which can affect the properties of finished cement are magnesia, phosphate, leads, zinc, alkalis and sulfides. A large quantity of MDP is generated during the cutting process. Leaving these waste materials to the environment directly can cause environmental problem. Moreover, there is a limit on the availability of natural aggregate and minerals used for making cement, and it is necessary to reduce energy consumption and emission of carbon dioxide resulting from construction processes, solution to this problem are sought through usage of MDP as partial replacement of Portland slg cement. In India, MDP is settled by sedimentation and then dumped away which results an environmental

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An Efficient Scheduling of Flyover at Grade Intersection under Mixed Traffic Environment

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Abstract: *A flyover is a bridge constructed along an intersecting highway over an at-grade intersection. It allows two –direction traffic to flow at free flow speed on the bridge. The flyover is one of the methods for solving traffic problems at at-grade junctions on highways including capacity, congestion, long delay and queue length. Traffic signalization at the upgraded intersection often uses the same fixed time control plans, even after the installation of a flyover over the intersection. Most of the flyovers in India are constructed at the junctions on highway bypasses of big cities. The present work deals with a efficient scheduling of flyover at the grade intersection under the mixed traffic environment. From the results and the modeling carried out in the "SIDRA Intersection" software different points are observed. The present work consists of the Proposed Intersection at Rajkamal Square, Amravati.*

Keywords: *Flyover, Intersection, SIDRA and traffic performance*

I. INTRODUCTION

The flyover is a bridge constructed along an intersecting highway over an at-grade intersection. It allows two –direction traffic to flow at free flow speed on the bridge. The flyover is one of the methods for solving traffic problems at at-grade junctions on highways including capacity, congestion, long delay and queue length. Traffic signalization at the upgraded intersection often uses the same fixed time control plans, even after the installation of a flyover over the intersection. Most of the flyovers in Thailand are constructed at the junctions on highway bypasses of big cities. There are 52 flyovers in Thailand, excluding the ones in Bangkok and its vaciniy. Twenty nine of these flyovers are bridges constructed on one of the main highway over existing at-grade fixed-time control signalized intersections To assess the benefits of a flyover, a study case was chosen. It was an at-grade signalized intersection where two 4-lane highways intersect. The flyover was built along the intercity highway over the highway to the Hatyai airport (Fig. 1).

Fig.1: Case study location (near Hat Yai airport, Songkhla)

II. LITERATURE REVIEW

A. General

In the present work there are different research papers related to the efficient scheduling of the flyover at the grade intersection under the mixed traffic environment is studied. The research papers studied are properly observed and the work carried out by the authors are mentioned.

B. Literature Review

Murali Sambasivan and Yau Wen Soon in a research paper entitled "Causes and effect of delay in the Malaysian construction industry," reviewed an integrated approach and attempted to analyze the impact of specific causes and specific effects of project delays.

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Scheduling of Flyover at Grade Intersection for Amravati

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Abstract: ***This work concerns the effective planning of flight at the intersection of classes under a mixed traffic environment. From the results and simulations performed in the SIDRA Intersection software, different points are observed. This work consists of a proposed crossing in Rajamal Square, Amravati. The area is highly populated, and this place offers the need for a good quality intersection. The graph shows that the turn of the 95% of the worst lane of the car per year increases as the year increases. The maximum value is 0.011. The graph shows that the stopping speed, which is detected, decreases as the year increases. The minimum value of the stopping speed is 0.5485. The graph shows that productivity increases over time. The maximum value of the performance index is 0.36.***

Keywords: Flyover, Intersection, SIDRA and traffic performance

I. INTRODUCTION

The crossing of the bridge is a crossroads that has a special bridge built across the intersection at the level to ensure free flow in two directions on one of the main roads and to reduce congestion in both directions.

This has been seen, over the last few decades, due to increased income and lack of insufficient, a fast and reliable public transport system is increasingly switching to personal vehicles in most cities, leading to massive growth in the automotive population around the world. It is observed that every year the number of vehicles increases by chance. To deal with this situation, it is very difficult to provide additional land according to demand. An alternative arrangement must be provided to reduce or stop congestion. For this purpose, the design of the signal at the intersection or across the bridge or under the passage structure at this place is possible to replace. Bridge or under-pass design is provided after appropriate preliminary studies. But sometimes it is possible that at the end of the project the user may not get a fruitful result.

II. REVIEW OF LITERATURE

Parthumar K. Patel, Arvind M. Jane "Before and after studying the excess - a study of the case of crossing IIM-An."In this work, the author is working on a short-term study at the IIM-A intersection (Andajan Summer-Mandal Road) before and after the construction of the bridge across. And check the condition of the earth. Assess the performance of the bridge and the impact on traffic.

T. Patel, K. Dave, feasibility study and rapid construction of a flight at the Sahakari Zin intersection on NH-8, Himmatnagar. In this paper, the author checks the feasibility of quickly building Fly over at the intersection of sahakari Zin on NH-8, himmatnagar. He noted that the number of accidents occurs due to high vehicle speed, traffic delay, pedestrian risk, lack of a proper object, such as a symbol, signals and markings.

Arjun, L. Venkat, V. M. Naidu, "Economic feasibility and effective planning of a project for a flight to Visakhapatnam (India) In this article, the author mainly carried out the economic expediency of a flight to Visakhapatnam (India) between Maddilapal and satyam. Acquired benefits and cost of construction of the flight, feasibility study was made.

MuraliSambasivan and Yau soon considered a comprehensive approach in a research paper entitled "Causes and Consequences of Delay in the Malaysian Construction Industry" and tried to analyze the impact of specific causes and specific consequences of project delays. They identified the root causes and consequences of the delay in Malaysia's construction projects by conducting a properly designed survey of the questionnaire with clients, consultants and contractors. In addition, they identified ten key causes of delay and six important consequences of delays, and an empirical relationship was established between them.

From the above research papers it is observed that the proper and efficient scheduling is very much necessary at the grade intersection under the mixed traffic environment.

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ANALYSIS AND DESIGN OF RC BUILDINGS USING LATEST IS CODES FOR EARTHQUAKE AND WIND-A REVIEW

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ABSTRACT

High rise construction has become a necessity for the urban development. As the demand for multi-story structures has increased tremendously as a solution for the growing population and increased demand for the requirement of dwelling for the increased population. As the height of the structure increases the forces acting on the structure also increases along with the height of the building increases like wind and earthquake forces.

Wind load is one of the important design loads for civil engineering; it controls the structural design of the high-rise structures. Therefore knowledge of the dynamic characteristics of a high - rise structure under wind loading becomes a requirement in engineering design and in academic study. In high risk seismic zone the seismic performance of structures are considered as the primary importance on the other hand which influence seismic performance , may be the effect of impact forces resulting from earth movement greater than the forces caused by wind loads and consequently, Seismic loading determines form and final design of the structure.

Earthquakes and cyclones are unexpected events which cannot be predicted earlier. The only way to survive through this disaster is by taking careful considerations while planning and designing buildings in urban areas. A structure because of its height is affected by lateral forces due to wind or earthquake actions to an extent that they play an important role in the structural design. A high rise building has to resist to overturning moment and lateral deflection caused by lateral forces like earthquake and wind forces.

The aim of this project is to presents a study results of building modeling by using latest IS codes of earthquake and wind forces (IS 1893 part 1 2016 and IS 875 part 3 2015 respectively) on a RC buildings. It is very essential to consider the effects of lateral loads in the design of reinforced concrete structures. It determines the critical design loading for a multistory buildings subjected to different basic wind speeds (39, 44, 47, 50, 55 m/s) and earthquake zones (II,III,IV,V).

Keywords:

Response spectrum method, ETABS 19, STAAD.Pro CONNECT Edition

1. INTRODUCTION

Engineering principles and practices undergo constant experiments, innovations and improvements to suit the demands and required needs of the time. Every new code is a response to review of a prior failure. Natural and manmade disasters have revealed our underestimation of safety requirements and compelled us to formulate ways to improve. The addressal of experienced inadequacies, over the years, has led to evolution of codes. This has helped to prevent mass casualties arising out of structural failures, inadequate lighting, inadequate ventilation, fires, and flooding. As society moves forward, standard codes for civil structures shall continue to evolve too, reflecting the lessons learned about the materials used / practices followed and the way it is to be re-implemented. The code, being adopted as Standards by jurisdiction, may or may not be implemented with intent to serve as regulatory requirements.

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IMPORTANCE OF BIM IN CONSTRUCTION INDUSTRY -A Review

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Abstract – BIM is the digital representation of Building which is Divided in the three parts Architecture, Structure & MEP. Information Modeling (BIM) can be a beneficial platform for Structural Engineers. Also beneficial in construction Industry. The current state of BIM is analyzed, giving a general overview on how architectural, Structural Engineering and construction firms are applying it on their projects. Over the past decade the fields of civil engineering, structural engineering, have increasingly used the building information modelling (BIM) approach in both professional practice and as the focus of research. Structural engineering companies & Construction Company's currently have a series of deficiencies that hinder their processes and interactions, decreasing their productivity, lacking collaborative and interconnected processes, not including current work methodologies such as building information modeling (BIM).BIM methodology seeks to integrate processes and professionals involved in engineering tasks by working on platforms with coordinated and intelligent 3D virtual models. Over the past decade the fields of civil engineering, structural engineering, have increasingly used the building information modelling (BIM) approach in both professional practice and as the focus of research. However, the field of structural engineering, which can be seen as a sub-discipline of civil engineering, misses, as far as the authors are aware, a real state-of-the-art on the use of BIM in this regard to start bridging that gap. in structural engineering, enabling them to perform a detailed content analysis of publications.

The main aim of BIM is to enhance project performance and produce better outcomes. BIM helps the construction manager to gather data and information from the relevant disciplines and communicate them more effectively.

Key Words: *BIM, Revit, MEP.*

1. Introduction:

The use of new methods and software is one of the most important tools that structural engineers are using nowadays to stay competitive. Engineers are constantly looking for new ways to improve and keep the pace on today's economy, reaching to new heights in the aspects like productivity, coordination and problem solving. Building Information Modelling (BIM) can potentially help with these important aspects. The core feature that BIM offers is the ability to integrate intelligent objects in the model. These intelligent objects contain all the data regarding a specific component, from geometric characteristics to the way they interact with other components, making the entire model full of information

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Condition Assessment of Structure and Remedial Measures-A Review

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Abstract – Condition Assessment is one of the stages in the structural monitoring management which plays an important role in the maintenance and Re-strengthening of the structure. The main ambition of the paper is to give review about assessment of structures and past researches with reference to the assessment strategies adopted and monitored different structural elements and suggest the suitable remedial measure. The assessment strategy classified on the basis of types of structures, their functional uses, life span, the degree of deterioration, and their economical preservation. To adopt the suitable methods on the structure which is having issues regarding the functionality and adverse effects on the metabolism of the structure. The assessment plays an important aspect in the rehabilitation, repairs, and retrofitting techniques which is directly related to durability , strength, serviceability of structure.

Key Words: *Condition Assessment, structural monitoring, Re-strengthening ,metabolism, deterioration*

1. Introduction:

The structure such as buildings, water tank, bridges has specific function to perform in their life span. As maintenance is very crucial for smooth functioning of the structure. In the past years we have seen various structural integrity to loss their functionality before their utility life because of lack of maintenance and monitoring. To sustain the structure in diverse condition and to work smoothly during useful period, the term condition assessment plays an important role; it is the process of collecting, observing the information, data and systematically using them to evaluate the existing condition of the structure. Now a days, Assessment has been a major aspect to stabilize the integrity of the structure and proper functioning until the utility time period. Going into this paper we have review the past researches about the assessment, monitoring, retrofitting, restrengthing and repairs of the structure and the different techniques they have adopt for monitoring and Re-strengthening. We have mentioned the past researches with typical site condition and the techniques they have adopted for the assessment of structure and certain remedies towards it. The review has given us the boost to build towards advancements in the methods of assessment and measure to adopted for restoration of structure.

2. Brief Literature Review:

1. **Sahaduta Linggar, Akhmaad Aminullah and Andreas Triwiyono " Analysis of buildings and its components assessment case study of dormitory buildings":** The researchers explained that the condition assessment is one of the vital stages in assets management. The authors explains that the inter building performance can be evaluated by comparison with the other building ,while intra-building evaluation is the performance evaluation of the building by self- assessed without any reference. The author has taken two models as dormitory building and Gadjah Mada University for assessment which they have divide in 6 different

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Simplified Solution of Precast Structural Element in Residential Building in India: A Review

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Abstract:

Let us discuss briefly about the precast construction technology from the India's point of view. It is the principal moto of this paper. India being a densely populated country and running under progress, housing is an important issue. Though India is known as the country of villages, urbanization is a main concern. The urban population in the year 2015 is reported 434 million and by the year 2031 outburst is expected to about 600 million. Need for shelter/ houses in urban is and will rapidly increase. Census 2011 states that 13.7 million people/families living in slums. Identifying the need of housing in urban areas it is necessary to meet the same being the primary to meet the same being the primary need. Civil engineering has a great challenge to overcome the situation by providing economical, high quality and energy efficient buildings with the use of developed technologies. At present precast construction technology has the potential to meet the challenge to produce economical, quality and energy efficient fast up housing solutions/ accommodation. This study based on identifying the challenges faced by the precast technology under local construction market in India. This study also presents a research gap in the area of precast technology in local construction market in India. Also to proposed future scope of work in this area.

Keywords: Precast Construction, Precast Stair Case, Precast Member etc.

I. INTRODUCTION

A finished precast structure element is made available at the site of construction which simply has to be erected to form the designed civil work. Before reaching at the construction site it has to undergo a disciplined production procedure at the factory. In the precast factory batching, testing, rebar work are the aspect to be focused to produce superior precast concrete member like pipe, culverts, facades, retaining walls, stadium and buildings. [4]

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RETROFITTING TECHNIQUES FOR REINFORCED CONCRETE STRUCTURAL MEMBERS USING DIFFERENT MATERIALS - A REVIEW

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Abstract

In the current situation, concrete building deterioration is a global issue. There are numerous reasons for this, including the occurrence of natural hazards such as earthquakes, a lack of awareness of several critical and essential codal rules in construction, insufficient supervision, and so on. These factors result in structures that are weak. Overloading structures can result in significant deformations and corrosion, which require immediate treatment. Repair, retrofitting, and strengthening are periodically required actions in the construction business today to overcome all of these effects on reinforced concrete structures. Even newly constructed structures may require repair and strengthening in order to address faults caused by design or construction errors. Damaged structural elements caused by unexpected events such as fire, earthquake, foundation movement, impact, and overload require specialised strengthening, increasing the strength, and restoration techniques.

Retrofitting is one of the most effective ways to make a current insufficient structure safe from future earthquakes or other natural disasters. Retrofitting decreases the risk of damage to an existing structure due to seismic activity in the near future. It tries to reinforce a structure in order to meet the requirements of contemporary seismic design codes. In recent years, a significant amount of research has been done to create various strengthening and rehabilitation procedures to improve structural seismic performance. This paper intends to provide an overview of many innovative and cost-effective local retrofitting strategies for strengthening damaged structures.

Keywords *– Retrofitting, Strengthening, Restoration*

1. Introduction

Any structures or buildings may show some sign of distress during their service period and also under the effect of natural calamity like earthquakes, etc. The safety of these buildings is of great concern especially because the loss of most of the lives during collapse of buildings has been reported in the past. The most of the old buildings made of stone masonry/ brick masonry are in existence and require adequate maintenance. At present, most of the buildings are being constructed in Reinforced Cement Concrete, which is assumed to be more durable and stable. The new materials and techniques in the field of construction and maintenance are developed and adopted in strengthening of existing buildings.

