3.2.1_Number of papers published per teacher in the Journals notified on UGC

Sr No.	Title of paper	Name of the author/s	Name of journal	Year of publication
1	Review Paper on Performance Evaluation Of Aerobic STP And Suggestions To Improving By Using Six Sigma	Lt. Col Prof Sanjay Karodpati (Retd)	International Journal of Engineering and Technology, ISSN: 3295-0056	2022
2	Use of Ethanol on Construction Site	Dr.Rajesh Katdare	International Journal of Engineering and Technology, ISSN: 3295-0056	2022
3	Study Of Use Of Green Fuel On Construction Site	Dr.Rajesh Katdare	International Journal of Engineering and Technology, ISSN: 3295-0056	2022
4	Planning And Designing Of Energy Efficient Parking Shed In Campus	Aakanksha Ingle	International Journal of Engineering and Technology, ISSN: 3295-0056	2022
5	Design of Plumbing System using Revit Software	Mr.Aniket Nemade	International Journal of Engineering and Technology, ISSN: 3295-0056	2022
6	Study Of Green Industrial Building In Chakan Midc	Mr.Aniket Nemade	International Journal of Engineering and Technology, ISSN: 3295-0056	2022
7	Leakage Detection of Water Distribution Network in Shallow Ground using Electrical Resistivity Principle	Prof.Uzma Shaikh	International Journal of Engineering and Technology, ISSN: 3295-0056	2022
8	Traffic Congestion in Mundhwa Chowk Pune : Causes and Solutions	Prof.Uday kakde	International Journal of Engineering and Technology, ISSN: 3295-0056	2022
9	A Review Paper On Design On Rcc Esr Using Etabs And Comparing With Conventional Method	Prof.Uday kakde	International Journal of Engineering and Technology, ISSN: 3295-0056	2022
10	Survey Of Town For Identifying Water Logging Problem Causes And Solutions	Prof.Koakte Sarika	IJARIIE	2022
11	Review Paper On Combine Effect Of Silica Fume And Metakaolin With 1% Sisal Fiber On Concrete	Prof.Jitendra Dalvi	International Journal of Engineering and Technology, ISSN: 3295-0056	2022

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12	A Comparative Study Of Environmental Impact Assessment Of Various Metro Rail Projects In India	Prof. Swapnil Bijwe	JARIIE	2022
13	Development of handmade Geomesh from paddy straw for erosion Control and Air Pollution Abatement	Dr.Rajesh Katdare	IJEP 42(6): 710-716(2022)	2022
14	Voice Controlled Robotic Car using Arduino	Prof. Swati Khawate, Komal Prajapati, Yash Anand, Kakshil Chandodwala	International Journal of Scientific Research in Science, Engineering and Technology	2022
15	Design & Development of Automated Solar Panel Cleaning Robot	Dr Saniya Ansari, Mr Piyush Kadam	The International Journal Of Analytical And Experimental Modal Analysis,	2022
16	Review of the State-of-the-art Sewer Monitoring and Maintenance Systems Pune Municipal Corporation- A Case Study	Mr. Ravindra Patil, Dr. Saniya Ansari, Dr.Rajnish Calay, Dr. Mohmmad Mustafa,	TEM Journal. Volume 10, Issue 4, Pages 1500-1508, DOI: 10.18421/TEM104-02	2022
17	Blood Glucose Monitoring System Using Convolutional Neural Network Algorithm,	Ms. Pallavi Patil, Dr. Saniya Ansari	The International Journal Of Analytical And Experimental Modal Analysis, Vol XIII, Issue: VIII	2022
18	Design Study of Smart Robotic Framework for Sewer Conservation	Dr. Saniya Ansari, Dr. S M Khairnar, Mr. Ravindra Patil, Mr. Nikhil Nikalje,	SSRG International Journal of Engineering Trends and Technology,	2022
19	Autonomous Vehicle for Polluted Water Quality Monitoring and Controlling strategies	Saniya M. Ansari, A. Chattopadhyay, Anjali Yadav, S. Bardapurkar,	Stochastic Modeling and Applications	2022
20	An Assessment on Water Quality Monitoring Practices and Sewer Robotic System	Dr. Saniya Ansari, Dr. S M Khairnar, Mr. Ravindra Patil	IT in Industry, Vol. 9, No.1, 28-02-2021, ISSN (Print): 2204-0595, PP:140-148	2022
21	Fire Extinguisher Vehicle Using Android Application	Swati Khawate, Vedshri, Ritika, Priyank	International Journal of Scientific Research in Science, Engineering and Technology	2022
22	Efficient Use of Convolutional Neural Networks for classification of Sugarcane Leaf Diseases	Swapnil Dadabhau Daphal; Sanjay M. Koli	ICCCE 2021, Lecture notes in Electrical Enfineering 828	2022

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23	Single shot Detectore for Multi Vehicle Detection and Tracking in Different Lighting and weather Conditions	Shilpa Jahagirdar and Sanjay Koli	ICCCE 2021, Lecture notes in Electrical Enfineering 828	2022
24	Real Time Human gesture Recognition: Methods,Datasets and Strategies	Rameez Shamalik	Recent Trends in Intensive Computing	2021
25	Medicine Recommendation System Using Machine Learning	Prajkta Khairnar	IJSRSET	2022
26	Smart Door Lock System Using Face Recognition	Namrata Harke Aishwarya Patil Yash NImbalkar Sandesh Khore Sunil Rathod	International Journal for Research in Applied Science & Engineering Technology, Volume 10, Issue V	2022
27	Research Trends in Laser Beam Welding Technology: A Review	Vijay Bhujbal	International Journal of Research in Manufacturing Technology & Management	2022
28	Voice Controlled Robotic Car using Arduino	Prof. Swati Khawate, Komal Prajapati, Yash Anand, Kakshil Chandodwala	International Journal of Scientific Research in Science, Engineering and Technology	2022
28	Study of Thermal Analyatical Characuterstics of Gymnema Sylvestre Plant by TGA-DTA technique	Dr. Shobha Rupanar	The Journal of Maharaja Sayajirao University of Baroda	2021
29	Additive manufacturing with shape changing/memory materials: A review on 4D printing technology	Amol N.Patila S.H.Sarjeb	elsevier/(Materials Today) Volume 44, Part 1, 2021, Pages 1744-1749	2021