Many existing buildings do not meet the seismic strength requirements due to design inadequacy

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Implementation Paper - Eye Movement Recognition based Human Machine Interaction System

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Abstract: ***A new revolution is occurring recently within the field of human computer access. Since the inception of the desktop, other companies have spent millions, and are still doing so, to develop highly attractive GUIs and state-of-the-art communication systems for the typical user. This eye-catching system may be a system for people with natural disabilities who can operate this method with their own eyes. Where we all feel blessed to be able to operate computers easily with our hands. But within the case of paralyzed patients, whether or not they are doing not have movement and speech***
The brain and vision are functional, they can not use their intelligence and remain unemployed. Thus, your ophthalmic system helps to resolve this problem.
Keywords: Interaction systems, Eye Gaze system, Speech synthesize

I. INTRODUCTION

Eye contact could be a technique that's utilized in a range of fields, including neuroscience, psychology, scientific discipline, human-computer interaction, and more. However, the earliest use has focused on using eye-trackers to review the cognitive processes of the brain. , The concept of using a watch tracker as an device for computer control is one in every of the less studied areas of research, which has focused totally on helping people with motor impairments who don't seem to be hands-on alternatives. is used as an eye fixed. there are differing kinds of eyes gazing methodologies available but most of them is pretty uncomfortable for the user. A more invasive technique involves placing a contact lens with a magnetic coil against the user's cornea and adhering it in place with suction.

II. LITERATURE REVIEW

1) The existing system such that the interaction amongst the computer and human is carried out with eye-tracking and blink-detection. In this concept, human computer interface system exists which tracks the direction of the human eye. The particular motion and the direction of iris is employed to drive the interface by positioning the mouse cursor consequently. The location iris is completed in batch mode. Here the frames are stored in a permanent storage device and are retrieved one by one. Each of the frames is processed for finding the location of the iris position and there by placing the mouse cursor consequently. Such a system that detects the iris position from still images provides an alternate input modality to facilitate computer users with severe disabilities.
2) In this paper, an individual human computer interface system using eye motion tracking is introduced. Traditionally human computer interface uses mouse, keyboard as an input device. However, the proposed vision-based virtual interface controls system work on various eye movements such as eye blinking. The planned virtual multimodal interface system provides vision-based mechanism, to convey between human and computer system, instead of conventional human computer interaction through mouse and keyboard. For motion tracking, recognition of eye is explored through an optical flow technique. To minimize the error caused by light variation, histogram equalization and max-min normalization is used to improve every frame. An innovative system for user-computer interaction based on the user's eye-gaze behavior.
3) In this paper we roughly describe some representative studies in the field of eye tracking, covering some aspects regarding different types of devices, algorithms for pupil detections, image processing or data filtering and also some well known applications in assistive technology, human computer interaction, virtual reality, psychology or eBlearning. As a general tendency we can conclude that in the future eye tracking approaches will be a hot subject for researchers. It is argued by some traditional conferences, international projects, books and scientific papers and technical reports. For example, held once every two years, Eye Tracking Research & Application (ETRA) Conferences join together companies and researchers involved in eye tracking technologies and highlightnew hardware and software solutions.

Covid19 Prediction Model with Hybrid Approach: A Review

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I. INTRODUCTION

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II. LITERATURE REVIEW

[illegible]

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Detect Misinformation Using Two Stage Semantic Extractor Based On Neural Network Classification

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ABSTRACT

The tremendous use of social media is the one of the important cause of generation of huge quantity of data. Analyzing this huge data is very important to get insights from the data and apply to solve real life problems. There is no accurate medium to check the semantics and authentication of data being generated. Any user of social media can post whatever they think according to their own perspection and opinion as well as user share the information without checking the authenticity, that is impacting societ in various ways. Many researchers are using Artificial Intelligence based algorithms which gives idea of detecting misinformation(commonly refereed as Fake News) potentially. Many of this techniques rely on the dataset being chosen to solve the problem. They mostly designed based on the direct feature. Understanding context with respect to its semantic is very necessary. Thus to overcome, this paper introduces Two Stage Semantic Extractor based Neural Network Method (TSENNM). According to experimental results, the proposed model obtained an good accuracy when compared with the previous model.

Keywords: Artifical Intelligence, Deep Learning, Fake news, Misinformation, Neural Network, Semantic Feature extraction.

1. INTRODUCTION

Today every mobile consumer is using social media due to its easy accessibility and less cost. Every real time application is connected or appended with social media [1]. As social media become core part of everybody's life, people used to share their thoughts, ideas, opinion, daily activities on social media. With this sharing of own things, people used to share forwarded information as well. Journalist or news channels are also posting the current affairs over social

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Implementation Paper - Eye Movement Recognition based Human Machine Interaction System

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Abstract: Eye movement is becoming more popular day by day for the development of human computer interaction. Many disabled people are unable to communicate with others, and are unable to express their thoughts and emotions. Eye tracking is the most important technique for the human computer interaction system. Eye movement tracking system may be very helpful for people with various physical disabilities to communicate with others. Human eye gaze direction is the most significant non-verbal communication channel in human interaction. Eye gaze tracking is an important research problem in the area of human computer interaction. It has a wide range of applications, such as human behavior analysis, psychological research, and usability studies.
The basic idea behind eye gaze tracking is to measure the point where the user's eyes are looking. There are various techniques for eye gaze tracking.
Keywords: Human Computer Interaction, Eye Movement, Eye Gaze Tracking

I. INTRODUCTION

Eye movement tracking is a technique that is utilized in a range of fields, including communication, psychology, education, human-computer interaction, and more. However, the accuracy of eye tracking systems is critical to the success of these applications. The concept of using eye movements to control devices for computer input is not a new one. Many of the early systems developed were intrusive, requiring people with disabilities to wear special hardware, such as head-mounted devices or electrodes placed around the eyes. These systems were often uncomfortable to use and could cause fatigue or discomfort over time. However, with the advancement of technology, researchers have been able to develop more sophisticated and non-intrusive eye tracking systems that can be used by people with disabilities in a variety of settings.

II. LITERATURE REVIEW

a. The existing system is such that the interaction between the computer and human is carried out with the help of keyboard and mouse. In the computer human interaction system which includes the use of the human eye. The pupil detection and the direction of which is employed to drive the interface by performing the mouse cursor accordingly. The interface is then programmed to perform the mouse functions. The functions are controlled by the human eye movements. The left eye blink is used to perform the left click of the mouse. The duration of the blink is measured and is used to differentiate between the left click and the double click of the mouse. The right eye blink is used to perform the right click of the mouse. The right click is performed by closing the left eye and opening the right eye. The double click is performed by closing the left eye for a longer duration than the left click. A graphical user interface is designed which consists of a set of icons which can be selected by the eye movements. The user is first trained to use the system. The training module helps the user to get familiarized with the system. The user is trained to perform the various mouse functions like the left click, right click, double click, cursor movement, etc. The accuracy of the system is found to be satisfactory.

b. In this paper, we propose a novel eye tracking system that can track the movement of the eye in real-time using a low-cost webcam. The system is designed to be easy to use and can be used by people with disabilities who may have difficulty using traditional input devices such as a mouse or keyboard. The eye tracking algorithm is based on the detection of the pupil and the corneal reflection, which are used to calculate the gaze direction. The system is calibrated using a simple procedure that requires the user to look at a series of points on the screen. The calibration data is used to map the gaze direction to the screen coordinates. The system is evaluated using a series of experiments that measure the accuracy and precision of the eye tracking algorithm. The results show that the system can track the eye movements with an accuracy of less than 1 degree of visual angle. The system is also shown to be robust to changes in lighting conditions and head movements. The proposed system has the potential to be a useful tool for people with disabilities who may have difficulty using traditional input devices. The system is also relatively low-cost and easy to set up, making it accessible to a wide range of users. Future work will focus on improving the accuracy and robustness of the system, as well as exploring its potential applications in various domains.

c. In the paper we propose a novel eye tracking system that can track the movement of the eye in real-time using a low-cost webcam. The system is designed to be easy to use and can be used by people with disabilities who may have difficulty using traditional input devices such as a mouse or keyboard. The eye tracking algorithm is based on the detection of the pupil and the corneal reflection, which are used to calculate the gaze direction. The system is calibrated using a simple procedure that requires the user to look at a series of points on the screen. The calibration data is used to map the gaze direction to the screen coordinates. The system is evaluated using a series of experiments that measure the accuracy and precision of the eye tracking algorithm. The results show that the system can track the eye movements with an accuracy of less than 1 degree of visual angle. The system is also shown to be robust to changes in lighting conditions and head movements. The proposed system has the potential to be a useful tool for people with disabilities who may have difficulty using traditional input devices. The system is also relatively low-cost and easy to set up, making it accessible to a wide range of users. Future work will focus on improving the accuracy and robustness of the system, as well as exploring its potential applications in various domains.

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Covid19 Prediction Model with Hybrid Approach: A Review

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Abstract: *Several medical specialty models are getting used round the world to project the number of infected people and therefore the mortality rates of the COVID-19 eruption. Advancing correct prediction models is of utmost importance to take correct actions. Because of the dearth of essential data and uncertainty, the medical specialty models are challenged relating to the delivery of higher accuracy for long prediction. As an alternate to the susceptible-infected-retrieval (SIR)-based models, this study proposes a hybrid machine learning approach to predict the COVID-19.This Paper presents hybrid approach for Covid-19 prediction.*

Keywords: *machine learning; prediction model; COVID-19; CNN; Hybrid Approach;*

I. INTRODUCTION

The World Health Organization (WHO) and therefore the global nations confirmed the corona virus ur-wellness to be extraordinarily contagious [2,3]. The COVID-19 pandemic has been well known as a public health emergency of international concern [4]. To estimate the occurrence, determine the height before time, and additionally predict the end-rate, medicine models have been wide employed by officers and media. outbreak prediction models have shown to be basic to produce insights into the damages caused by COVID-19. moreover, the prediction models are used as a relevance build new policies and to judge the conditions of carrier [5]. The COVID-19 pandemic has been reportable to be extraordinarily aggressive to spread [6]. Due to the uncertainty and complexity of the COVID-19 this paper presents hybrid approach for covid-19 prediction in which feature extraction is done with GLCM Algorithm. And then hybrid approach is used in which CNN and SVM are used for COVID-19 Prediction. After that accuracy score get calculated.

II. LITERATURE REVIEW

Time series models will play a vital role in surveillance prediction. Incidence knowledge is the longer term product data prevalence of recordable events. Developments in modeling approaches give a chance to match totally different statistic models for prognostic power. Michael J Kane et al [1] applied ARIMA and Random Forest time series models to incidence data of outbreaks of highly pathogenic avian influenza (HPAI) in Egypt, available through the online EMPRES-I system. they found that the Random Forest model outperformed the ARIMA model in predictive ability. Furthermore, they found that the Random Forest model is effective for predicting outbreaks of HPAI in Egypt

Deepak Gupta et al [2] presents associate optimized cuttlefish algorithm for feature choice supported the standard cuttlefish algorithm, which may be used for diagnosing of Parkinson's surveillance at its early stage. Parkinson could be a central system disorder, caused because of the loss of brain cells. Parkinson's surveillance is incurable and will eventually result in death however medications will facilitate to regulate symptoms and alongside the patient's life to some extent. The proposed model uses the standard cuttlefish algorithm as a good strategy to establish the best set of options. the choice tree and k-nearest neighbor classifier as a judgment on the chosen options. The Parkinson speech with multiple kinds of sound recordings and Parkinson Handwriting sample's datasets are accustomed evaluate the proposed model. The proposed algorithm may be utilized in predicting the Parkinson's surveillance with associate accuracy of roughly ninety four and facilitate individual to own correct treatment at early stage. The experimental result reveals that the proposed bio-inspired algorithm finds associate optimal subset of options, increasing the accuracy, minimizing variety of options chosen and in additional stable.

In [3] Isra Al-Turaiki et al built several models to predict the stability and recovery of MERS-CoV infections. Their models were built using Naïve Bayes and J48 decision tree classification algorithms. The decision tree recovery model indicated that persons who are healthcare personnel are more likely to survive. The age attribute was found to be vital in predicting the soundness of the patient. Previous patients with ages between sixty six and eighty seven are a lot of probably to suffer from crucial complications.

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Social Distancing Measurement and Alert System Equipment

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Abstract:- Social isolation is important in stopping the spread of infectious diseases and covid-19. This project aims to provide a holistic development in which emerging technologies e.g., wireless and networked ai can empower promote and enforce social isolation in order to do that we provide a foundation for social isolation that incorporates basic concepts values and models and raises real-world situations. We then discussed allowing more efficient and widely accepted wireless technology to keep distances and monitor people emerging technology that combines gadget efficiency laptop imaginative and prescient laptop thermal ultrasound opens up many new answers and guidelines to address the problems of social exclusion.

In view of the problem-solving requirement, we have developed a software-based system where our system camera will be able to take various pictures and scan and send them to the user for testing if there is no appropriate public distance to record the system will issue a warning to the user.

Keywords:- *Social distancing, AI, machine learning, computer vision.*

I. INTRODUCTION

Covid-19 has completely changed the courts perception of the epidemic to adversely affect global economic stability in addition to the global health crisis covid-19 was also causing significant economic losses.

Social reduction refers to measures that reduce the spread of disease by reducing the frequency and intensity of physical contact as well as the closure of public spaces when used by the government in the early stages of a deadly disease social schemes can play an important role in reducing the number of infections and reducing the incidence of the disease during the ongoing covid-19 epidemic many governments have resorted to various forms of public interference including travel restrictions border controls public storage areas and warning their citizens to cover a distance of 15-2 meters from each area if they need transportation outside the doors however these aggressive and major measures are not easy to implement in those cases technology plays an important role in helping to divide society for example wireless stopping systems can effectively help people maintain a safe distance by measuring distances between people and warning them when they are very close to others in addition different technologies incorporating artificial intelligence ai technology may be used to facilitate or implement social isolation.

II. OBJECTIVES

A. Creating System

To create a complete system to detect, recognize and find the violation through computer vision. In this project the aim is to create a complete system which has a capability to detect recognize and find the violation provided to the computer vision and recognize its distance that it is smart enough to convert the input field which is being provided to the webcam and convert it into its corresponding value this can be carried out by the following libraries. corresponding value this can be carried out by the following libraries.

B. Recognizing the image

To provide a new low-cost, high speed and color image acquisition system that will recognize the image and give the box shape to the resultant images which has a capability to give alert corresponding on violation.

III. RELATED WORK

The article robust real-time object detection [2] is the most frequently cited article in a series of articles with the help of the viola that actually makes face detection possible invariant multi-image face detection is basically based on real adaboost 3 for primary-time real adaboost applied to element detection and proposed a more mature and sensible multi-face detection framework slot structure is cited in cascading upgrades also has the right effects of low-frame cost object various life tracking video cascade particle filtering scopes with distinctive observers within the range of styles is a good combination of 4 face detection version and tracking offline version and online version and cvpr 2007 achieved a satisfactory academic paper the main goal is to find the position and size of each face it is also important to decide on the correspondence between the image or video but unusual f aces in the body for tracking.

Zhu A, Wang T, Qiao T [8] proposed a deeper hierarchical version for the discovery of more than one human body. This version uses a convolutional neural network (CR-CNN) with multiple conversion capabilities to place local people above the context records from the image and has an accuracy of up to 86%. Studies presented in the literature show that object discovery is critical to PC thinking and science due to the frequency of sensible use cases, e.g., facial detection, pedestrians, detection, hobby, clinical photography, and so on. This paper has extended the acquisition of the object in order to reduce the apparent spread of COVID-19. as a result, we aim to increase the distance learning resource between people using the raw material detector. surveillance, that is, tracking social

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Fake News Detection using Machin

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Abstract: **Most smart phone users prefer to read news stories through online forums. The news websites are publishing the news and provide the source of validation. The question is how the stories and articles that are distributed on social media such as what's App groups, Facebook pages, Twitter and other small blogs and social media sites are authorized. It is dangerous for the society to believe on the rumors and pretend to be news. The necessity for an hour to prevent rumors especially in developing countries like India, and to specialize in fair, proven issues. This paper deals with the revision of existing machine learning algorithms like Naïve Bayes, Logistic Regression, Support Vector Machine proposed to detect and reduce false information from various social media platforms. This paper provides a comparison of the results of existing fake news detection methods using different algorithms of machine learning.**

Keywords: **Artificial Intelligence, Machine Learning, Naive Bayes, SVM, NLP, LR, Fake news detection.**

1. Introduction

Fake News is one of the most controversial stories that has attracted attention over the past year. The media reports that social media has played a key role in the outcome of the 2016 US elections. Propaganda, conspiracy theories and other myths have been widely used in the media for the second time as political gain and ideological fraud. Clearly, social media is a powerful tool for spreading lies. Modern life has become much more relevant and people around the world should appreciate the great contribution of internet technology to the transmission and sharing of information. There is no doubt that the internet has made our lives easier and access to more information has worked. This is an evolutionary process in human history, but

(image recognition, voice
hardware is cheaper and larg

Although many false stor
entertainment purposes only
truth of these stories and cha
It is therefore very difficult f
of stories whether they are is
for any other purpose. That
such a model that can easily
that readers are not distracte

2. Rel

[1] It shows a simple techn
Naive Bayes classifier. Th
software system and tested a
posts. The authors achieved
74% on the test set which
relative simplicity of the mo

[2] It provides an ideal
developing and illustrating th
which copies the format a
Satirical news stories were
contrast with their legiti
contemporary news topics
business, and "soft" news).
based algorithm, develope
(Absurdity, Comedy, Gr
punctuation) and tested their
Their best predicting feature

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Employee's Performance Analysis and Prediction Using Random Forest Algorithm

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ABSTRACT: The employee data are evaluated for giving promotion, yearly increment and career advancement. Main objective is to evaluate the performance of employee. In this project we will concentrate on collecting data about employees, generating an algorithm from historical data, testing the algorithm with attributes of an employee and generating the output as whether to give the promotion or not. The information about an employee is collected by using [illegible]. This information is compared with the trained data stored in the algorithm. The final goal is to determine whether the employee will get yearly increment, promotion or not.