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REVIEW PAPER ON PERFORMANCE EVALUATION OF AEROBIC STP AND SUGGESTIONS TO IMPROVING BY USING SIX SIGMA

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Abstract – *The observed inefficiency of the Sewage treatment plants in India and their sub-par standards of performance and quality yield calls for a inspection of these plants. Owing to these problems, the amount of untreated sewage has risen and has a negative environmental impact on the surroundings. To solve this issue, we have read Review papers pertaining to the topic of STP process and DMAIC technique. Different review papers use different tools of Six Sigma, use of DMAIC with QFD, root cause analysis and more. The parameters which evaluate the performance of the plant are BOD, COD, TSS. The study is based on incorporating Six Sigma principles and apply them to reduce the variance of these parameters, to have positive impact on the performance*

Key Words: **Six Sigma, Define-measure-analyze-improve-control (DMAIC), Bio-chemical Oxygen Demand (BOD), Quality Function Deployment (QFD)**

1.INTRODUCTION

Humans and their subsequent projects generate tons of sewage each day, this sewage comprises of industrial waste, domestic waste, storm water and many more. The presence of both inorganic and organic waste gives rise to a mixture which can be toxic for the environment. Wastewater when discharged into water bodies can cause various diseases and contamination of land and water. Therefore, it is imperative that wastewater is treated before it is released into the environment and, if possible, treated it to make it potable. In India, the continual rise in population and urbanization has led to an increased demand of water and the authorities are finding it difficult to meet the daily requirements of water. To help mitigate this crisis, it is important for the Sewage Treatment Plant in the region to be functioning at 100% capacity. Surveys taken up by the Central Pollution Control Board for evaluating performance of STPs, it was found that more than 60% of the STPs did not meet the working standards. This is a major problem, which if not solved can prove to have some devastating effects.

2. LITERATURE REVIEW

2.1 D.D. Basu et al. in their report "PERFORMANCE EVALUATION OF SEWAGE TREATMENT PLANTS UNDER NRCD (2013) CENTRAL POLLUTION CONTROL BOARD OF INDIA" mentions that himself and his companions analyzed over 150 STPs spread over 15 states in India. The total treatment efficient treatment of the STPs was found to be 60%. A report was generated by the Scientists at CPCB on each of the STPs, that included remarks and suggestions to improve the efficiency of the plant. Considering the Maharashtra region, the defects observed in 6 STPs were the poor condition of oxidation ponds, vegetation growth observed on Sludge drying beds and maturation ponds. D.D Bose argued that the defects were due to the lack of attention and concentrated focus. The equipment efficiency also must be questioned, which in turn gave poor results.

2.2 S. K. SINGH et al. in their paper – "PERFORMANCE EVALUATION OF SEWAGE TREATMENT BASED ON ADVANCED AEROBIC BIOLOGICAL FILTRATION AND OXYGENATED REACTOR (BIOFOR) TECHNOLOGY"- A CASE STUDY OF CAPITAL CITY DELHI, INDIA (2014) illustrates that the study conducted by Delhi Technological University, in which him and his counterpart utilized the BIOFOR technology as an alternative to conventional aerobic treatment technologies. Results of STPs based on BIOFOR technology show that BOD, COD and Suspended Solids removal efficiencies were noted to be 95.2%, 93.4% and 97% respectively. This indicates the efficient removal of the parameters. Thus, BIOFOR systems open up further possibilities for a more economically and secure sewage process in India.

2.3 MICHAEL J. BODOH, UNIVERSITY OF WISCONSIN-STOUT- "REDUCTION OF CHLORIDE IN WASTEWATER EFFLUENT WITH UTILIZATION OF SIX SIGMA" (2006) attempted to implement a Six Sigma on company's wastewater treatment system. He sought to find whether the application of Six Sigma tools would result in reduction of the chloride concentration. It incorporated the DMAIC pattern to reduce the chloride levels. Michael and his team used Fishbone diagram and Pareto chart to locate the major contributor of Chloride source which turned out to be Brine Chillers, and defined Key Process Output Variable (KPOV) as mg/l. They also made corrections to measure parameters in Brine chiller 7 and 8, with the further use of Root cause analysis they

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Use of Ethanol on Construction Site

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Abstract—**Bio fuels, Ethanol being the most promising among them is experimented to find out if it has potential to replace conventional high speed diesel used as a fuel in construction machineries like Dump Truck, Road roller and excavator at construction sites. This is done by quantifying the vehicular pollution parameters; CO, CO2, NOx and HC emitted from these vehicles while using high speed diesel and Ethanol as fuels. Considerable reduction in a green house gas like CO2 is observed when High speed diesel is replaced by Ethanol. The quantification of pollutants is done by using empirical formulas used by researchers earlier. Also considerable reduction in Carbon Monoxide (CO) and Hydrocarbons (HC) is also observed, but the increase in oxides of Nitrogen (NOx) is found to be an issue although not very significant since it can be resolved by adding some catalysts or by make modification in the catalytic converter of the exhaust of the construction machineries. The study highlights the use of ethanol as future fuel which is not only economical but is also environment friendly**

Index Terms—**Petroleum base fuels, Pollution, construction, Ethanol, Fuel consumption, construction site**

I. INTRODUCTION

India is a developing country and there is a rapid growth in its Infrastructure. This growth has brought a large population from rural areas to urban cities resulting in overcrowding of cities. To solve this problem, many areas have seen a tremendous amount of construction of residential as well as commercial structures.

The building materials used in construction sites are found to cause all the types of pollution which includes air, water and soil pollution to the residential areas which are in nearby of such construction sites. The effect of such pollution may be minimized by taking precautions and using eco-friendly material However the pollution generated in the form of dust and air pollution by the machinery like Cranes, Excavators, Diesel operated generators, vibrators etc, is most often neglected due to its insignificant value when compared to other sources. But this insignificant value adds up to become severe due to rapid growth and increased quantum of construction

Non Conventional fuels have a potential to replace fossil fuel at the construction sites but its replacement will be possible when its advantages over conventional fuel like diesel will be known and accepted universally over a period of time. However use of petroleum based products in the form of diesel for operating machineries and in transportation is still in existence in many parts of the developing countries like India.

Diesel is a compound of hydrocarbons obtained by refining petroleum oil. All vehicles that use diesel release toxic pollutants into the atmosphere. The incomplete burning of diesel generates soot /particulate matter along with gases like nitrogen and sulfur, which are directly released into the atmosphere. These gases are invisible and the vehicle releases emissions even when it is idling.

Toxic fumes from the burning of diesel contribute to the production of ground-level ozone which damages crops, trees, and other vegetation. Also It produces acid rain, which affects soil, lakes, and streams and enters the human food chain via water, produces, meat and fish.

Considering all the above factors, diesel still contributes to a big portion of the pollutants in the air and therefore there is a need to use fuels that are alternatives to diesel.

Biofuels are liquid fuels that are made from biomass which is a cheap renewable source of energy. Ethanol and biodiesel are some of the types of biofuels available today, as alternative to petrol and diesel fuel In order to promote the use of Biofuels output for the growth ahead, the Union Cabinet (Govt. of India) has made new amendments in the National Policy.

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Study of Use of Green Fuel on Construction Site

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***Abstract*—Bio fuels are seen to be fast replacing the conventional petroleum based fuels, especially in vehicles · used for transportation in building construction Industries. These fuels have low-carbon content and which help reduce greenhouse gas and climate change due to impact from transport. . The aim of the present study is to quantify the emissions from petroleum-based fuel like diesel used in earthworks/transportation related vehicles and compare them with emissions generated because of the use of bio- diesel. Other parameters under comparison between above two fuels include cost comparison, efficiency of vehicles and environment impacts. The data generated would be helpful to find out all pros and cons of replacing petroleum based diesel with bio-diesel.**

***Index Terms*—Petroleum base fuels, Pollution, construction, Bio-Diesel, Fuel consumption, construction site.**

I. INTRODUCTION

As India is a developing country there is a rapid growth in Infrastructure. This growth has brought a large population from rural areas to urban cities resulting in overcrowding of cities. To solve this problem, many areas have seen a tremendous amount of construction of residential as well as commercial structures.

The building materials used in construction sites are found to cause all the types of pollution which includes air, water and soil pollution to the residential areas which are in nearby of such construction sites. The effect of such pollution may be minimized by taking precautions and using eco-friendly material However the pollution generated in the form of dust and air pollution by the machinery like Cranes, Excavators, Diesel operated generators, vibrators etc, is most often neglected due to its insignificant value when compared to other sources. But this insignificant value adds up to become severe due to rapid growth and increased quantum of construction

Non Conventional fuels have a potential to replace fossil fuel at the construction sites but its replacement will be possible when its advantages over conventional fuel like diesel will be known and accepted universally over a period of time. However use of petroleum based products in the form of diesel for operating machineries and in transportation is still in existence in many parts of the developing countries like India.

Diesel is a compound of hydrocarbons obtained by refining petroleum oil. All vehicles that use diesel release toxic pollutants into the atmosphere. The incomplete burning of diesel generates soot /particulate matter along with gases like nitrogen and sulfur, which are directly released into the atmosphere. These gases are invisible and the vehicle releases emissions even when it is idling

Toxic fumes from the burning of diesel contribute to the production of ground-level ozone which damages crops, trees, and other vegetation. Also It produces acid rain, which affects soil, lakes, and streams and enters the human food chain via water, produces, meat and fish.

Considering all the above factors, diesel still contributes to a big portion of the pollutants in the air and therefore there is a need to use fuels that are alternatives to diesel.

Biofuels are liquid fuels that are made from biomass which is a cheap renewable source of energy. Ethanol and biodiesel are some of the types of biofuels available today, as alternative to petrol and diesel fuel.

II. LITERATURE REVIEW

Since the beginning of the automotive industry, Bio-fuels have been used in engines. Rudolph Diesel tested peanut oil in his first engine after coal was found to be unusable. In the 1940s, bio-ethanol

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Planning and Designing of Energy Efficient Parking Shed in Campus

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Abstract - **A car park is an empty area designated for parking a car. The term usually refers to a specific area with a durable or semi-permanent surface. In most places where two-wheeled vehicles are the dominant mode of transportation, parking is a feature of every city and suburban area. Shopping centers, educational institutions, sports stadiums, giant churches and similar places often have huge parking lots. In recent years, the increasing demand for electricity and electric power generation from fossil fuels is increasing day by day which leads to atmospheric environmental impacts from greenhouse gases and the high cost of electric power from these sources makes it unaffordable. The use of renewable energy sources can overcome this problem. Therefore, in this work, we present a solution by implementing solar car parking. Detailed work has been done to determine the location of the solar car parks and the maximum generation of solar electric power.**

Index Terms - **Solar Canopies, Carports, Asphalt pavement, Solar Parking, EV Stations, Parking Lots, Solar and Electric Vehicles, Environment friendly parking lot.**

INTRODUCTION

Renewable energy sources such as geothermal heat. tides, wind, and sunlight can be abundant in nature, and they can easily cope with the increasing demand for electrical power. The sun provides 174.000 TWh of electrical energy in the form of solar radiation to the upper level of the Earth's atmosphere which drops to 121,800 TWh at ground level. This power is roughly equivalent to one year's use of all human activities on Earth. Solar irradiance, which is a measure of solar energy for a given area, is 1.3 kWm above ground level. and 1000 Wm^2 at ground level. We can harness this solar radiation with a solar photovoltaic (PV) system that can replace primary generations of fossil fuels and does not require refueling.

Installing parking blinds on your property protects cars from unexpected weather and damage. Vehicle protection for parking lots should be durable and strong enough to withstand harsh winds, provide protection from UV rays, and be made of materials strong enough to withstand dust and rain. Among the three influences on parking lot design, traffic specifically, truck traffic-is by far the most crucial. A large commercial parking lot might allow for low-cost thinner pavement design if there is little or no truck traffic. However, most commercial operations have dedicated loading areas and roadways that must accommodate heavy, slow-moving loads. A typical parking lot plan will show two or three pavement sections, typically identified as "Heavy Duty-Traffic Class III," "Medium Duty-Traffic Class II" and "Light Duty-Traffic Class I." Investing time predicting vehicle loadings and traffic flow will allow a designer to accommodate actual expected traffic.