KEYWORDS: Employee Performance Evaluation; Employee Performance Analysis; Performance Prediction; Random Forest Algorithm; Employee Promotion.

I. INTRODUCTION

Most organizations or companies have a formal performance appraisal system where staff performance is scheduled regularly, usually once or twice a year. A performance appraisal system can greatly benefit an organization. It assists the employee in [illegible] within the organization's objectives by allowing employees to know what is expected of them, and provides information on employment decisions, such as those relating to salary, promotions or dismissals. An employee can improve their performance by monitoring the progress of their work. Machine Learning algorithms such as the decision tree of the data mining method can be used.

The decision tree is used to make the right decision for the Project. Based on the results of the [illegible] whether further training, other certifications or other qualifications are required or not. With the growth [illegible], the results of the work done have been very satisfactory. In line with [illegible] the organization will function better due to the high staff engagement that has been built in the individual [1]. Findings [2] state that with the creation of high employee engagement, performance will increase, then working people will voluntarily provide additional service to their customers. Similarly, the findings [3] reveal that employee [illegible] improve individual performance, and people who feel busy in their work will be encouraged to provide additional services [illegible].

The current system for determining staff performance is a manual. Staff performance appraisal is usually determined by senior management. If the authorities are biased, the employee will never be promoted. Therefore, to make this process automated, we have developed a system to monitor the performance of employees online in terms of

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A SMART HEALTHCARE RECOMMENDATION SYSTEM

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ABSTRACT

In this paper, we proposed Healthcare Recommendation System. We proposed two different recommender systems. First is to recommend symptoms wise trustworthy hospitals and second is to recommend treatments of the users who are satisfied with their treatments having similar health profile of the registered users. It is very difficult to find out appropriate hospital on the basis of symptoms for general public, but it is very important to find out appropriate hospital in case of emergency. Therefore, to solve this issue we proposed symptoms wise trustworthy hospital recommendation module. In this recommendation module we will use reviews and ratings given by other patients to the hospitals as well as the treatment details feed by the hospital administrator. Treatment Recommendation for chronic diseases is recommendation module, in which users will enter their chronic diseases and treatment details as well as current health status for other users. To recommend treatment on chronic diseases we proposed content-based filtering using decision tree algorithm. Decision tree algorithm will use user's profile to recommend better treatment, doctors and hospitals.

Keywords: *symptom based searching, treatment recommendation, health status prediction, clinical test data, ratings, reviews*

1. INTRODUCTION

Today, information technologies have led to number of innovations and developments in number of fields. In this context, Recommender systems (RS) have been a cutting-edge development in the service industry. In the case of web-based services, RS aims to increase reachability of products and to provide alternatives for potential customers. In this context, recommender systems for medical use should be implemented to bridge these gaps and support both patients and medical professionals, to make better healthcare-related decisions. Recommender systems have been integrated into online retailers, streaming services, and social networks to facilitate users item selection process. Recently, these systems have been widely applied to the healthcare domain (so called Health Recommender Systems - HRS) to better support medical suggestions. Many variances of RS have been used in online stores and it is substantially being adopted by many organizations on the web.

HRS offer a better personalization that increases the details of provided recommendations and improves user's understanding of their medical condition. These systems also provide patients with a better experience, improve their health condition, and motivate them to follow a healthier lifestyle. Moreover, they also assist healthcare professionals with disease predictions/treatments. In health services, information systems have assisted to optimize decision making processes and to increase effectiveness of communication channels and infrastructures, such as ERP systems. In the health industry, RS has a significant role in terms of assisting decision making processes about individuals' health.

2. OBJECTIVES

Following are the main objective of health recommendation system:

- To develop an online healthcare recommendation system.
- To implement content based filtering approach for recommendation.
- To implement Symptoms wise trustworthy hospitals Recommendation.
- To implement Decision tree algorithm for treatment recommendation.

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DESIGN FRAMEWORK OF REALTIME COVID-19 ALERTS AND TRIGGER

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ABSTRACT

In this paper, we proposed Design framework of realtime covid-19 alerts and trigger. This design framework proposes a framework about coronavirus alerts which frequently notifies people about the spread of coronavirus. It provides notification which

contains information about the current covid-19 cases, discharged cases , total number of cases and total number of deaths due to this infectious disease. Corona virus tracking is essential for health management organizations and individuals as well to be updated with

the information. Therefore , as the need to provide frequent updation about covid-19 is sure we decided to propose a system which gives alerts to user and hence there is no need for user to visit other website and check again and again for covid-19 cases .As they will get automatic notifications after certain time interval. The proposed system uses Machine learning together to combat the spread of Coronavirus.Alerts are enabled by the user and are triggered after certain time interval. System alerts are system events that have passed a pre-defined threshold and that provide Services that contain information about the spread of covid. Thus for tracking the covid-19 cases and using the latest technology as better alternative instead of checking the current covid-19 cases again and again.

Keywords: *Machine learning, covid-19, Safety , Alerts and trigger, Health management,Virus tracking*

1. INTRODUCTION

Corona virus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus.The virus can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, speak, sing or breathe. These particles range from larger respiratory droplets to smaller aerosols. Anyone can get sick with COVID-19 and become seriously ill or die at any age.COVID-19 deaths are a key indicator to track the evolution of

the pandemic. However, many countries still lack functioning civil registration and vital statistics systems with the capacity to provide accurate, complete and timely data on births, deaths and causes of death. A recent assessment of health information systems capacity in 133 countries found that the percentage of registered deaths ranged from 90% in the European region to only 10% in the African region.Countries also use different processes to list and report COVID-19 deaths, making comparisons difficult. To overcome these challenges, many countries have turned to excess mortality as a more accurate measure of the true impact of the pandemic.

In many cases, medical science and medicaments have prevailed over diseases through knowledge, expertise,capacity and medicaments applied to disease management. Through the integration of technology in the sportsmen, instrumentation and control campaigns, robust systems including those with real-time capabilities have been developed and implemented across different socioeconomic sectors of the global society including the health sector. In the area of public health management, medical alert system have been developed to manage patients . Using these platforms, information dissemination, disease prevalence and position tracking of carriers, confirmed carriers and status of treated patients could be easily managed. Coronavirus notification system will help you to easily get updated about the latest information.

2. OBJECTIVES

Following are the main objective of Design Framework of Real Time covid-19 alerts and trigger.

To develop a system that helps people to save time

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Detect Misinformation Using Two Stage Semantic Extractor Based On Neural Network Classification

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ABSTRACT

The tremendous use of social media is the one of the important cause of generation of huge quantity of data. Analyzing this huge data is very important to get insights from the data and apply to solve real life problems. There is no accurate medium to check the semantics and authentication of data being generated. Any user of social media can post whatever they think according to their own perspection and opinion as well as user share the information without checking the authenticity, that is impacting societ in various ways. Many researchers are using Artificial Intelligence based algorithms which gives idea of detecting misinformation(commonly refereed as Fake News) potentially. Many of this techniques rely on the dataset being chosen to solve the problem. They mostly designed based on the direct feature. Understanding context with respect to its semantic is very necessary. Thus to overcome, this paper introduces Two Stage Semantic Extractor based Neural Network Method (TSENNM). According to experimental results, the proposed model obtained an good accuracy when compared with the previous model.

Keywords: Artifical Intelligence, Deep Learning, Fake news, Misinformation, Neural Network. Semantic Feature extraction.

1. INTRODUCTION

Today every mobile consumer is using social media due to its easy accessibility and less cost. Every real time application is connected or appended with social media [1]. As social media become core part of everybody's life, people used to share their thoughts, ideas, opinion, daily activities on social media. With this sharing of own things, people used to share forwarded information as well. Journalist or news channels are also posting the current affairs over social

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A Survey on Wireless Sensor Networks, Challenges, And Application

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ABSTRACT

Wireless sensor networks (WSNs) consist of several sensor nodes that may be deployed in relatively harsh and complex environments. Regarding cost, sensor nodes always adopt relatively cheap chips, which make these nodes error-prone in the course of their operation. Various natural factors, as well as electromagnetic interference, could also influence the performance of the WSNs. When sensor nodes become faulty, they may die which means they cannot send data to other members in the wireless network, or they may be alive but gives incorrect data or they may be unstable jumping between the normal state and faulty state. Many studies have focused on fault diagnosis to improve the quality of data, shorten response time, strengthen network security, and prolong network lifespan. This paper presented the study on wireless sensor networks with challenges and their application.

1. INTRODUCTION

A wireless sensor network (WSN) is defined as a group of devoted and isolated sensors for monitoring as well as recording various physical conditions of the environment and placing the resultant collected data in a central place [1]-[2]. WSNs evaluate environmental conditions like sound, temperature, pollution levels, humidity, wind, and so on.

WSN is an interesting area of networks consisting of low-power wireless sensor nodes for high-quality sensing of the environment. The development of wireless sensor networks was aggravated by military applications like battlefield surveillance. In the early days, setting up a WSN required very expensive and sophisticated equipment. Hence, these were used only for selective and crucial applications. However, the advancement of technologies like micro-electro-mechanical systems (MEMS) [1], wireless communication, and low-cost manufacturing techniques have made WSNs economically affordable, small, and manageable. As a result, nowadays, the WSNs are being used in a variety of applications such as many industrial and

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Facial Emotion Detection of children Using Machine Learning

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Abstract- Facial Emotion Detection is a technique for detecting human emotion through facial expressions. Autism Spectrum Disorder is a neurobehavioral disorder with a wide range of symptoms. Autistic people are unable to communicate socially in this state. The behaviours of autistic people are inflexible and repetitive. Autism affects people's ability to recognise emotions. The goal of this project is to use a machine learning algorithm to track and identify persons with autism spectral disorder. demonstrate a novel approach for recognising facial expressions in youngsters with autism spectrum disorders. In this work, five emotions have been recognized from face like sad, angry, happy, Disgust, and surprised. In proposed work, three important methods have been used like LBP and HOG for feature extraction, and Ensemble Random decision machine learning algorithms for classification of emotions. Large dataset of autistic person has been utilized for proposed work implementation. From result simulation, it has been seen that proposed algorithm has provided good results in terms of Accuracy. We achieved the accuracy near about the 86.6% by using proposed emotion recognition system for autistic database.

Keywords- Machine Learning Algorithm, Facial Emotion Detection, Ensemble Random Decision, Emotion Recognition System, Autism Spectral Disorder

I. INTRODUCTION

Human emotion detection is used in a variety of situations when extra security or knowledge about the person is required. It can be viewed as a follow-up to face detection, in which we may be needed to implement a second layer of security that detects both the face and the emotion. This can be used to ensure that the person in front of the camera is not merely a two-dimensional depiction [1]. Another key arena where emotion detection is crucial is in business promotions. The majority of businesses rely on client responses to all of their products and services to survive.

Machine learning algorithms have proven to be very useful in pattern recognition and classification. The features are the most critical parts of any machine learning algorithm. We'll look at how features are extracted and updated for algorithms like Support Vector Machines [1] in this study. Different articles' algorithms and feature extraction strategies will be compared. The human emotion dataset can be used to investigate the robustness and nature of classification algorithms, as well as how they perform for various dataset types.

Face detection methods are usually applied to the image or video frame before extracting features for emotion identification. The steps for detecting emotions can be summarised as follows:

1) Dataset pre-processing
2) Face Detection
3) Feature Extraction
4) Classification based on the features

This study focuses on recognising children's emotions based on their facial expressions. We focused on five different emotions. Sad, glad, neutral, fearful, and angry are some of these emotions. Image processing and machine learning methods are used to detect children's emotions. We'll use textural features from each component of the face, such as the lips, eye, and overall face, to extract the feature. Autistic children's emotions are classified using ensemble random decision machine learning algorithms.

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II. RELATED WORK

Charvi Jain et. al. [1] The elements that affect face expression are sad, glad, disgust, surprise, fear, and anger. The goal of this work is to detect faces in any image, extract facial features (eyes and lips), and categorise them into six different emotions (happy, fear, anger, disgust, neutral, sadness). The training data is run through a number of filters and processes before being classified using a Support Vector Machine (SVM) and improved with Grid Search. The testing data is then tested, along with their labels, and the correctness of the testing data's classification is reported in a classification report. For better data categorization, many procedures are used, such as running the training images through a Gabor filter or modifying images using Histogram of Oriented Gradients (HOG) and Discrete Wavelet Transform (DWT). Passing the training images through Histogram of Oriented Gradients (HOG), then characterisation with SVMD, has yielded the greatest results so far.

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Image Retrieval Based on CBIR and SVM Classifier

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Abstract

In modern age, Content Based Image Retrieval system is used for retrieving the images from web pages. In order to retrieve an image; three visual features may help, that are color, texture and shape. Image retrieval system is used to search images from database that are content fully same as that of query image. The substantial method that help in the retrieval of images from a large database is the Content Based Image Retrieval (CBIR) with SVM. In proposed scheme, CBIR approach along with Support Vector Machine algorithm is used for retrieval. Proposed method has been provided higher accuracy with the help of SVM classifier.

Keywords

Content Based Image Retrieval, Support Vector Machine, HSV, GLCM.

I. INTRODUCTION

An image retrieval system is a computer system used for browsing, searching and retrieving images from a large database of digital images. Content Based Image Retrieval is the best technique to get relevant images with higher accuracy. CBIR will be provided extensive research into image retrieval systems. In CBIR image-based search is used instead of text-based search. Image retrieval systems was to search through a database to find images that are similar to a query image. Most proposed CBIR techniques [1, 2] automatically extracted low-level features that are color, texture, and shape to measure the similarities among images by comparing the feature differences. Color, texture and shape features have been used for describing image content. Content of query image is same as images have to be find, image retrieval systems tried to search through a database. Color histogram, color correlogram as conventional color features are used in CBIR. To represent color in terms of intensity values, a color space is defined as a model. Texture is a key part of human visual perception. Everyone can identify texture, but it is more complicated to define. Unlike color, rather than at a point texture occurs over a region. It is usually perceived by intensity levels. Commonly, the shape features are different from other elementary visual features such as texture or color features and the shape carries semantic information. Ultimately, shape features can be classified as region-based and boundary-based. Implementation of CBIR system which is based on dominant color, shape and texture.