The engineer should base the paving design on the local soil types as well as local municipal rules and requirements. Soil testing of the site is an absolute necessity prior to design and Construction of the building and its surrounding car parks. For rehabilitation projects, soil borings are a major asset as they provide the existing pavement cross section and type, strength, and moisture of the underlying subbase. This will provide a historical look at what the pavement section was and how it performed (its service life) and is a great tool in designing the new section. The soil borings will identify structural loading capacity of the in-situ materials, possible groundwater issues, and the variance in soil structures across the site.

Adequate pavement drainage is of great importance to all pavement designs. Both surface and subsurface (groundwater) drainage must be considered. All drainage must be carefully designed and should be

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Design of Plumbing System using Revit Software

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Abstract - **In India there is a rapid growth in the construction sector. Day by day we are forwarding steps into the world where technology is introducing the world as simple as possible. As we know India is a very rapidly developing country in the world. The construction industry in India is improving and providing a lot of jobs to the people. In the late 1960s, there was no growth in technology as compared to today. But now we have so many advanced technologies in our hands. The whole world is taking the initiative to implement technologies in their daily life. So in the construction sector, there is much software which is used in the whole world. "Revit" is one of the software which is widely used and accepted in the world for improving their construction quality. Quality is the main point and inevitable thing. Revit is very much useful for improving the quality of construction and it has so many advantages. But in India, there is no such growth of using software technology as compared to the other countries in the world. But some construction companies in India are coming forward with this technology and by using this they are improving their quality. The design communication is gradually being changed from 2D- based to integrated 3D digital interface.**

1.INTRODUCTION

In India we are facing many challenges. There are so many difficulties and problems raised on-site, but if we use Revit technology in our process of construction, we can eliminate such problems on our computers rather than on-site. It will be helpful for time and cost reduction. In this whole project, we study the objectives of software i.e., "Revit". We will discuss the features of the software that can be useful in our whole construction process.

2. WHAT IS REVIT?

Autodesk Revit is a building information modeling software for architects, landscape architects, structural engineers, mechanical, electrical, and PLUMBING (MEP) ENGINEERS, designers, and contractors. Revit software is based on the theory of BLM-BIM to guide the development of engineering software, to achieve the sharing of different professional information and related. It was overtaken by Autodesk in 2002, Its co-founder was founded in 1997 by Pro/E Software Engineer Technology Revit company. Compared with the traditional CAD platform for 3D modeling and operation, the Revit software based on the concept of BIM has a powerful and sophisticated 3D modeling technology. Revit API(Application Programming Interface) is one of the powerful applications used worldwide.

Autodesk Revit software has the following characteristics: (1) Powerful visual modeling features: the building, structure and water heating, and other professional design is a very good combination, the formation of a consistent three- dimensional visualization building model, and has a variety of user-friendly data conversion interface, the design of traditional professional design software to import the software, to achieve information sharing and collaborative work. (2) 2D- 3D easy conversion: the process of building design is not only to create a three-dimensional model of the process but also to draw the process of flat vertical profile drawings and three-dimensional expression. The software the 3D model building and its horizontal and vertical section drawings tied, the program design and graphics performance of the combined, so that designers can switch freely in 3D model and 2D drawings. And for the more complex structures, it can obtain the profile of the arbitrary position and analyze the design area. (3) The design has gradually deepened: Revit use 3D visualization technology and data management, which can truly reflect the various physical properties of the building components, in the early stage of the program designers can temporarily ignore these attributes, but with the design depth of the construction project, and

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STUDY OF GREEN INDUSTRIAL BUILDING IN CHAKAN MIDC

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Abstract: *The idea of green building has made a great significance in a making come into existence nation like India. The hypothesis indicates making seem unimportant the waste and the price of development. With expansion in process of building up land the normal properties were put to use as a part of ill-judged ways which drives us in the direction of the use of green structures and the idea helps in making ideal use of regular properties. The green building is a nature-friendly segment, since it depends on the essential belief, opinion - "reduce , use again and make use of again " . In the long run, the green structures manage the price of an abnormal state of money business and building execution , which drives us to the move-forward of future era. The point of a green building configuration is to make seem unimportant the interest on non-renewable properties, amplify the use good effects of these properties when being used and push up reduce, using again and use of renewable properties. With in connection with to the expression "Green buildings," we may simply give account of qualities of it as a special sort of working without having knowledge of the delicately balanced elements and start behind it . really, Green buildings have among its parts of a wide range of sort of material and gear .*

Author keywords: *Green Building; Resource efficiency; Energy efficiency; Waste reduction.*

1. INTRODUCTION -

These days, people give taking care point to be taken into account to ecological safety, in this way make up another pattern called Green buildings . It is not about the shading green, but rather has something to do with another structural idea . The "Green Building" is a having a great number of fields of interest subject, where the green building idea makes into company more number of components,segment and methodology which veer to a few subtopics that twisted together to frame the green building idea .

The expression "Green" says something about to naturally, kind practices from building configuration to the coming to an end decisions . It in addition hopeful person and Economic vitality use, water utilize, and storm water and waste water use again . A Green building is that building which is have undergone growth at a good in a number of ways ordered area with within the law configuration and reasonable materials put into and painted with eco pleasing materials . The building have to make ready for its inhabitants solid and pleasing environment in all atmosphere . It Stays cool in summer, warm in winter, inside completely safe-skinned from weighty rain-fall, gives normal contamination free air and light through entryways windows and ventilators with no acted the part of means . For specific necessary conditions it has sun based, wind power and eco friendly electrical, mechanical and so on small apparatuses . The expression "Green Building" makes a request to things on a list, as well in connection with development systems , building out-line and opening part, finishing, building operations , support, and the sky is the limit from there . The less effect a building has on human wellness and the earth, the more green it isr re-utilized or made use of again .

1.1 Related Literature -

A study done by Boyd and Kimmet (2006), took a gander at the Triple Bottom Line (TBL) way to deal with the budgetary execution of speculation properties, concentrating particularly on ecological and social attributes of green structures. The likely effect of improved natural qualities on venture sort property is appeared in Figure 1.

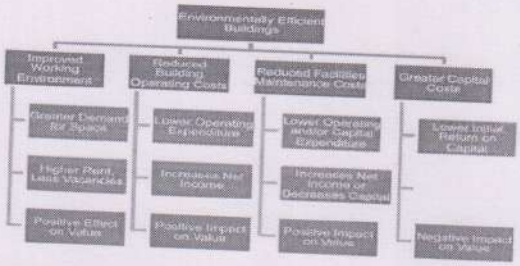

Figure 1: Value Impact of Environmentally Efficient Buildings

The figure shows four expected outcomes from greater environmental efficiency, i.e. improved working environment, reduced building operating costs, reduced facilities maintenance (FM) costs and increased capital costs. All characteristics, with exception to the latter had positive impacts on the capital value of property.

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Leakage Detection of Water Distribution Network in Shallow Ground using Electrical Resistivity Principle

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Abstract - **Water is a daily necessary resource for life, health, economic development, and the ecosystem all over the world. As water is precious to everyone, its availability and quality are essential. Wastage of water due to pipeline leakages is one of the most critical and largest challenges confronted throughout the globe. Water is considered to be one of the vital resources used around the world. And most of the countries highly depend on the standard of water management. Sustainability of available water resources has now become a dominant issue for several reasons. The issue is quite related to poor water allocation, inefficient use and absence of good enough and integrated water regulation. Therefore, wastage of water due to pipeline leakages is one of the most critical and largest challenges confronted throughout the globe. Previous few decades many tracking gadgets integrated with water leakage detection have been common. Monitoring water leakage is a necessary responsibility for government and residence prospect. Thus, from an engineer's aspect, distribution of water can be enhanced mainly by limiting the water waste that occurs along the path, between the source and the end-users. But leakages are unavoidable due to some circumstances, such as corrosions manufacturing defects and aging of pipes**

When leak occurs in pipelines, large volume of water is lost, causing adverse impact on the production industries and common people's routine. Since the pipes are invisible and Unreachable, indication of cracks is not noticed. Hence finding the leakages and replacing the defective pipe is very crucial during the distribution of water and gas. Therefore, Implementation of pipeline leakage detecting system has importance in domestic applications and industries. The existing leak detecting systems such as acoustic waves system, ground penetrating Radar (GPR) systems, pressure measurements, fiber optic monitoring and vision-based systems etc. are based on measurement of acoustic waves, radar waves, pressure, of needed lots of labor efforts and erroneous measurements of leaks would lead to expensive Repairing of the ground. Therefore, by a possible system is to be built, that can effectively detect the leaks in the pipeline to minimize human intervention.

Index Terms - **Leak detection, Resistivity principle, groundwater exploration, detection and location, leakage, pipe burst, water distribution system.**

INTRODUCTION

A water distribution system should supply necessary amount of potable water at demand points for domestic, commercial, industrial and firefighting purposes; the system should be capable of meeting the stress almost any time at required pressures.[1] However, sometimes considerable water leakages from the system may because problems associated with the pressures at the consumers tap and significant water losses. Leakage is defined as the amount of water which escapes from the pipe network by means other than through a controlled action. [2] Water leakage in distribution systems is typically classified into background and burst related leakage. Bursts (i.e. main breaks) represent structural pipe failures and background leaks represent the water escaping through inadequate joints, cracks, etc. Leaks can also exist in service reservoirs and tanks. [3]

The unaccounted flow of water and leakage within the water supply system and the urban water distribution network are paid attention in many countries. Leakage occurs in all water distribution systems nowadays. Scientific and systematic planning of the water distribution system can help to reduce the leakages. Initially the factors causing leakages should be identified and subsequently the leakage management methods can be adopted. A significant amount of water is lost in the water supply system. Water leakages have been a major problem for many regions around the world (Weifang et al, 2011). [4] In some countries water loss due to water leakages in the

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Traffic Congestion in Mundhwa Chowk Pune : Causes and Solutions

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Abstract - **In modern life we have to face with many problems one of which is traffic congestion becoming more serious day after day. It is said that the high volume of vehicles, the inadequate infrastructure and the irrational distribution of the development are main reasons for increasing traffic jam. The traffic problem in city like Pune is increasing with every day. The major factor for traffic congestion in mundhwa chowk today is the narrow road ,illegal construction on road , high population area ,improper traffic management etc. Congestion occurs when traffic demand exceeds the operational capacity, when vehicle got breakdown, etc of the roadway. To overcome the congestion and to save precious time it is essential to find proper solution for traffic congestion. In this study the data will collect from various sources. In this study traffic congestion problem in mundwa chowk Pune city will be identified and studied for finding out the causes and proposed solution of it. The collected data will be analyzed by using Regression Analysis and the correct suggestions will apply on the basis of severity of the congestion problem.**

Index Terms - **Traffic Jams, Conjunction, Road Broadening, Travel Time, Increasing Population, solutions.**

1.INTRODUCTION

Since immemorial transportation of people and goods from one place to another place has been a vital part of the human life. In olden times carts driven by animals such as horses, elephants and oxen were used for transportation. With the passage of time and discoveries, in the field of motor vehicle and fuels drastically changed the face of transportation which eventually boosted rapid industrialization resulting in different sizes and shapes of vehicles. Along with economic development in India, urbanization took place, people migrating from village to cities at a faster rate in India. It leads to increase in population in cities. Also, the barrier of cost was removed by the motor industry which became affordable for the middle class to buy two or four-wheeler vehicles due to this traffic density is increasing at a faster rate. In past decades, the traffic police controlled the traffic flow smoothly, but as the population and the living standard of the people increased the demand of the private vehicle has also increased hence, it is not easy for traffic police to control the congested traffic. Studies are done to reduce traffic density and the conflicting movement of the vehicle on the traffic congestion which was useful for the alleviation of traffic. Sometimes in traffic congestion area, the traffic information taken from the AHP-TOPSIS model achieve in getting the shortest route defined. Many studies identified the intersection congestion problem from the chronological balanced car data to eradicate traffic congestion problem. To avoid traffic congestion caused by the unwanted structure or encroachment or reconstructions of the structure, good planning for traffic management should be obtained. Planning was done before construction, during construction and after construction. For the uniform flow of traffic on the freeway, appropriate speed limit for safety as well as the smooth flow of traffic should be applied according to the studies done until now. Due to more traffic congestion in developing country will affect indirectly on the economy of that developing country. Some studies analyze the genuine occasion aspect for causing the traffic congestion by considering few parameters like maintenance of the road, lights on the roads, weather conditions etc. Some studies are done on the installations of auxiliary lane on the sag section of the pavement, for the smooth traffic flow. The auxiliary lane should be more than the 1000m. To mitigate the traffic problem not only charging based parking near small areas or in public areas are the better solution, but also gives the suggestions to the public to the maximum use of public transport. Traffic