This method [1] yielded average recall with reduced feature vector dimension and higher average precision. An effective color image retrieval scheme for combining all the three i.e. texture, shape, and color information, which achieved higher retrieval efficiency is presented in [2]. By using fast color quantization with clusters combining, the image is pre-set, and then a small number of dominant color and their percentages can be obtained. Trademark image retrieval (TIR) system is projected in [3] to deal with the immense number of trademark images

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Effective Content Based Image Retrieval Technique using Color and Texture Features

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Abstract

To find an image from large database is implemented by CBIR technique. An image has three main features such as color, texture and shape. The proposed scheme is effectively searching images by using feature extraction. Dominant color descriptor is used in image indexing and dominant color extraction. By using Gray Level Co-occurrence Matrix (GLCM), texture of an image is obtained. Color and texture features are normalized. Using Gradient Vector Flow fields, shape information is captured in terms of edge images computed. A robust feature set for image retrieval is provided by using the combination of the color, shape and texture features. In retrieving the similar images, weighted Euclidean distance of color, texture and shape features are used. To classify relevant and irrelevant images in this retrieval process, support vector machine is used. This technique is simply displayed relevant images that are similar to a query image.

Keywords

CBIR, Dominant color descriptor, GLCM, GVF, SVM.

I. INTRODUCTION

Content-based image retrieval (CBIR) is effective retrieval technique that has been used to describe the process of retrieving desired images from a large collection on the basis of syntactical image features. In the earlier image retrieval systems are used image-based search instead of text-based search [1] since the images are required to be indexed. An important problem that needs to be addressed is fast retrieval of images from huge databases. To find images that are similar to a query image, image retrieval systems attempt to search through a database. Content-based image retrieval [1, 8] is used as an alternative and complement to traditional text-based image searching. For describing an image content [2], color, texture and shape features have been used. Color is one of the most widely used low-level visual features and is invariant to image size and orientation. In CBIR color histogram, color correlogram, and dominant color descriptor (DCD) as conventional color features are used. Content-based image retrieval system is based on Dominant color, GLCM texture and shape. Texture is described the structural arrangement of a region and the relationship of the surrounding regions and also considered of some basic primitives [2]. Texture features extracted by using gray-level co-occurrence matrix (GLCM). Shape feature has been extensively used for retrieval systems. CBIR system used dominant colors, Gray-level co-occurrence matrix [1, 2] and Gradient vector flow field in the concrete selection of color, texture and shape description. Following are the steps of CBIR system found relevant images from huge database:

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Smart Transportation and Fire Detection in Industrial IoT Environment based on Digital Image Processing

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ABSTRACT

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1. INTRODUCTION

In embedded systems, the current worldwide trend is ubiquitous computing. It enables communication between everyday objects by embedding microcontrollers in everyday objects to make our life simpler. Devices like smartphones and wearables keep us reachable, interactable and updated to the everyday events happening around the world. It has been termed those machines are used to assist people or work those humans find difficult. They are capable of performing repetitive tasks more quickly, cheaply, and accurately than humans. Robots can be used in many situations and for lots of purposes, but today many are used in dangerous environments (including bomb detection and deactivation), manufacturing processes, or where humans cannot survive (e.g. in space). Our motive is to design a robot that acts as an exterminator in fireplaces thereby avoiding human effort in such places to exterminate the fire.

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Comparative Study of Development in Techniques for Smart Detection of Fire

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Abstract— The progress on fire detection technologies has been substantial over the last decade due to advances in sensor, microelectronics, and information technologies, as well as a greater understanding of fire physics. This paper provides a review of progress in fire detection technologies over the last decade, including various emerging sensor technologies (e.g., computer vision system, distributed fiber optic temperature sensor, and intelligent multiple sensors), signal processing, and monitoring technology (e.g., real-time control via the Internet) and integrated fire detection systems. Some problems and future research efforts related to current fire detection technologies are discussed.

Keywords—Fire Detection, Distributed Fiber Optic Temperature Sensor, Intelligent Multiple Sensors

I. Introduction

With advances in sensors, microelectronics, and information technologies, as well as a greater understanding of fire physics, many new fire detection technologies and concepts have been developed over the last decade. For example, techniques are available now for measuring almost any stable gaseous species produced before or during combustion [1]. The distributed fiber optic temperature sensors have been introduced to provide fire protection for those applications with difficult ambient conditions such as tunnels, underground railways, and stations [2]. More than one fire signature detected by multiple sensors, such as smoke, heat, and CO signatures can be processed at the same time through an intelligent algorithm to intelligently discriminate between fire and non-threatening or deceptive conditions [3]. In addition, fire detection systems are integrated with other building service systems to reduce false alarms, speed building evacuation, and assist in firefighting.

Over the last decade, however, insulation and building materials, furnishings, and furniture have undergone a major transformation from natural materials, such as wood and cotton, to synthetic materials. Consequently, the risk to life and property has changed radically since burning synthetic materials releases not only highly dangerous smoke and toxic fumes but also carbon monoxide at rates far over natural materials [4], resulting in a dramatic reduction in the available time for escape. Many of the locations in most need of protection, such as telecommunication facilities, are unattended and/or remote [5], and interruptions to the service caused by fires are becoming more costly.

Fire detection technology still faces challenges related to reducing false alarms, increasing sensitivity and dynamic response, as well as providing protections for highly expensive and complex installations to better safeguard the public and meet evolving regulations. This paper aims to review recent research and development in fire detection technology, including emerging sensor technology, fire signal processing, and monitoring technology, and integrated fire detection system. Some problems and future activities related to fire detection technology are discussed.

II. Emerging Sensor Technology

A. Heat Detectors

The distributed fiber optic temperature sensor is considered as one of the new and promising heat detection technologies for fire protection applications [2]-[6]. Optic fiber has been widely used for the transmission of information, and it can also be used for sensing changes in temperature, strain, and tensile force subjected to the fiber optic cable, as the variation of these physical parameters alters the refractive indices and geometric properties of the optical fiber and then perturbs the intensity, phase, or polarization of the light wave propogating within the optical fiber. Unlike the conventional thermal detectors, the distributed optical fiber sensor uses the entire optical fiber as the sensing medium. Temperature measurements can be made at any and every point along the fiber cable. The measured temperature is in the range of -160 to 800o C, which is limited only by the durability of the fiber, or more specifically, its primary coating. In comparison to conventional thermal detectors, the optical fiber sensor cable responds much more quickly to temperature fluctuations due to its low mass. The fiber cable itself is strong, resilient,

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Digital Image Processing Based Smart Transportation and Fire Detection in Industrial Environment using Internet of Things

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ABSTRACT

Internet of Things (IoT) allows massive number of uniquely addressable "things" to communicate with each other and transfer data over existing internet or compatible network protocols. This article proposes a new concept which tackles the issues on industrial transportation to perform task of transportation using smart vehicles guided by sensors and IOT. Vehicle will take images of environment and apply fire detection DIP algorithm. Vehicle will also note the temperature of environment and transferred to remote operator by IOT. In case of fire detect and temperature rise above threshold, the vehicle will blow buzzer. The same information will be reported to remote operator. Exact simulation arena as that of physical industrial arena is developed using python graphical module. Simulation arena and vehicle in industrial arena will communicate with each other using internet. By simulation we can provide traveling path to vehicle. The same traveling path will be trace in simulation and in physical industrial arena. This complete idea is explained with the help of prototyping module.

1. INTRODUCTION

The Internet of Things (IoT) [1] is "a self-configuring and adaptive system consisting of networks of sensors and smart objects whose purpose is to interconnect all things, including every day and industrial objects, in such a way as to make them intelligent, programmable and more capable of interacting with humans". The Internet of things extends the cloud computing concept [2] beyond computing and communication to include everything, i.e., also the physical devices [3]. Industrial internet [4] uses sensors, software, machine-to-machine collaboration and various technologies to gather and analyse data from physical and virtual world for optimized operations and providing services. In the meanwhile, trends such as fast-changing and unpredictable market needs and customer requirements, the customer expectation of responsiveness, and the connectivity capability becoming available to embedded systems are triggering many companies to move from products

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An Empirical Study of Safety Models used in Driver Assistance Systems from a Statistical Perspective

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***Abstract*—Driving assistance systems (DAS) are responsible for enhancing the on-road driver experience in terms of lane safety, speed monitoring/control, drowsiness detection, vehicle to vehicle communication for incident alerts, etc. Each of these systems requires large amounts of input temporal data that is processed via machine learning algorithms. For instance, lane safety systems use a combination of image and depth data to analyze whether vehicles are following lane-rules or not. For this analysis, algorithms like convolutional neural networks (CNN), support vector machines (SVMs), and etc. is used. Each of these input-to-algorithm combinations has different advantages and nuances for each application. Thus, it is very difficult for system designers to identify best practices to evaluate and select these algorithms. In order to simplify selection of these algorithms for given systems, this text evaluates different recently proposed & highly efficient systems for each of these applications. This will assist researchers and system designers to select application-algorithm pairs for deploying highly efficient and customized driving assistance systems. The text also suggests various optimizations that can be done in these algorithms to further improve their performance when deployed in new or existing real-time systems.**

***Index Terms*— Driving assistance, on-road, machine learning, lane, speed, control.**

I. Introduction

Driving assistance includes a multitude of driver-related operations which include [1], but are not limited to, speed monitoring/control, drowsiness detection, lane detection/correction, driver-to-driver communications, parking assistance, etc. In order to perform these operations a series of steps are followed by system designers, these steps can be observed from figure 1, wherein the following blocks are used,

- Acquisition or sensing block, wherein data from different sources is collected. This block includes sensors like Camera, Radar, Infra-red camera, global positioning systems, vehicle to vehicle (V2V) and vehicle to infrastructure (V2I or V2X) communication systems.
- All these sensing elements are responsible for effective data reading and keeping it pre-processed for further processing.
- Data processing block, wherein data from acquisition block is taken and processed using systems like computer vision, radar processors, infra-red processors, V2V and V2X processors. This data processing requires a large number of algorithms, which include but are not limited to,
    - Data clustering algorithms for segregation of data
    - Classification algorithms for finding out different data patterns

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Keywords—Fire Detection, Distributed Fiber Optic Temperature Sensor, Intelligent Multiple Sensors

I. Introduction

With advances in sensors, microelectronics, and information technologies, as well as a greater understanding of fire physics, many new fire detection technologies and concepts have been developed over the last decade. For example, techniques are available now for measuring almost any stable gaseous species produced before or during combustion [1]. The distributed fiber optic temperature sensors have been introduced to provide fire protection for those applications with difficult ambient conditions such as tunnels, underground railways, and stations [2]. More than one fire signature detected by multiple sensors, such as smoke, heat, and CO signatures can be processed at the same time through an intelligent algorithm to intelligently discriminate between fire and non-threatening or deceptive conditions [3]. In addition, fire detection systems are integrated with other building service systems to reduce false alarms, speed building evacuation, and assist in firefighting.

Over the last decade, however, insulation and building materials, furnishings, and furniture have undergone a major transformation from natural materials, such as wood and cotton, to synthetic materials. Consequently, the risk to life and property has changed radically since burning synthetic materials releases not only highly dangerous smoke and toxic fumes but also carbon monoxide at rates far over natural materials [4], resulting in a dramatic reduction in the available time for escape. Many of the locations in most need of protection, such as telecommunication facilities, are unattended and/or remote [5], and interruptions to the service caused by fires are becoming more costly.

Fire detection technology still faces challenges related to reducing false alarms, increasing sensitivity and dynamic response, as well as providing protections for highly expensive and complex installations to better safeguard the public and meet evolving regulations. This paper aims to review recent research and development in fire detection technology, including emerging sensor technology, fire signal processing, and monitoring technology, and integrated fire detection system. Some problems and future activities related to fire detection technology are discussed.

II. Emerging Sensor Technology

A. Heat Detectors

The distributed fiber optic temperature sensor is considered as one of the new and promising heat detection technologies for fire protection applications [2]-[6]. Optic fiber has been widely used for the transmission of information, and it can also be used for sensing changes in temperature, strain, and tensile force subjected to the fiber optic cable, as the variation of these physical parameters alters the refractive indices and geometric properties of the optical fiber and then perturbs the intensity, phase, or polarization of the light wave propagating within the optical fiber. Unlike the conventional thermal detectors, the distributed optical fiber sensor uses the entire optical fiber as the sensing medium. Temperature measurements can be made at any and every point along the fiber cable. The measured temperature is in the range of -160 to 800o C , which is limited only by the durability of the fiber, or more specifically, its primary coating. In comparison to conventional thermal detectors, the optical fiber sensor cable responds much more quickly to temperature fluctuations due to its low mass. The fiber cable itself is strong, resilient,

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Design and Implementation of In-Building Solution for LTE (4G and 5G) Network

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ABSTRACT

Blend of telecommunication with business, finance and battlefields makes it enhance to govern the future of prosperity. This slogan depicts modern era of wireless communication which is fundamentally beyond any financial limits with idea 'stay connected anywhere anytime'. Due to huge infrastructure many of us find difficult to connect with the RF range while using mobile phones in certain areas like high rise skyscrapers, metallic lifts, basement (Parking Zone), hotels, stadiums and tunnels. So there is need to troubleshoot this coverage holes as user demands high data rate. The primary objective of this paper is to provide solution for mentioned problem by implementing network quality enhancer having matching capability 4G and 5Gmobile network.

KEYWORDS: *RF range, troubleshoot, coverage holes, network enhancer, 4G, 5G.*

1.INTRODUCTION

The number of mobile phone users is growing, and so their demand is for high quality service. People spend a large part of their time inside buildings, and increasingly rely on mobile phones to communicate. Whether it's a crowded convention centre or a remote railway station, users expect their mobile phones to perform. Since building material such as concrete and steel attenuates the incoming RF signal by some dB value, hence the RF strength is reduced, if we move in remote area inside building which degrades the performance of the network.

Due to increases in cellular phone, and data usage, the demand for more capacity in urban areas is ever increasing. Operators must increase the number of available cells to these areas to meet these capacity demands. With the increased number of cells, each cell is required to support a smaller area to minimize interference between adjacent cells. The service providers need a solution that will enable them to increase the number of cells, while minimizing costs on equipment, real-estate, and human resources.

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A Survey on Retinopathy Classification for Diabetic Patient using Image Processing

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Abstract: Diabetic retinopathy is a retinal disease that affects diabetes patients and the major cause of blindness for age population. It is an asymptomatic disease, which involves changes to blood vessels that can cause them to bleed or leak fluid, causing distortion of vision. Therefore, the blood vessels extraction is very important to help ophthalmologists to recognize this disease at the first stage in order to prevent an eventual loss of vision. Diabetic Retinopathy (DR) is a leading disabling chronic disease and one of the main causes of blindness and visual impairment in developed countries for diabetic patients. Studies reported that 90% of the cases can be from through early detection and treatment. Eye screening through retinal images is used by physicians to detect the lesions related with this disease. Due to the increasing number of diabetic people, the amount of images to be manually analyzed is becoming unaffordable. Moreover, training new personnel for this type of image-based diagnosis is long, because it requires to acquire expertise by daily practice. This paper presents the survey of retinopathy classification for diabetic patient using various methods which include image processing and artificial intelligence or machine learning.

Index Terms **- Retinopathy, Image Processing, Diabetic Patient, Machine Learning.**

I. Introduction

Diabetic Retinopathy (DR) is human eye disease among people with diabetics which causes damage to retina of eye and may eventually lead to complete blindness. Diabetes mellitus is a metabolic disorder characterized by a hyper-glycaemia due to malfunction in the production of insulin by the pancreas. At long term, it can cause microvascular complications that affect the retina, resulting in Diabetic Retinopathy (DR), which is the leading cause of blindness in active population. Moreover, the World Health Organization (WHO) anticipates that 347 million people were diagnosed with diabetes in the world, and it is predicted that, can be affect more than 640 million people by 2040. According to some estimations, more than 75% of diabetic patients within 15 to 20 years of diabetes diagnosis are endangered by DR. Diabetic retinopathy is an asymptomatic retinal disease and primarily a consequence of diabetes, which involves changes to blood vessels, resulting in micro aneurysms, hemorrhages, exudates, malformation and vascular tortuosity (Non-Proliferative Diabetic Retinopathy) that can subsequently cause an abnormal growth of retinal blood vessels (Proliferative Diabetic Retinopathy) that can lead to blindness in the absence of appropriate treatment. Therefore, the extraction of blood vessels is crucial to help ophthalmologists to identify this disease at the early stage in order to prevent the loss of vision. Anatomy of eye for normal retina and DR-affected retina is shown in Fig-1 and Fig-2 respectively [1] [2].