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A review Paper on Design on RCC ESR using ETABS and Comparing with Conventional Method

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Abstract - **Elevated water tank is a water storage facility supported by a tower and constructed at an elevation to provide useful storage and pressure for a water distribution system. Due to post earthquake functional needs, seismic safety of water tanks is of most important. These structures have large mass concentrated at the top with a supporting structure of beams and columns (staging).**

Index Terms - **RCC ESR, Circular Water Tank, ETABS, Stagging, Earthquake Analysis.**

1.INTRODUCTION

Elevated water tanks are commonly used in public water distribution system. Being an important part of lifeline system and due to post earthquake functional needs, seismic safety of water tanks is of considerable importance, Elevated water tanks also called as elevated service reservoirs (ESRs) typically comprises of a container and a supporting tower (also called as staging). Staging in the form of reinforced concrete shaft and in the form of reinforced concrete column-brace frame are commonly . The column-brace frame type of staging is essentially a 3D reinforced concrete frame which supports the container and resists the lateral loads induced due to earthquake or wind. In public water distribution system, Elevated water tanks are generally used being an important part of a lifeline system. Due to post earthquake these structures are dangerous.

functional needs, seismic safety of water tanks is of most important. Elevated water tanks also called as elevated service reservoirs (ESRs) typically consists of a container and a supporting tower. In major cities and also in rural areas elevated water tanks forms an Integral part of water supply system. The elevated water tanks must remain functional even after the earthquakes as water tanks are most essential to provide water for drinking purpose. These structures has large mass concentrated at the top of slender which have Supporting structure and

1.1 Earthquake and its effects on structure

Earthquake is the sudden release of accumulated energy in the tectonic plates of the earth crust and resulting in the propagation of the seismic waves; P waves, S waves and surface waves. Most earthquakes occur due to compression or tensional stresses built up at margins of huge moving lithosphere plates that make up the earth's surface. The movements of plates such as plate collision, separation and slide results in the tremors and huge vibrations. The earthquake also occurs because of the volcanic eruptions that is sudden violent displacement of lava within or beneath the earth core. Due to earthquake, building resting on the ground will experience motion at its base. From Newton's First Law of Motion, even though the base of the building moves with the ground, the roof has a tendency to stay in its original position. But since the walls and columns are connected to it, they drag the roof along with them. The tendency to continue to remain in the previous position is known as inertia. In the building, since the walls or columns are flexible, the motion of the roof is different from that of the ground.

2.LITERATURE REVIEW

2.1 SEISMIC ANALYSIS OF RC ELEVATED RECTANGULAR WATER TANK USING IS 1893 (PART2):2006 DRAFT CODE The elevated water tank has 300 m 3 capacity, various staging height such as (6m, 9m, 12m, 15m, 18m and 21m) and also considered in different seismic zones such as II, III, IV

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SURVEY OF TOWN FOR IDENTIFYING WATER LOGGING PROBLEM CAUSES AND SOLUTIONS

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ABSTRACT

This research based on the rainfall causes flooding that it is caused by high intensity storm, rainfall and runoff in the city area that is overcome due to lack of proper drainage system and inefficient management. It discovers the water logging problem, its cause and its effects on the surroundings and nature of the city from the authorities of different organizations and people living in different wards of Pune City Corporation. This water logging becomes a burden for the inhabitants of Pune city and creating adverse social, physical, economic and environmental impacts. It creates disturbance to traffic movement and normal life, damage of structures and infrastructure, destruction of vegetation and water habitats and loss of income potentials are the encountered effects of water logging on city life. The rain water becomes polluted as it mixes with solid waste, clinical waste, silt, contaminants, domestic wastes and other human activities that increase the water born disease. Groundwater table rise below cultured, industrial and urban areas, and archaeological sites is a worldwide environmental phenomenon. Groundwater level rise can cause damages to the foundations of the archaeological monuments due to water logging and salt accumulation. Plenty of factors contribute to the groundwater rise. Important factors are those related to hydrological and hydro geological conditions as well as the inadequate sewerage, excessive irrigation and poor drainage systems. At the end of the study, there are some recommendations from the DYPSOE students of PUNE UNIVERSITY by selecting a suitable size of drain pipe to avoid the water logging on the porwal road (Lohegaon) & to provide some recommendation as an input for the concerned authorities for better management of storm water.

Keyword : - *Infrastructure, Waterlogging, Urban area, Drainage Study, Pune city, storm water etc.,*

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1. INTRODUCTION -

In last few years, rainfall induced water-logging has become a common hazard in the Urbanized areas. *When the water table rises to such heights that the soil pores in the root zone become saturated, thus displacing the air, the land is said to be water logged.* It affects water in soil to become displaced, natural procedures in the earth are affected and there is buildup of harmful substances in the soil, which can causes problems with growth of plants in

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REVIEW PAPER ON COMBINE EFFECT OF SILICA FUME AND METAKAOLIN WITH 1% SISAL FIBER ON CONCRETE

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Abstract - *The influence of replacing conventional concrete material with the waste material, natural fiber and mineral admixture has been studied in different proportions. Replacing cement with mineral admixture upto 20% has increased the strength of concrete. 30% partial replacement of sand with Used foundry sand and 1% Sisal fiber by weight of cement found to be the optimum percentage for replacement. Addition of used foundry sand didn't have any adverse effect on concrete. Addition of sisal fiber has result in reduction in workability. Sisal fiber causes high water absorption in concrete. Adding mineral admixture can help in reducing the water absorption of FRC. In this review paper, it has been found out that an experimental investigation can be done to increase the percentage of mineral admixture to reduce the consumption of cement with replacing the sand by UFS and incorporating the sisal fiber to increase in the strength properties of concrete.*