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Secure Reversible Image Steganography Over Encrypted Domain Using Public Key

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Abstract— Hiding information in an image in a way that does not affect the original cover image pixels or cause a permanent distortion after extracting that information is known as reversible data hiding technology. Many reversible data hiding schemes have been proposed and successfully applied in military applications. Such schemes are developed to ensure digital images' authenticity and integrity without any distortion of the original images. They guarantee that any attempt to change the watermarked image will be detected by the image owner. In this research, an algorithm is proposed to reversibly hide data into encrypted grayscale images in a separable manner. The proposed work exploits only LSB insertion for steganography. Scope exists for adopting frequency domain manipulation which may further improve the security of the signal. Comparison with the state-of-the-art methods; the proposed approach provides higher embedding capacity and can perfectly reconstruct the original image as well as the embedded message. Extensive experimental results are provided to validate the superior performance of our scheme.

Keywords— Data Hiding, Steganography, Reversible Data Hiding, Image Processing, Images Authenticity Embedded Message

I. Introduction

Preserving information safe while conveying it to someone at a distance has been on people's minds since the dawn of time, leading to the development of very basic to extremely specific computer-based approaches. Around the last four to five decades, there has been a massive exchange of data all over the world. The internet and the computer network's remarkable growth spawned and simplified a plethora of E-Commerce apps. This seeks assurance of data security and any potential misuse resulting from the loss of information. Individual communication becomes more important as ultimate confidentiality becomes a demand. As a result, there is a requirement for data transfer in encoded or modified form.

In multimedia communication, privacy and authenticity become even more important, especially when computer networks like the internet are open and vulnerable. In today's world of worldwide connectedness, intruders, hackers, computer viruses, eavesdropping, digital fraud, and cybercrime fraud, it's critical to protect vital information from falling into the wrong hands. Cryptography is the study that deals with the process of secreted writing in which original information is encoded into an incoherent form that can't be decoded by an adversary, whereas steganography hides the secret information in other mediums and thus can't be seen. The data in ciphertext may raise suspicions in the interceptor's mind, but a steganographically hidden message is ignored.

Cryptography, Steganography, and Watermarking are three interconnected techniques that have been discovered in the literature. Cryptography is a different branch from steganography and watermarking, which both belong to the class of information concealment and are quite comparable.

The possible cover carriers in steganography are innocent-looking carriers that will store the hidden information (images, music, video, text, or some other digitally represented code). The information hidden is called a message, and it can be plaintext, ciphertext, pictures, or anything else that can be encoded in a bitstream. A stego-carrier is made of the cover carrier and the embedded message. Hiding data may necessitate the use of a stego-key, which is additional secret data, such as a password, required for embedding the data. A possible formula of the process may be represented as:

Cover medium + embedded message + stego key = stego-medium

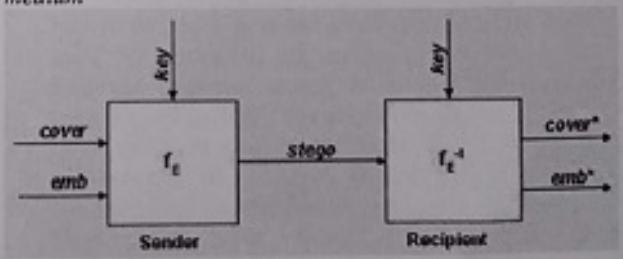

Figure 1: Graphical Version of the Steganographic System

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Data Hiding Using Image Steganography Techniques

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ABSTRACT

Steganography is the technique of hiding the fact that communication is taking place, by hiding data in other data. Many different carrier file formats can be used, but digital images are the most popular because of their frequency on the Internet. For hiding secret information in images, there exist a large variety of steganographic techniques. Steganalysis, the detection of this hidden information, is an inherently difficult problem. In this paper we have critically analyzed various steganographic techniques and also have covered steganography overview its major types, classification.

1. INTRODUCTION

In today's highly competitive and dynamic world, it is the data and information that fuels the engine of the computer communication and global economy. With the boost in computer power, the internet and with the development of digital signal processing (DSP), steganography has gone "digital". In order to ensure that data is secured and does not go to unintended destination, the concept of data hiding has attracted researchers to come up with creative solutions to protect a piece of information from falling into wrong hands. This idea of data hiding is not a novelty but it has been used for centuries all across the world under different regimes which is a tool for hiding information so that it does not even appear to exist. Over the past decade methods, techniques and technologies to conceal digital evidence and communicate covertly have increased alarmingly. Thus, people have adapted different means of concealing information.

Digital data provides easy way of editing and modifying of data which can be copied without any

CLASSIFICATION OF DIABETIC RETINOPATHY USING IMAGE PROCESSING IN DIABETIC PATIENTS

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Abstract - Diabetic retinopathy is a retinal condition that affects people with diabetes and is the leading cause of blindness in the elderly. It's an asymptomatic illness characterized by abnormalities in blood vessels that might cause them to bleed or leak fluid, resulting in visual distortion. As a result, blood vessel extraction is critical in assisting ophthalmologists in detecting this illness at an early stage and preventing vision loss. Diabetes Retinopathy (DR) is a debilitating chronic illness that is one of the primary causes of blindness and vision impairment in diabetic individuals in industrialized nations. According to studies, the majority of instances may be avoided with early identification and treatment. Physicians utilize retinal imaging to detect lesions associated with this illness during eye screening. The amount of pictures that must be manually examined is getting expensive because of the rising number of diabetics.. In this research, we used Image Processing to offer a technique for automatically classifying diabetic retinopathy disease based on retina fundus pictures. For this, we combined a feature extraction approach based on a pre-trained deep neural network model with a machine learning-based support vector machine classification algorithm. In MATLAB software, the proposed system is examined and analyzed.

Keywords: Retinopathy, Image Processing, Diabetic Patient, Machine Learning

1. Introduction

Diabetic Retinopathy (DR) is a human eye disease that affects diabetics and causes damage to the retina of the eye, potentially leading to blindness. Diabetes mellitus is a metabolic disease marked by hyperglycemia caused by a failure in the pancreas' insulin synthesis. Diabetic Retinopathy (DR) is the main cause of blindness in the active population, and it can induce microvascular problems that damage the retina over time. Furthermore, the World Health Organization (WHO) estimates that 347 million people worldwide have been diagnosed with diabetes, with more than 640 million people expected to be affected by 2040. Diabetic retinopathy is an asymptomatic retinal disease caused by diabetes that causes micro aneurysms, hemorrhages, exudates, malformations, and vascular tortuosity (Non-Proliferative Diabetic Retinopathy). As a result, blood vessel extraction is critical in assisting ophthalmologists in detecting this illness early on and preventing vision loss.

Ophthalmologists urge diabetic individuals should get their fundus medically screened on a regular basis to detect DRs early. Nonetheless, diabetic retinopathies are often undiagnosed until significant damage to the patient's fundus has occurred (typically manifested as deterioration or loss of vision). The main issue is that DR does not reveal characteristic symptoms until the disease has progressed to an advanced stage [3]. As a result, frequent eye examinations and check-ups are encouraged to avoid problems. Human evaluation of retinal characteristics and morphological changes in fundus pictures, on the other hand, is a tedious and time-consuming job. To address this shortcoming, numerous automated computer-aided diagnostic tools have been developed in recent years that assist ophthalmologists in examining retinal abnormalities. The infrastructure required to avoid blindness due to DR will become even more insufficient as the number of people with diabetes continues to rise. Detecting DR is now a time-consuming and laborious process involving a skilled physician examining and evaluating digital color fundus images of the retina. Unfortunately, there is no known effective cure for diabetic retinopathy, and the current therapies are at best management techniques. As a result, it's critical to catch the condition early on. The appearance of lesions linked with the disease's vascular anomalies can help clinicians detect DR. While this strategy is effective, it necessitates a lot of resources. In places where the prevalence of diabetes in the local population is high and DR detection is most needed, the requisite knowledge and equipment are frequently inadequate.

2. Related Work

Efficient diabetic retinopathy technology has been created or applied by researchers and is discussed below.

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Review on Classification of Natural & Synthetic Images

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***Abstract*—The classification of image system mainly focuses on photographic and non-photographic i.e. natural & synthetic images. The semantic description-based on classification of images is a more interesting and significant problem in involuntary image identification. An algorithm for natural and synthetic image classification system has been established. In order to adventure the difference, the color pattern and spatial correlation of pixels in natural and synthetic images, some of the features are removed from the database of images. If these features are used alone, they have low accuracy but when it combined together and used for image classification forms a more multifaceted and appropriate classification and their exactness can be improved. Proposed image classification for natural and synthetic images algorithm will be use these low-level features of images such as edge map, color map, threshold ratio, nearest neighborhood & energy level for classification of the images into synthetic and natural.**

***Index Terms*— Natural Image, Synthetic Image Color map, Edge map, Energy Level, Threshold value and nearest neighborhood.**

I. Introduction

Differentiating between a photograph and a graphic is always a simple task, for human being. It is often just matter of a glance. But unfortunately, it is not simple task for a computer, there is no simple and easy feature are available to extract and process the images. The amount of colors, edge map, edge location, energy level, & threshold ratio is taken from the raw image data available in different ways. These features are collected together to build a solid classifier. If it is used individually, they can lead to poor or incorrect results. The main motive of proposed system i.e. image classification is used to separate images into dissimilar classes [1].

The ideal systems are able to distinguish different images with no unwillingness like a human being. Unfortunately, sometimes the classification task is more complicated and unclear even for a human. The entirely images are created by digital means, are increasing is more important. These types of synthetic images are more important for recording and provides visual evidences. The correct classification for these images such as icons, maps, figures and charts are more important. The images which are downloaded from of the internet, are not used for just communicate the contented but also used for decoration, formatting and alignment. The image classification system can improve image examination and recovery engines and act as an input filter for down streaming for internet processing as well as image sympathetic systems [2].

In another side, it is very frequently a natural image describe the actual objects and subjects. They usually have textures, smooth angles, larger variety of colors but less saturated by making these problems are more

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Analysis of Hyperspectral Image Denoising Using Deep Neural Network (DNN) Models

Vaibhav J. Babrekar and Shirish M. Deshmukh

Abstract Image denoising is considered a common preprocessing step in the analysis and interpretation of hyperspectral images. Nevertheless, most of the methods developed and used previously was adopted for HSI denoising exploit architectures originally developed for grayscale and RGB images which limit the processing of high-dimensional HSI data cubes. As rich spectral information is present in HSI which is to be fully exploited considering the high degree of spectral correlation between adjacent bands in HSIs which gives in resulting poor image denoising, HSI denoising is the most important preprocessing step before the image is being classified. End to end mapping is needed between the clean and noisy images for the dataset by the deep learning method. Conventional low-rank methods lack flexibility for considering the correlation between different HSI which results to loss of information. This paper gives a brief review and analysis of the state-of-the-art available methods for hyperspectral image de-noising with the major advancements, benefits and obstacles in denoising an HSI. Due to limited availability of real time dataset of HSI and equipment expenses, researchers rely on the freely available hyperspectral datasets. This research proposes Hyperspectral image denoising for efficient classification of objects on the earth surface.

Keywords Hyperspectral image denoising · Remote sensing · Deep neural networks · HSI classification · Feature extraction

1 Introduction

HSI is extensively used in numerous applications such as agriculture planning, urban locality planning, monitoring the changes occurring in environment, anomaly detection. Because of some factors, these images are usually tarnished with noise which are type casted in regions of salt and pepper, stripes, Gaussian or dead-line noise, which is primary cause of the degradation of HSIs [1, 2]. Hyperspectral imaging

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An Empirical Study of Safety Models used in Driver Assistance Systems from a Statistical Perspective

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***Abstract*—Driving assistance systems (DAS) are responsible for enhancing the on-road driver experience in terms of lane safety, speed monitoring/control, drowsiness detection, vehicle to vehicle communication for incident alerts, etc. Each of these systems requires large amounts of input temporal data that is processed via machine learning algorithms. For instance, lane safety systems use a combination of image and depth data to analyze whether vehicles are following lane-rules or not. For this analysis, algorithms like convolutional neural networks (CNN), support vector machines (SVMs), and etc. is used. Each of these input-to-algorithm combinations has different advantages and nuances for each application. Thus, it is very difficult for system designers to identify best practices to evaluate and select these algorithms. In order to simplify selection of these algorithms for given systems, this text evaluates different recently proposed & highly efficient systems for each of these applications. This will assist researchers and system designers to select application-algorithm pairs for deploying highly efficient and customized driving assistance systems. The text also suggests various optimizations that can be done in these algorithms to further improve their performance when deployed in new or existing real-time systems.**

***Index Terms*— Driving assistance, on-road, machine learning, lane, speed, control.**

I. Introduction

Driving assistance includes a multitude of driver-related operations which include [1], but are not limited to, speed monitoring/control, drowsiness detection, lane detection/correction, driver-to-driver communications, parking assistance, etc. In order to perform these operations a series of steps are followed by system designers, these steps can be observed from figure 1, wherein the following blocks are used,

- Acquisition or sensing block, wherein data from different sources is collected. This block includes sensors like Camera, Radar, Infra-red camera, global positioning systems, vehicle to vehicle (V2V) and vehicle to infrastructure (V2I or V2X) communication systems.
- All these sensing elements are responsible for effective data reading and keeping it pre-processed for further processing.
- Data processing block, wherein data from acquisition block is taken and processed using systems like computer vision, radar processors, infra-red processors, V2V and V2X processors. This data processing requires a large number of algorithms, which include but are not limited to,
    - Data clustering algorithms for segregation of data
    - Classification algorithms for finding out different data patterns

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Effective Content Based Image Retrieval Technique using Color and Texture Features

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Abstract

To find an image from large database is implemented by CBIR technique. An image has three main features such as color, texture and shape. The proposed scheme is effectively searching images by using feature extraction. Dominant color descriptor is used in image indexing and dominant color extraction. By using Gray Level Co-occurrence Matrix (GLCM), texture of an image is obtained. Color and texture features are normalized. Using Gradient Vector Flow fields, shape information is captured in terms of edge images computed. A robust feature set for image retrieval is provided by using the combination of the color, shape and texture features. In retrieving the similar images, weighted Euclidean distance of color, texture and shape features are used. To classify relevant and irrelevant images in this retrieval process, support vector machine is used. This technique is simply displayed relevant images that are similar to a query image.

Keywords

CBIR, Dominant color descriptor, GLCM, GVF, SVM.

I. INTRODUCTION

Content-based image retrieval (CBIR) is effective retrieval technique that has been used to describe the process of retrieving desired images from a large collection on the basis of syntactical image features. In the earlier image retrieval systems are used image-based search instead of text-based search [1] since the images are required to be indexed. An important problem that needs to be addressed is fast retrieval of images from huge databases. To find images that are similar to a query image, image retrieval systems attempt to search through a database. Content-based image retrieval [1, 8] is used as an alternative and complement to traditional text-based image searching. For describing an image content [2], color, texture and shape features have been used. Color is one of the most widely used low-level visual features and is invariant to image size and orientation. In CBIR color histogram, color correlogram, and dominant color descriptor (DCD) as conventional color features are used. Content-based image retrieval system is based on Dominant color, GLCM texture and shape. Texture is described the structural arrangement of a region and the relationship of the surrounding regions and also considered of some basic primitives [2]. Texture features extracted by using gray-level co-occurrence matrix (GLCM). Shape feature has been extensively used for retrieval systems. CBIR system used dominant colors, Gray-level co-occurrence matrix [1, 2] and Gradient vector flow field in the concrete selection of color, texture and shape description. Following are the steps of CBIR system found relevant images from huge database:

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Image Retrieval Based on CBIR and SVM Classifier

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Abstract

In modern age, Content Based Image Retrieval system is used for retrieving the images from web pages. In order to retrieve an image; three visual features may help, that are color, texture and shape. Image retrieval system is used to search images from database that are content fully same as that of query image. The substantial method that help in the retrieval of images from a large database is the Content Based Image Retrieval (CBIR) with SVM. In proposed scheme, CBIR approach along with Support Vector Machine algorithm is used for retrieval. Proposed method has been provided higher accuracy with the help of SVM classifier.

Keywords

Content Based Image Retrieval, Support Vector Machine, HSV, GLCM.