***Key Words*: Silica Fume, Metakaolin, Used Foundry Sand, Sisal Fiber, Compressive Strength**

1.INTRODUCTION

Concrete is currently the most commonly used construction and Concrete is most used material in the construction industries which comes 2nd after water. It provides excellent properties in terms of strength, durability, adaptability, and user-friendly. It is the mix of cement, fine aggregate, coarse aggregate and water. Yearly, there is an increase of 0.5% production of CO2 mainly because of cement, and sadly, around 8% of the world's CO2 emission is due to cement. In India, 130 metric ton of CO2 produced in year 2020. We are producing 38-40 MM ton of co2 in atmosphere for every 100 MM ton of cement. and its 550kg cement is being produce for every one person on earth. Which creates huge anxiety for degradation of natural resources using in concrete and its huge impact on environment. To reduce this anxiety researchers have studied on utilization of waste material like (silica fume, fly ask, steel powder, foundry sand, rice husk ash, plastic, GGBS, etc...) in concrete for making it eco-friendly. And also reducing the use of natural resources. Concrete has a lot of cracks due to shrinkages and some other reasons, to reduce the cracks and increase the mechanical properties of concrete, some of fibers are suggested from the researcher's like (coconut fiber, sisal fiber, bamboo fiber, etc...) as natural fiber is cheap and easily available as waste material. It enhances the properties of concrete.

2. LITERATURE REVIEW

2.1 T.V. Reshma et al. (2021)

Studies the Effect of waste foundry sand and fly ash on mechanical and fresh properties of concrete. And natural river sand is replaced with waste foundry sand in different percentages 0%, 10%, 20%, 30% and 40%. As well 30% fly ash is kept constant as a partial replacement of cement for M40 grade concrete. Better workability is obtained with increase in WFS and maximum slump value is achieved at 30% replacement of WFS. compressive strength is enhanced with increase in WFS content at each curing period for all the mixes. Maximum strength is observed for 30% WFS replacement. About 8.32% increment in compressive strength is observed.

2.2 Adanagouda et al. (2021)

studied the mechanical properties of HPC with metakaoline as partial replacement and addition of hybrid fibers (steel fiber(SF) and(PF) polypropylene fibers) The test results reveal a maximum increase of 31.83%, 37.05%, and 36.53% in compressive strength for curing periods of 7, 28, and 56 days, at 1.25% (0.25% PF and 1% SF) of hybrid fiber and 10% Metakaolin for Water binder ratio of 0.275.

2.3 Tarun Gehlot et al. (2021)

Did a study on the impact of cement replacement on the development of Ternary Blended Concrete by various percentages (0, 5, 10, 15, and 20) of Metakaolin and fly ash. fibres (0% to 1%) has been added with water cement ratio 0.32. Cubes Samples were being tested for compressive strength at age of 28 days. M60 grade of concrete has been considered. It has been observed that that all combination gives the strength more than control mix. At replacing 10% of cement each with fly-ash and metakaolin and addition of 0.75% of fibres an Increase in compressive strength by 15% was obtained.

2.4 S Jagan (2021)

Experimented on the effect of silica fume on the various properties of concrete. Increase in the percentage of Silica

A COMPARATIVE STUDY OF ENVIRONMENTAL IMPACT ASSESSMENT OF VARIOUS METRO RAIL PROJECTS IN INDIA

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ABSTRACT

This paper investigates the effect of the Delhi and Mumbai Metro, an intra-city mass rail transit system, on environment within Delhi and Mumbai. The objective of the present study is to carry out Environmental Impact Assessment (EIA) and preparation of Environmental Management Plan (EMP) for both the corridors. The Environmental baseline data collected for the study includes secondary data and primary data on quality of air, water and soil; noise; vibration; and sensitive receptors along the corridors. The identifying assumption is that in the absence of the extension there would be a smooth transition in pollution levels.

Various alternatives such as modes of transport, alignment, proposed design etc. have been considered and analyzed for its likely impacts on various environmental parameters. Additionally, an evaluation of potential environmental impacts in terms of 'with' and 'without' project situation has been considered for the justification of Corridor.

It is concluded to show that the Metro Projects has resulted in reductions of two important vehicular emissions, namely, nitrogen dioxide and carbon monoxide. It is estimated that a cumulative impact of a 35 percent reduction in CO levels for the regions around major traffic intersection in Delhi and Mumbai are observed. This is due to the traffic diversion effect, where people are switching from private modes of travel to the Metro. Given, documented evidence on the adverse health effects of air pollution, the findings suggest that these indirect benefits must be considered in any cost-benefit analysis of a rapid mass transport system. The Metro Rail Projects has proved to be a great success in the recent times as it turned out to be a boon for the people of the city.

Keywords :- *Transportation , metro rail, transit system, Environmental Impact Assessment (EIA).*

1. INTRODUCTION

The purpose of this Environmental Impact Assessment (EIA) is to identify, evaluate and report the environmental and socio-economic effects of the proposed Expansion and modernization of the Project. It is a process of identification, prediction, evaluation, and mitigation of biophysical, social and other relevant effects of developmental activity on environment prior to make commitment is. This process includes identification of mitigation measures that will be used to reduce or eliminate potential adverse effects, where appropriate. Environmental Impact Assessment is usually considered as the appraisal of impacts that any developmental activity may effects on the environment. Environmental impacts may be positive or negative, harmful of beneficial. EIA process implemented prior to any developmental project in order to ensure that no adverse impact will be faced by the environment. Many developing Asian countries have been facing serious issues originated due to increase of environmental pollution. India is also experiencing environmental degradation due to rapid growth in economic, Population, Urbanization and industrialization.