I. INTRODUCTION

An image retrieval system is a computer system used for browsing, searching and retrieving images from a large database of digital images. Content Based Image Retrieval is the best technique to get relevant images with higher accuracy. CBIR will be provided extensive research into image retrieval systems. In CBIR image-based search is used instead of text-based search. Image retrieval systems was to search through a database to find images that are similar to a query image. Most proposed CBIR techniques [1, 2] automatically extracted low-level features that are color, texture, and shape to measure the similarities among images by comparing the feature differences. Color, texture and shape features have been used for describing image content. Content of query image is same as images have to be find, image retrieval systems tried to search through a database. Color histogram, color correlogram as conventional color features are used in CBIR. To represent color in terms of intensity values, a color space is defined as a model. Texture is a key part of human visual perception. Everyone can identify texture, but it is more complicated to define. Unlike color, rather than at a point texture occurs over a region. It is usually perceived by intensity levels. Commonly, the shape features are different from other elementary visual features such as texture or color features and the shape carries semantic information. Ultimately, shape features can be classified as region-based and boundary-based. Implementation of CBIR system which is based on dominant color, shape and texture.

This method [1] yielded average recall with reduced feature vector dimension and higher average precision. An effective color image retrieval scheme for combining all the three i.e. texture, shape, and color information, which achieved higher retrieval efficiency is presented in [2]. By using fast color quantization with clusters combining, the image is pre-set, and then a small number of dominant color and their percentages can be obtained. Trademark image retrieval (TIR) system is projected in [3] to deal with the immense number of trademark images

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A Survey on Wireless Sensor Networks, Challenges, And Application

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ABSTRACT

Wireless sensor networks (WSNs) consist of several sensor nodes that may be deployed in relatively harsh and complex environments. Regarding cost, sensor nodes always adopt relatively cheap chips, which make these nodes error-prone in the course of their operation. Various natural factors, as well as electromagnetic interference, could also influence the performance of the WSNs. When sensor nodes become faulty, they may die which means they cannot send data to other members in the wireless network, or they may be alive but gives incorrect data or they may be unstable jumping between the normal state and faulty state. Many studies have focused on fault diagnosis to improve the quality of data, shorten response time, strengthen network security, and prolong network lifespan. This paper presented the study on wireless sensor networks with challenges and their application.

1. INTRODUCTION

A wireless sensor network (WSN) is defined as a group of devoted and isolated sensors for monitoring as well as recording various physical conditions of the environment and placing the resultant collected data in a central place [1]-[2]. WSNs evaluate environmental conditions like sound, temperature, pollution levels, humidity, wind, and so on.

WSN is an interesting area of networks consisting of low-power wireless sensor nodes for high-quality sensing of the environment. The development of wireless sensor networks was aggravated by military applications like battlefield surveillance. In the early days, setting up a WSN required very expensive and sophisticated equipment. Hence, these were used only for selective and crucial applications. However, the advancement of technologies like micro-electro-mechanical systems (MEMS) [1], wireless communication, and low-cost manufacturing techniques have made WSNs economically affordable, small, and manageable. As a result, nowadays, the WSNs are being used in a variety of applications such as many industrial and

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Survey on Deep Learning based Computer Vision Applications

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Abstract - A computer vision is the field where 3D scene can be reconstructed or interpreted by using basic 2D images. The field of Computer vision has been changing rapidly with the consistent growth in powerful technology like deep learning along with neural networks which can extract many required information from images directly. With the advent of deep learning in computer vision applications like face recognition system, self-driving cars, image captioning etc. making rapid progress within a very short span. Advancements in machine learning and deep learning has made computer vision technology more accurate and reliable too. With the advanced deep learning algorithms, computer vision has been highly effective in real world scenarios. The use of convolutional neural network in computer vision has made it suitable for many industrial applications and made it as a reliable technology to trust as investment for companies which are looking to automate their works and tasks

Key Words: **Image captioning, Segmentation, Object detection.**

1.INTRODUCTION

Humans have the inbuilt vision capability which uses experimental knowledge which it gains from day to day activities. This knowledge help them to contextualize or visualize the data within the view field. Human's eyeballs captures the visual parameters for e.g.. image of dog and the prior knowledge of that visual parameters about that image or similar to that image relates it to the dog. This ability is due to our very powerful visual perception system which is closely related to our mind and memory. Mind provides higher reasoning ability to convert this visual data into meaningful context through the experience of day to day activities. These powerful human abilities are not available to machines but can be imitate through machine learning and deep learning algorithms. To imitate such expertise to machines is difficult task and lot of work is going on in this field of research to make it convenient.

Earlier computer vision techniques were dependent on substantial manual work to create rule based classification techniques which were able to predict and classify certain groups of pixel arrangement. For e.g. to detect the image of dog, programmer codified every component of dog into computer as fixed rules so that it could be able to detect these features in an image. In past decades this field of computer vision depends on this troublesome, manually-created feature detectors for sorting and classifying an image. These procedures were not flexible and was very difficult for making change into it also it used to take lot of time for each new object of detection. This model tends to fail when the number of classes needed to classify increases or when the quality of image degrades. Simple changes in size of object, rotating direction would cause to system to get halt or stop. Advances in machine learning and deep learning gives the new directions and way to this computer vision field. Today's deep neural network can train the process which uses very large dataset by countless training cycles which can teach the machine entirely how actually dog looks. In training phase algorithm can automatically extracts the appropriate features of 'dog' to predict. This process build a model which can be imposed to previously unseen images to generate more accurate classification and prediction. The below image illustrates the conflict between traditional machine learning process for image detection & recognition compared to deep learning approach.

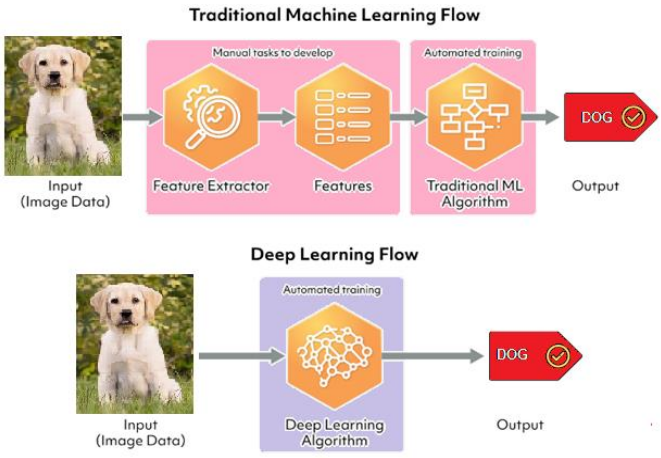

Fig -1: Deep Learning for Computer Vision

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Multi Cloud Data Hosting with SIC Architecture

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Abstract: ***Data hosting on cloud decreases cost of IT maintenance and data reliability get enhance. Nowadays, customers can store their data on single cloud, which has some drawbacks. First is vendor lock in problem and second is security on cloud. The solution to this problem is to store the data on different cloud server without redundancy using encryption algorithm. Customers do not want to lose their sensitive data on cloud. Another issue of cloud computing is data thievery should be overcome to supply higher service. Multi-cloud environment has ability to scale back security risks. To avoid security risk we offer framework.***
Keywords: Cloud computing, cloud storage, data hosting, data intrusion, multi-cloud, single cloud.

I. INTRODUCTION

Cloud computing can be a virtualized resources that allows user to gain access in web base environment on demand. in a cloud computing environment, people and businesses work with applications and data hold on and/or maintained on shared machines in a internet environment instead of physically situated within the home of a user or as company [2] environment. More and more enterprices and organizations are hosting all or part of their data into the cloud, in order to reduce the IT maintenance cost and enhance the data reliability [3], [4], [5].

In multi cloud data Storage, data and information are shared with external users, so cloud computing users need to avoid vital information from attackers or malicious business executive is of essential importance. Users are responsible for protecting operating system and cloud providers must provide protection for user's data. Resources within the cloud are accessed through the net, oftentimes even though the cloud supplier concentrates on security within the cloud infrastructure; the information continues to be transmitted to the users through networks which may be insecure. So the basic motivation behind this is-

1) To use SIC Secure-Inter-Cloud Architecture. It is three-tier architecture. There is one CSP i.e. Cloud Service Provider.
2) This is the main central server which keeps the data about clients. Clients/users do not have any idea about where exactly the data/files have been stored.
3) Data is stored in cloud server. The servers may reside in different physical locations. The CSP decides the servers for data storage depending upon available spaces.
4) This implementation uses load balancing algorithms for making the decision, on which server we should actually store the data. The CSP will also keep track about the files stored on each server. The cloud servers will only store the data, but they will not have any records about the user accounts, their passwords or encryption and decryption keys. [7].

II. PROPOSED DESIGN

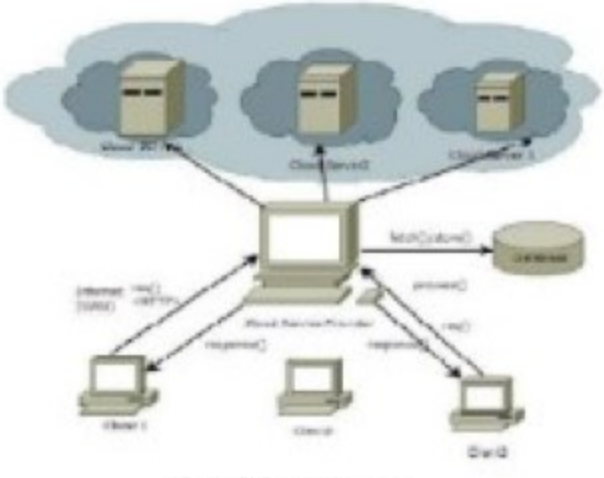

Fig.1 SIC Architecture

COMPARATIVE APPROACH TO STUDY THE EFFECT OF SOUND FREQUENCIES ON PLANTS GROWTH WITH DIP*

BY

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ABSTRACT

Plants are always have diversified effect of number of environmental parameters in their growth cycle and these sound waves effects the plants' growth, and it influences the yield result and crop quality. The demand of the efficient technology in the agriculture science sector has increased because of the growing population. Applying the preferable sound frequency to the plant is always very effective technique to increase the plant growth and to increase the productivity of that plant which will definitely help to attain the financial profit. Exposing plants to audible sound frequencies can be more trustworthy technique with digital image processing. The population of world which is increasing every day gives a challenge to scientists and researchers to investigate the every possible way to utilize new and green techniques consequently the production of food get enhance.

This review study is planned to show the hypothesis that Plants accept the vibrations and does sound effects are on the plant growth.

KEYWORDS

Sound frequency, Plant growth, Digital Image Processing, Economic Benefits.

I. Introduction

If the plants are exposed to particularenvironment so they also reacts in the same way as humans. There is for eternity the effect of climate conditions like temperature, cold, luminosity on humans and just resemblinghumans plants are also get affected by certain weather conditions. There is a extensive range to carry out additional research in this interdisciplinary area. There are many scientists and agricultural and biological researchers are working to make a system which will help to increase crop growth without any chemical fertilizers, but up till now there is no such system built. As there will be more flowers and

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On Efficiency of Air-Phase Change Material Heat Exchanger for Free Cooling System

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Abstract *- Free cooling is a promising passive cooling technique that requires minimum or no energy for cooling the space. Free cooling can be achieved with the use of phase change material based thermal energy storage. An organic phase change material (PCM) with phase change temperature 35^{0}C is selected based on the climatic conditions of the selected location. A heat exchanger containing phase change material with selected geometry is tested by varying selected dependent variables, which are inlet airflow velocity and the orientation of the flat plates of the heat exchanger. In this paper, investigation results of an air-phase change material heat exchanger are presented along with its efficiency. It was observed that maximum heat exchanger efficiency of 74.07%was obtained.*

Keywords — *Air-PCM heat exchanger, Free cooling, Passive cooling, Phase Change Materials, Thermal Energy Storage*

I. INTRODUCTION

With increasing automation and industrialization, more and more machines entered into our lives. India, a developing nation, is the second-largest populous country in the world, and it is the third-largest consumer of energy after China and the United States of America, as per a study in 2019 [1]. Because of a growing population and their rising standard of living, energy consumption will continue to increase. Nearly 40% of energy is consumed by the domestic sector [2]. And the biggest fraction of energy consumption in the domestic sector is taken by space heating or cooling. Air-conditioners are extensively used for this purpose not only in residential buildings but also in commercial and industrial buildings. Apart from this, one more cause behind the ever-increasing trend in the use of air-conditioners is global warming. This results in an increase in the demand for electricity. Electricity production leads to the emission of greenhouse gases which causes a rise in the temperature of the Earth. This, in turn, pronounces more need to cool the space. Cooling the space without harming the environment can be done by either using renewable sources or using Passive cooling techniques. Passive cooling techniques are the methods that require minimum or no energy for cooling the space [3].

Free-cooling, one of the passive cooling techniques, is a process of storing outdoor coolness during the night and discharging this coolness during the day so as to maintain a comfortable indoor temperature [4]. Energy storage with the use of Phase Change Material (PCM) will reduce the mismatch between supply and demand and thereby plays an important role in conserving energy. Determinants of effective free cooling are; melting point of the PCM used, the Design of thermal energy storage, and the geographical location.

Present literature has given different theories regarding the first determinant, i.e., selection of suitable PCM for the free cooling [5-7]. Barreneche, C. et al. [8] have presented an innovative database of more than 300 PCMs. Iten M. [9] gave a review regarding various Thermal Energy Storage (TES) geometries for cooling as well as heating purposes. Various publications [10-15] gave different designs to test the free cooling phenomenon, which includes geometries like flat containers, shells, and tubes, Spherical encapsulated PCM beds, etc. The geographical location is also an important deciding factor as free cooling is applicable at the location where the diurnal temperature difference is larger than 15^{0}C. [16]

This publication focuses on finding the energy-saving potential of a Phase Change Material at a selected geographical location using an air-PCM heat exchanger. This heat exchanger is designed by Kolhekar et al. by solving a systematic non-linear optimization problem [17]. By carrying out discharging experiments with variable conditions, thermal comfort inside the selected location is monitored.

II. MATERIALS AND METHODS

For free cooling using PCM based heat exchanger, it is important to select the appropriate PCM and the container geometry. This section presents the methodology adopted for the selection of phase change material and for the investigations of the air-PCM heat exchanger to find out the cooling achieved.

PERFORMANCE EVALUATION OF MODIFIED SINGLE SLOPE SOLAR STILL

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ABSTRACT:*In many parts of the world, fresh water is unavailable to people. The worldwide rapid growth in industry has greatly increased the demand for fresh water. Early advancements in providing such solutions have come up with desalination plants to convert sea water into drinking water through distillation system. However, the operational and maintenance costs are high and energy demanding which is a practical option only in rich countries. Solar distillation is an expanding alternative to desalination that is distilling water using solar energy. Solar distillation is environmentally safe and uses solar radiation to evaporate saline water into potable water. This project aims to develop a solar desalination device that will produce fresh water using direct solar energy and to enhance the production of fresh water trough solar distillation by using external energy concentrator using lens under local condition. The solar still was operated in two modes of operation; basic solar still alone and basic solar still with external energy concentrator using lens. The experiment was taken in the month of July start on 9am to 5pm. The condensing tank efficiency increased 4% by using the enhancement of external concentration collector.*

Keywords: Condensing Tank, Solar Energy, Solar Still, Solar Distillation

1. Introduction

Solar still, also known as solar distiller is a simple device that uses heat directly from the sun. This heat can be used to drive evaporation from humid soil, and ambient air to cool a condenser film in a simple manner to purify brackish/saline water into potable water. A solar still operates on the same principle as rainwater; where evaporation and condensation process take place. The water from the oceans evaporates, only to cool, condense, and return to earth as rain. When the water evaporates, it removes only pure water and leaves all contaminants behind. Solar still has been proven to be the best solution to solve water problem in remote arid areas and developing countries. Purifying water through distillation is a simple, yet effective means of providing portable water in a reliable and cost-effective manner. Solar stills effectively eliminate all water borne pathogens, salts, and heavy metals, and produce ultra-pure water to be superior to most commercial bottled water sources. Many Researchers have found the productivity for different brine depths in the basin of a single-slope single basin solar still.
In order to improve the performance of a conventional solar still, several other designs have been developed, such as the double-basin type, multi-basin, inverted trickle, multi-effect and regenerative with reflectors. The methods that have been attempted to increase productivity ranges from decrease the volumetric heat capacity of the basin, attachment of additional sub-systems and other major departures from the simple configuration. The enhancement of the productivity of the solar desalination system in a certain location could be attained by a proper modification in the system design. How-ever, the increase in the system productivity with high system cost may increase also the average annual cost of the distillate. This current work explores the design and efficiency evaluation of a flexible, robust and low cost solar still with variable collector angle. This is capable and has the potential of producing distilled water for domestic, industrial and commercial purposes when scale-up, irrespective of the geographical location. Furthermore, in this work, Amravati (11° 20', a region in Western India) was used as a case study to evaluate the performance of the modified solar still. The implications of the results from the design are discussed for the potential development of a robust and dynamic single slope solar still system with variable collector/inclination angle.
In this paper, solar water distillation system was fabricated and the above literature survey dealing with the various design of solar water distillation system, various glass thicknesses, Tilting angles and using the various vacuum tubes are used to improve the performance of solar water distillation systems are available, but in literature survey dealing with different types coatings for the same dimensional solar water distillation system are not available. Hence two numbers of same solar water distillation systems were fabricated with two different coatings and the performance of each system were analyzed.

1.1 Solar Still

Solar still distillation is a process of distillation that used solar energy to produce fresh water. Solar desalination would permit obtaining fresh water by means of an environmentally friendly process even in remote areas with no access to electricity or other conventional energy sources. Solar desalination can be classified as most economic device that used renewable energy sources. Comparatively this technology has no skilled workers needed and low maintenance due to which it can be used anywhere with lesser number of problems.

1.2 Objectives

On this proposed project, the author will strive to overcome the problem that has been discussed in the previous section. As been clarified earlier, there are two main objective of this project which is:
a) To develop a solar distillation device that will produce fresh water using direct solar energy.
b) To enhance the production of fresh water trough solar distillation by using external energy concentrator using lens.
The combination of these two objectives will overcome the main to water scarcity crisis. The final outcome of this device is should be able to produced fresh water with optimum production for daily use.

1. LITERATURE REVIEW

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Study of Total Productivity Maintenance and It's Implementation

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ABSTRACT: Total productive maintenance is one of the most valuable strategies to follow for those who want to be competitive over the coming "world class competition" decades. Total productive maintenance (TPM) is a maintenance program, which involves a newly defined concept for maintaining plants and equipment's. The goal of the TPM program is to markedly increase production while, at the same time, increasing employee morale and job satisfaction. After carrying out several visits and direct observations of machines on the production shop floor and analyzing previous machine utilization records at Kasturi Metals Pvt. Ltd., it was found that machines were not operating up to its full production capacity due to problems associated with it. A Case Study conducted on machines of the production shop floor is used to illustrate need for implementation of TPM. Thus by the application of TPM it was found that the stepwise implementation of TPM in the company marked improvements in availability, performance efficiency and quality rate and thereby leading to increase in OEE of model machine and which will further lay down foundation for companywide implementation of TPM.

I. INTRODUCTION

Total productive maintenance (TPM) is a systematic process for optimizing overall equipment effectiveness by minimizing the unavailability of machinery due to breakdown and slowness. TPM involves machine operators as partners with maintenance. TPM embraces various disciplines to create a manufacturing environment wherein everyone feels that it is his or her responsibility to keep the equipment running and productive. Aside from eliminating equipment downtimes and improving equipment productivity, TPM has the following goals:

a) Improvement of personnel effectiveness.
b) Reduction of operational costs.
c) Sense of ownership.
d) Customer satisfaction.

1.1 Problem Definition

After carrying visits and observations of machines on the production shop floor and analyzing previous machine utilization records at Kasturi Metal & Composites Pvt. Ltd, at MIDC, Amravati, Maharashtra (India) it was found that steel wool scrubbing machine was not operating up to its full production capacity due to various problems associated with it, which are affecting the Overall Equipment Effectiveness (OEE) of machines on the production shop floor and thereby effecting overall plant efficiency. Hence there was need to implement Total Productive Maintenance strategy to overcome from the regular problems and overcome it to achieve improvement in overall equipment effectiveness (OEE).

1.2 Objectives of the Study

a) To minimize the production delay.
b) To save the time loss during changeover from one job to other on machine accounts for setup loss & break downs of machines due to improper cleaning and lubrication of machine parts which accounts for availability loss.
c) To minimize performance loss due to lack of planned maintenance schedule for machines.
d) To minimize frequent tool breakage due to operator inefficiency which accounts for performance loss.

1.3 Methodology used for the study

In order to overcome problems mentioned in previous section a brief study was carried out and implementation of TPM methodology to improve OEE was finalized. To start with TPM, few machines were selected. These machines were selected on the basis of most important activities performed on the production shop floor which included various important operations. Hence these

FABRICATION OF SOLAR COMPOSTING MACHINE

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ABSTRACTThe Food waste converter uses to treat solid waste and turn it into reusable or compostable content. It uses the process of anaerobic digestion to decompose organic matter. Plants thrive on new, decomposing organic matter, so this work includes composting organic matter into compost. There is a low-cost and safe alternative to usual waste disposal methods presented in this idea. The approach is easy and efficient. Although attempting to optimize water reuse, the project used solar energy to turn wet waste into nutrient-rich compost. Solar is the energy source that uses electrical resources and helps us reduce the amount of waste we produce. Because of lower initial capital expenditure on electricity, this machine is highly economical. It is an excellent source of the perfect bug and rodent-free compost. Although aerobic degradation involves bacteria working at a temperature range of 45-55 degrees Celsius, this process's biodegradable results are better. This paper gets around the semi-automatic nature of traditional composting machines while at the same time putting plant food to good by using Solar Energy. It takes 05 days to go through the complete process of heating, airing, dryingand inoculating for each step.

Keywords:-Food Waste; Municipal Solid Waste; Organic Fertilizer; Renewable Energy; Solar Energy.

INTRODUCTION:-Including anaerobic is composting organic waste including leaves, food scraps, manure, and paper into fertilizer Composting is the regulated biological nutrient production from organic matter such as manure, plant waste, grass, leaves, writing, and yard trimmings. Aerobic, anaerobic, and vermiculture are all possible methods of composting. Such profits include enriching the soil, keeping plants from disease, maintaining moisture, and subduing pests. It creates beneficial bacterial and fungal fungi, a component rich in nutrients that breaks down organic matter to produce humus, reduces landfill gas, and minimizes greenhouse gas emissions. Compost is excellent for adding nutrients to the soil because it allows the soil to retain moisture and moisture to permeate the soil. Father Howard, inventor of the Indore, co-inventor of the organic process in 1905-1934 Compost replenishes and revives worn-out farm soils by replacing trace minerals and replenishes and helps plants grow since it provides trace nutrients. In general, composting improves the soil textures and makes nutrients more abundant. There are various ways to produce compost. However, many people prefer to use already-made compost.It is easier than other approaches. The initial cost is less expensive. Using this process produces excellent compost. The solar radiation from the sun works function in the composting process. It has two forms of solar composting. Our idea we're to use a semi-automatic solar composting machine. This machine cuts capital expenses in half due to their low initial purchase price. It is an excellent source of the superb bug and rodent-free compost. Although aerobic degradation involves bacteria working at a temperature range of 45-55 degrees Celsius, this process's biodegradable results are better. We are making a semi-automatic composting system using solar technology that is using for gardening.

MATERIALANDMACHINESPECIFICATIONS:-It works with energy from the sun in a solar system. The solar Collector dimension is 620 mm by 430 mm. The Pipe is composed of stainless

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Computer Aided Design and Analysis of an Alloy Wheel

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Abstract: *The essence of the alloy wheel gives a firm base on which to fit the tire. Its measurements, shape ought to be reasonable to enough oblige the specific tire required for the vehicle. Design in a vital modern action which impacts the nature of the product. Wheel is a main mechanical term of the vehicular suspension system that supports the static and dynamic loads encountered during vehicle action. Wheels are one of the most critical components in Automotive Engineering. Since cars carry heavy loads of occupants as well as self-weight, the alloy wheel rim should be strong enough to withstand this load. Various parameters are identified and studied in this dissertation which are necessary to be considered in design of alloy wheels. Different designs of alloy wheels are modelled in this dissertation work by incorporating various essential parameters. The modeled alloy wheel designs are evaluated in this dissertation work.*

Keywords: Alloy wheel, cars, automotive and measurements

I. Introduction

Automotive wheels have evolved over the decades from early spoke designs of wood and steel, to flat steel discs and finally to the stamped metal configurations and modern cast and forged aluminum alloys rims of today's modern vehicles in aesthetic and durability point of view. Historically, successful designs arrived after years of experience and extensive field testing. Since the 1970's several innovative methods of testing well aided with experimental stress measurements have been initiated. In recent years, the procedures have been improved by a variety of experimental and analytical methods for structural analysis (CAE). Within the past 10 years, durability analysis (fatigue life predication) and reliability methods for dealing with the variations inherent in engineering structure have been applied to the automotive wheel. Wheels are clearly safety related components and hence fatigue performance and the state of stress in the rim under various loading conditions are prime concerns.

II. Review of Literature

The essence of the car alloy wheel gives a firm base on which to fit the tire. Its measurements, shape ought to be reasonable to enough oblige the specific tire required for the vehicle. In [1] a feel burnt out on car alloy wheel having a place with the disc wheel class is considered. Design in a vital modern action which impacts the nature of the product. The alloy wheel is designed by CATIA V5 R20 utilizing displaying programming. In displaying the time spent in creating the perplexing 3-D models and the hazard engaged with design and assembling procedure can be effectively limited.

So the displaying of the alloy wheel is made by using CATIA. Later this CATIA show is foreign to ANSYS for investigation work. ANSYS programming is the most recent utilized for simulating the distinctive forces, pressure following up on the component and furthermore to calculate and seeing the outcomes. A solver mode in ANSYS Software figures the anxieties, avoidances, bowing minutes and their relations without manual intercessions, diminishes the time compared with the strategy for scientific counts by a human. ANSYS static investigation work is carried out by considered two different materials specifically Aluminium alloy, Titanium alloy, and Epoxy

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"Modeling and Analysis of Reciprocating Compressor Valve using FEA Tool"

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Abstract : This study has been undertaken in the Reciprocating Compressors are among the most used types of compressors and their CAD modeling of the valve with analysis of compressor valve Equivalent Stress, temperature and flux. The analysis of the influence of the valve parameters on its dynamic behavior is also present in this study paper.

Keyword **– CAD, Compressor, Valve.**

I. INTRODUCTION

Reciprocating compressors are among the most used types of compressors. They can be found in highly diverse fields of application, such as in the oil and gas industry or chemical industry, where these compressors are used mainly for their ability to deliver high-pressure gas. Basically, piston compressors are vital part in any process they are employed in; therefore their reliability has garnered widespread interest. As the limiting elements in the design of the reciprocating compressor, the compressor valves can be considered. They are often described as the heart of the compressor, due to the fact that should they fail, it would lead to the shutdown of the compressor and to costly downtimes. A compressor running at even moderate speeds such as 700 rpm requires for each valve to open and close over one million times a day. The main reason in developing this tool is to qualitatively assess the factors influencing the dynamic behavior. To validate the precision of this tool, the results are compared to freely accessible experimental data found in literature. However, the main goal of this study is not aimed at a quantitative estimation, since an experiment would be inevitable for the precise evaluation of the theoretical results. The analysis of the influence of the valve parameters on its dynamic behavior is also present in this paper.

II. TYPES OF RECIPROCATING COMPRESSOR

A. Single-Acting

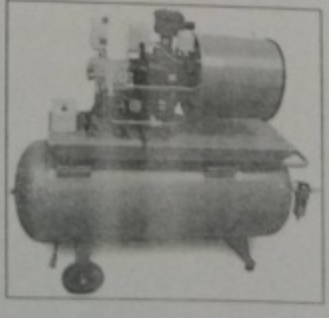

Figure 1: Single Acting Compressor

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Design and fabrication of semi-automatic dishwasher machine

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ABSTRACT

Though lot of human activities are automated in the present competitive world. There is a lag in automated dish washer. Some machines are already designed with the help of high velocity water only; hence there is a chance of uncleanliness and not removing tough strains in dishes. In order to overcome the above problems a special machine called – Semiautomatic Dishwasher Machine" with shower and water jet introduced in this work. The project is to design and fabricate semiautomatic dishwasher that is efficient and overcome the human work. In market existing dishwasher, the spray arm is not sufficient to spray water in each part of the dish. So, keeping this in mind, we designed the circular rack and spray arm in center of the machine which will spray the water equally and effectively in each and every area of dish. The machine has less cycle time, less energy consumption, less water required for cleaning as compare to manual machine.

Keywords: *Energy Consumption, Rack, Spray Arm, Semi-Automatic*

1. INTRODUCTION

In India most of the women wash the dishes with their hand scrubbing on it which is giving strain to the muscles. Therefore, purpose of this research is to reduce human efforts in dish washing. The dish washing machine has made cleaning and drying dishes much easier and more efficient. Investigations shows the problem faced in uses of automatic dish washer and solution on the same. Large amount of electricity, time and cost is required in case of existing dish washer machine, because of this reason the uses of dish washer machine in our country are very less. Currently the chores of washing the dishes are being performed by the women which results in the labor work as it is carried out for up to several hours each week. So, by developing semiautomatic dishwashing machine we can overcome the above-mentioned problems significantly. Also, by using plastic material for casing part, the overall weight of the assembly also reduced.

A dishwasher is a mechanical device for cleaning eating-utensils and dishes. Dishwashers can be found in private homes and hotels. Unlike manual dishwashing 's, which depend largely on physical scrubbing to remove soiling, the mechanical dishwasher cleans by the brush and by spraying water, at the dishes. A mix of water and detergent is circulated by a pump. Water is pumped to one or more rotating sprays arms, which blast the dishes with the cleaning mixture. Once the wash is finished, the water is drained. After the rinse cycle finishes and the water is drained, and the dishes are left in the atmosphere for drying.

The function of the dishwasher is to provide the mechanical action necessary to distribute and direct the detergent solution and rinse waters over, under and around the dishes to loosen and remove soil.

Automatic dishwashers vary in the design of their washing systems. Some have a single water source; others may have several water sources. Water is distributed in dishwashers by spray arms or spray towers. The design of the spray arms or towers may differ in size, shape and placement in the dishwasher, or in the number, size and location of their water ports (holes through which water is forced). All of the washing systems do a good job, but those with fewer water sources require greater care in loading the dishes to prevent blocking the washing action to various parts of the machine, especially the corners.

The dishwasher has made cleaning and drying dishes much easier and more efficient. This project work has been conceived having studied the difficulty in washing the any type of plates. Our survey in the regard in several home, revealed the facts that mostly some difficulty occurs in washing the dish in Hand. The washing power contains the chemical substances and this is reacting with human hand. Now the project has mainly concentrated on this difficulty, and hence a suitable device has been designed. Such that the dish washing can be done without application of any impact force. By using semi-automatic dishwasher, we can reduce time as well as human efforts significantly. In conventional dish washing process large amount of human power as well as quantity of water is used. So, keeping that in mind, to reduce this semi-automatic dish washing machine is developed.

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On Efficiency of Air-Phase Change Material Heat Exchanger for Free Cooling System

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Abstract *- Free cooling is a promising passive cooling technique that requires minimum or no energy for cooling the space. Free cooling can be achieved with the use of phase change material based thermal energy storage. An organic phase change material (PCM) with phase change temperature 35^{0}C is selected based on the climatic conditions of the selected location. A heat exchanger containing phase change material with selected geometry is tested by varying selected dependent variables, which are inlet airflow velocity and the orientation of the flat plates of the heat exchanger. In this paper, investigation results of an air-phase change material heat exchanger are presented along with its efficiency. It was observed that maximum heat exchanger efficiency of 74.07%was obtained.*

Keywords — *Air-PCM heat exchanger, Free cooling, Passive cooling, Phase Change Materials, Thermal Energy Storage*

I. INTRODUCTION

With increasing automation and industrialization, more and more machines entered into our lives. India, a developing nation, is the second-largest populous country in the world, and it is the third-largest consumer of energy after China and the United States of America, as per a study in 2019 [1]. Because of a growing population and their rising standard of living, energy consumption will continue to increase. Nearly 40% of energy is consumed by the domestic sector [2]. And the biggest fraction of energy consumption in the domestic sector is taken by space heating or cooling. Air-conditioners are extensively used for this purpose not only in residential buildings but also in commercial and industrial buildings. Apart from this, one more cause behind the ever-increasing trend in the use of air-conditioners is global warming. This results in an increase in the demand for electricity. Electricity production leads to the emission of greenhouse gases which causes a rise in the temperature of the Earth. This, in turn, pronounces more need to cool the space. Cooling the space without harming the environment can be done by either using renewable sources or using Passive cooling techniques. Passive cooling techniques are the methods that require minimum or no energy for cooling the space [3].

Free-cooling, one of the passive cooling techniques, is a process of storing outdoor coolness during the night and discharging this coolness during the day so as to maintain a comfortable indoor temperature [4]. Energy storage with the use of Phase Change Material (PCM) will reduce the mismatch between supply and demand and thereby plays an important role in conserving energy. Determinants of effective free cooling are; melting point of the PCM used, the Design of thermal energy storage, and the geographical location.

Present literature has given different theories regarding the first determinant, i.e., selection of suitable PCM for the free cooling [5-7]. Barreneche, C. et al. [8] have presented an innovative database of more than 300 PCMs. Iten M. [9] gave a review regarding various Thermal Energy Storage (TES) geometries for cooling as well as heating purposes. Various publications [10-15] gave different designs to test the free cooling phenomenon, which includes geometries like flat containers, shells, and tubes, Spherical encapsulated PCM beds, etc. The geographical location is also an important deciding factor as free cooling is applicable at the location where the diurnal temperature difference is larger than 15^{0}C. [16]

This publication focuses on finding the energy-saving potential of a Phase Change Material at a selected geographical location using an air-PCM heat exchanger. This heat exchanger is designed by Kolhekar et al. by solving a systematic non-linear optimization problem [17]. By carrying out discharging experiments with variable conditions, thermal comfort inside the selected location is monitored.

II. MATERIALS AND METHODS

For free cooling using PCM based heat exchanger, it is important to select the appropriate PCM and the container geometry. This section presents the methodology adopted for the selection of phase change material and for the investigations of the air-PCM heat exchanger to find out the cooling achieved.

DESIGN OF HEAT STORAGE SYSTEM FOR PARABOLIC DISH TYPE SOLAR COOKER

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ABSTRACT

Solar energy is available freely and does not create any pollution to the environment. Hence, researchers from all around the world are always working on solar energy applications with enhancement technologies. The solar cooker is one of the largest solar energy application, which is used to cook the food. However, because the solar energy is available only during the daytime, solar cookers are not getting popularity as the main device for cooking. To store the heat during the day, energy storage system is required. Hence, this study presents the design of heat storage system for parabolic dish type solar cooker. Heat storage unit is used to store heat during daytime and use for other than daytime hours. Also, the two types of heat storing materials were considered for analysis and compared. Hence, with proposed heat storage unit the cooking is possible even in the evening with a solar cooker. So that, solar cooker with storage unit is very beneficial for the humans and as well as for the energy conservation

INTRODUCTION

Solar cookers are the means to cook food with the help of solar energy. For this purpose, the solar energy can be collected using solar collector and transferred to the cooking vessel. The solar cooking is in practice since seventeenth century with continuous research efforts to improve the performance of cooker. The solar cooking was started with the solar cooker box and has been developed into various forms in due course of time. But, in the present condition the solar cookers are rarely used. Its main reason limits the usefulness of solar cookers in sunshine time only. The cooking at night or in cloudy days is not possible. This has created a necessity for development of solar cookers which can work at night as well as in cloudy days.

As the energy demand is increasing day by day with increasing population and pollution, the need of renewable energy is becoming the very essential in every field. There are various sources for renewal energy which are being widely used now days. Solar energy is the one of a very popular and easily available source of renewable energy. Still its use is only about 4% of total renewable energy used [1]. This solar energy can be used by means of photovoltaic (PV) cell or solar collectors. It has several uses like drying, space heating, cooking, electricity generations etc. [2–5]. And one of the well-known uses of solar energy is to cook the food [6]. It requires proper mechanism to use this solar energy for solar cooking. And it is done with the help of solar cookers. Till now, lot of solar cookers have been designed and used. It is being developed since seventeenth century [7–9]. Still it needs lot of research before selecting any one type for its use at specific region. It depends on geographical area, type of collector & its area, heat requirement, type of food to be cooked; at what time it is to be cooked etc. [10]. Among all those different designs, a simple solar box type cooker is used commonly due to its simplicity. The use of a solar box cooker is limited because cooking of food is difficult due to frequent clouds in the day or unavailability of solar energy in the evening. So cooking at night by this solar box cannot be done. Some have used hybrid energy also to improve the efficiency of cooker [11]. If storage for solar energy can be provided in a box cooker, then there is a possibility of cooking food in the evening and this will increase the effectiveness and reliability of these solar cookers [12–14]. This leads to need

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Five-Dimensional Plane Symmetric String Cosmological Model with Bulk Viscosity in General Relativity

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Abstract: In this paper, we considered five-dimensional plane symmetric Bianchi type-I cosmological model generated by a cloud of strings with particles attached to them with bulk viscosity in general relativity. To obtain solutions of field equations, we considered that shear scalar of the model is proportional to expansion scalar which leads to the anisotropic relation between the metric potentials. Also the physical and geometrical properties of the model are discussed in detail.

Keywords: Five dimensional plane symmetric Bianchi -I space-time; bulk viscosity; cloud string; general relativity.

1. Introduction:

In cosmology, the rate at which the phase transition proceeds is given by the expansion rate of the universe which is very fast in the early universe. Hence, topological defects will inevitably be produced in a cosmological phase transition [1]. String theory is one of the most important theory in cosmology that study about the unknown facts of the universe. It was developed to describe events at the early stages of the evolution of the universe. In the recent past years, in the framework of string theory several models in cosmology has been proposed by different authors in order to explain the hidden reasons of expansion of the existing universe with the acceleration. Cosmic strings are topologically stable defects, which are probably formed at some stage of the phase transition or earlier the introduction of particles in the early universe.

Furthermore, at extremely early times before the universe underwent the compactification transitions, solutions of Einstein field equations in higher dimensional space times are believed to be of physical relevance. As a consequence, now the higher dimensional theory is receiving great attention in both cosmology and particle physics. Particle physicists and cosmologists predicted the existence of GUT (Grand Unified Theory). Using a appropriate scalar field it was shown that the phase transitions on the early universe can give rise to such objects which are nothing but the topological knots in the vacuum expectation value of the scalar field and most of their energy is concentrated in a small region. As the necessity to study higher dimensional space-time in this field aiming to unify gravity with other interactions the concept of extra dimension is pertinent in cosmology [2].

Several researchers have studied Bianchi models with bulk viscosity in various frame work. Misner [3] explored the consequences of bulk viscosity in the cosmological evolution of the universe. Wang [4] have investigated Bianchi type-III string cosmological model with bulk viscosity in general relativity. Mohanty et.al. [5] have studied five dimensional axially symmetric cosmological model generated by a cloud of strings with particles attached to them in Lyra manifold. Bali and Pradhan [6], Tripathy et al. [7, 8], Rao et al. [9], Kandalkar et al. [10] have investigated different cosmological models in the presence of

A CONCEPT ANALYSIS AND REVIEW OF LITERATURE ON LANDSLIDE PREDICTION WITH DIGITAL IMAGE PROCESSING*

BY

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ABSTRACT

Global climate change causes landslide occurrence has been increased and subsequently, rise in the losses and damages associated with landslides. To save life of people in mountainous area from it is very important to warn them early. Landslides cause a serious harm to terrestrial life and activities in most high mountain ranges. Because of a difficult nature of such mountains ranges, it is very difficult to assess the susceptibility of slopes to landslides. Hence these situations give much importance to remote sensing specially in less developed areas. It is much important for the technique to be much accurate when it deals with life & environment. This review is to study Landslide Prediction in prone areas and to develop the new technique which will be more prominent warn administration or people so that they can take necessary actions to save life, environment & economic loss. It is very essential to build such a system which will earn the people and the authority in the hilly areas prior to the landslide which will save the people and animals in the prone region.

KEYWORDS

Landslide, Satellite, Hazard Assessment, Remote Sensing, Mountainous Region.

I.Introduction

Every year, landslides claim thousands of lives and cause considerable economic damage to buildings, roads, and other infrastructure around the world. As natural hazards, landslides are largely unpredictable. Improvement in the monitoring, detections, and investigations of landslide helps to raise the understandings of the process that causes this kind of disaster. Hence it can assist us to solve ecological problems, and to address it and for mitigating risk, and to deliver

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A Study of Impact of Celebrity Endorsements on Consumer Perception

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Abstract- The goal of this study is to see how celebrity and non-celebrity advertisements affect customer perception. The study is of a quantitative nature. Using a non-probability convenience random selection method, a sample of 200 people is drawn from the population. A organised questionnaire is used to collect data. Using SPSS , the collected data is examined using correlation analysis. According to the findings, there is a positive relationship between celebrity and non-celebrity advertisements on customer perception, although celebrity advertisements have a stronger positive relationship than non-celebrity advertisements. Although there have been numerous studies on celebrity endorsement in advertising, none have been conducted on the impact of celebrity and non-celebrity advertisements on customer perception. This void has been filled by our study.

Keywords: Consumer Perception ,Celebrity Endorsement, Celebrity Endorser, Non Celebrity Endorsement.

Introduction

Every year, a large sum of money is spent on celebrity endorsement deals.
Celebrities have a critical part in product promotion and advertising vigilance (Daneshvary & Schwer, 2000; Ka mbitsis et al. 2002; Mistry, 2006). The rapid advancement of communication technologies has resulted in an in crease in the number of celebrities. Celebrities are people who arewellknown in the public eye and who appear in advertisements for this reorganisation (McCracken 1989, p.310). The practise of gaining and, in particular, p urchasing promotion is referred to as advertisement.

Advertisers believe that messages delivered by celebrities have a higher level of petition, concentration, and exorability than those delivered by non-celebrities, and hence have a more favourable and meaningful impact on brand than messages sent by non-celebrities (Cooper, 1984). Advertisements featuring celebrity spokespersons have a stronger impact on consumers than those without (Atkin& Block, 1983). Individuals identify celebrity personal attributes such as attractiveness, likeability, status, and plausibility with the recommended brand (Atkin & Block ,1983; Nelson, 1974).

The impact of celebrity credibility on consumer perceptions and purchase intentions reveals that only "experts" have a significant impact on consumer perceptions. There is a clear link between believability and the efficacy of advertisements (Kamins et al. , 1989). People like celebrities more when they see them as experts and

ANALYSIS TECHNIQUES FOR NETWORK VULNERABILITY SCANNING IN UBUNTU LINUX ENVIRONMENT

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Abstract: - *Today's IT world belongs to open-source software, especially Debian class operating system i.e., Ubuntu. However, ubuntu take initiative to protect and stabilize server operating system in terms of providing security services to web hosting platform. With this dramatically change in hosting pattern, many threat actor start their offensive site for gathering information for destructive purpose. Ubuntu 20.04 LTS is launched by canonical for desktop and server platform. But while using this OS on network many high-end intruders intercept these network connections established between server and client system.*

This research work presents a study on analysis of vulnerability scanning using Nessus, Qualys and OpenVAS vulnerability scanner tools. By performing operations using these tools we implement CVSS (Common Vulnerability Scoring System), it is widely used for assessing vulnerability in class of complexity and severity. Research work summarize by calculating vulnerability under six different measures as Access vector, Related complexity, Authentication, Information confidentiality, Availability and Integrity. All these are result out as vulnerability analysis rating and score respectively. Research concluded with evaluation of vulnerability impact under ubuntu Linux environment.

Keywords– **Ubuntu, Linux, Nessus, Qualys, OpenVAS, CVSS.**

1. INTRODUCTION –

Now a days Internet become widely spread up among the world, which comprehend security aspect according to defender as well as attacker side respectively. Network security had different branches as security point of view. So, security can be breach at any side by internal as well as external intruder. This research work explains the analysis techniques for vulnerability scanning is Linux environment, specially in Ubuntu. As Ubuntu is one of popular Debian class operating system based on open-source system. It has wide variety of flavours [1] (Kubuntu, Lubuntu, Kylin, Mate, Xubuntu etc.) for network administrators and users. For this growing use for application, security scanning is essential in term of vulnerability detection and assessment.

In this paper, we analyze network vulnerability using three popular scanners i.e., Nessus [2], Qualys [3] and OpenVAS [4]. Which result out as vulnerability rating score. We import vulnerability management program to detect, manage and restructure network vulnerability. Basic approach of this program is to scan network vulnerable assets to build strong defendable system in the field of cyber security. Following **Fig. 1** shows structure for network vulnerability assessment.

Evaluation of Network Security on basis of Virtualization Techniques in Kali Linux Environment

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Abstract: In today's cyber security space network security has a top priority specially system based on Open Source platform. Kali Linux is the new door for white hat security specialist for hardening security for firm and organization. Kali is secure based distribution from linux family having Debian platform. As it includes over 600 + preinstall security application, so it is needy to keep record of network activity by the system and to the system. As kali linux is power tool for server security, virtualization is secure way to implement that tool. The main purpose of this article to evaluate network security on basis of virtualization techniques for this we track implementation of KVM (Kernel Based Virtual Machine) using three virtualization techniques – virt-manager, kimchi project and SDN (Software Defined Network).

Virt-manager is python-based desktop user interface for editing and customization of virtual machine through lib-virt. Kimchi is HTML based virtual machine management tool specially used for KVM. SDN is a technology revaluation which needed priory in cloud and virtualization world for providing network services. In this paper we aim to present advantages of virtualization techniques to explore network security hardening in kali linux.

Keywords: Kali linux, Kimchi, KVM, SDN, Virt-manager.

1. Introduction

Virtualization in network security is a new era. KVM and linux environment specially kali linux are key elements of network security. Problems arises while selecting a proper flavor of linux for server building are administration security [1], tools configuration, hosting capacity, client request response and hardware support for service providence. For its great security tool support Kali linux is well known, So, it is network demand to host web server on Kali in virtual manner.

In this paper we evaluate performance of virtualization techniques to build strong network policies, with hosting to numerous applications including hardware support.

As shown in Fig. 1, virtual architecture is differing than traditional architecture, which has additional layer and extended to subcategories of operating system and application for effective use of system hardware and extent use of Host Operating System (OS).

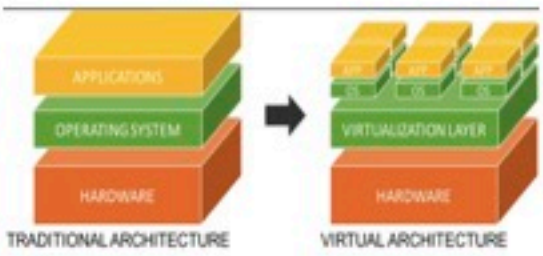

Fig. 1: Virtualization Architecture

This paper is organized as, Section 2 discusses about related work, which provides details of virtualization in network security, Section 3 discusses on methodologies which includes details of virtualization techniques as 3.1 – Virt-manager ; 3.2 – Kimchi Project ; 3.3 – SDN , Section 4 discusses about implementation of virtual machines, Section 5 report about result and evaluation and last Section 6 conclude the paper.

2. Related Work

This section discusses about the literature survey of different researchers in the field of virtualization and network security. The researcher Ganji et al. [2] examined suitable infrastructure for the linux OS. They also mentioned linux system security requirements in server network security. Patil et al. [3] proposed hypervisor level distributed network security (HLDNS) framework which is deploy to monitor VM related network traffic for intrusion detection. Li et al. [4] proposed framework, which divides network security into five stages which are as factor acquisition, model representation, measurement establishment, solution analysis and situation prediction. Bock et al. [5] explain real time hypervisor based on Xvisor for delivering secure and separated environment for virtualized