Since 1991, The Indian economy has witnessed a rapid expansion and growth with the advent of economic liberalization in India. This led to the initiation of major infrastructure projects in India. With this, cities began to grow at a brisk pace as they provided a major share to the economy with people migrating from remote villages and towns in India looking for employment. Similarly, the city of Delhi and Mumbai also witnessed the same economic growth. With this, the population of Delhi and Mumbai also started increasing at an exponential rate. The increase in population significantly led to the increase in number of

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Development of Handmade Geomesh from Paddy Straw for Erosion Control and Air Pollution Abatement

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Paddy straw, abundantly produced in northern India is stacked in the field after its harvest. Financial liability to clear straw from their field for next crop forces farmers to take desperate decision to resort to open field burning causing severe air pollution. Global climate change also has catastrophic impact on the built environment in the form of incessant rains to cause erosion of slopes of newly built embankments. Control of erosion of such slopes would increase security and safety of the infrastructure. In the present work, paddy straw is used as an alternative to high ended materials, like jute and coir, to manufacture rolled erosion control products (RECP). The claim of paddy straw is justified since it has same chemical composition as that of jute and coir. Thus using IS15868 part 1 to 6, a mesh type rolled erosion control product (RECP), made from stems of paddy straw, using handmade technique and labelled as 6PSG-12 (12 referring to aperture size in mm) is proposed [1]. Paddy straw geomesh (6PSG-12) was tested and found to possess important index properties, like tensile strength, drapability and durability. Similarly bench scale testing has confirmed effectiveness of 6PSG-12 in controlling slope erosion in the field.

KEYWORDS

Paddy straw geomesh, Rainfall intensity, Slope erosion control, Tensile strength

1. INTRODUCTION

India is a demographically big country and has fast developing economy. The road to development passes through many challenges and issues. Two such problems are soil erosion due to rains of higher intensity as a result of climate change and deterioration of air quality due to paddy straw burning in an open field in some parts of the country. Pruski in their study, have shown that a 1% increase in precipitation results in, on average, 2.4% increase in soil loss [2]. It highlights the danger of a drastic increase in soil erosion due to heavy rains. Raj point out the rain-triggered erosion of the railway embankment at Malda, India, due to heavy rainfall and eroded embankment is shown in figure 1 [3]. Halkude observed that rain induced gully formation on the surface of newly constructed embankment may lead to internal erosion and if not timely controlled by suitable method, may endanger safety of the structure [4]. Indian Agriculture Research Institute in their report on 'crop residues management', estimates that approximately about 82 million tonnes of cereal crop residues are produced in India and out of which 36 million tonnes are produced alone in the state of Punjab [5]. Review committee setup to discourage farmers from paddy straw burning in the field headed by Dr. Narendra Singh, has identified that out of 33.03 million tonnes of paddy straw produced in the states of Punjab and Haryana, 12.78 million tonnes were burnt in the year 2018. Soam have explained that one tonne of rice straw on burning in the field is estimated to produce, on average of 1168 kg CO_2, 1.0 kg of CH_4, 0.06 kg of N_2O, 27.8 kg of CO, 3.2 kg of non-methane hydrocarbon (NMHC), 2.9 kg of NOx, 1.6 kg of SO_2 and 10.4 kg of total particulate matter (TPM) emissions [6]. Accordingly, if 12.78 million tonnes of paddy straw is diverted from open field burning and used for alternate use, like making paddy straw, one would prevent the emission of 14.92×10^6 kg of CO_2, 12.780×10^3 kg of CH_4, 766.8 kg of N_2O and 132912 kg of particulate matter.

Paddy straw attributes to its poor digestive value and is not preferred either as fodder or for ruminant consumption. Various alternate uses of paddy straw in industrial applications including agriculture (compost/vermicompost), manufacturing (papermaking/food packaging/bricks/particle boards) and energy sector (ethanol/electricity) do not go well with farmers due to high investment and low returns. Both state and central government have floated various incentive schemes to discourage burning but are not very well accepted

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Voice Controlled Robotic Car using Arduino

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ABSTRACT

The project entitled "Voice Controlled Robotic Car" aims to build a car that reacts in accordance to the corresponding voice command of the user. Simple voice commands like left, right, forward, back, and stop is used for various movement of the car. The idea is to first design the hardware prototype and then develop the entire working code. At the heart of the car is Arduino UNO, which acts as the brain of the car. To the Arduino UNO are all the other hardware interfaced. The code is then developed, simulated, and fed to the Arduino UNO using the IDE. The car is then connected and controlled wirelessly via a smartphone. This wireless coordination is accomplished with the help of a HC-05 Bluetooth module. Voice commands are given to the robotic car via the android application installed in the smartphone Additionally, an HC-SR04 ultrasonic sensor is also interfaced, which when on detecting an obstacle stops the car, henceforth, preventing the collision.

Keywords: Arduino UNO, ASR, C++, IDE, Robotics

I. INTRODUCTION

Speech is an ideal means of communication in human beings. It is a form of voice that uses airflow coming out from the lungs. Air makes pressure over vocal folds which vibrate. Each and every person's speech is unique which therefore helps in determining one's personality and mood. To use our speech to drive a car is what our project demonstrates.

The project entitled "Voice Controlled Robot Car using Arduino" aims at creating a robot vehicle which can be controlled by the voice command of a person. Normally these types of systems are called as Speech Controlled Automation System (SCAS). The vision of our project is to recreate the driving technology thereby assisting the driver while driving the vehicle. At the heart of our project, sits Arduino Uno which acts as the brain of the voice-controlled robot car.

To establish a relation between the user and the microcontroller, a Bluetooth module is interfaced with the Arduino UNO. Bluetooth devices use 2.4 to 2.5 GHz frequency to communicate with each other. It has an approximate range of 2400–2483.5 MHz approximately. These devices generally use frequency-hopping spread spectrum communication technique to communicate with each other.

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Design and Development of automated Solar Panel Cleaning Robot

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Abstract:

Solar power is mainly produced from photovoltaic (PV) panels solar panels which are set at a particular angle in solar farm. However, the efficiency of energy generated from PV panels solar panels is affected by the accumulation of dust particles and other debris on the solar panels. This condition of the solar panels leads to the need for regularly or at some intervals cleaning of the surface of PV panels solar panels. Currently the labour-based cleaning methods for cleaning of PV panels/solar panels is costly, time consuming, water and energy usage is more as well as lacking in automation capabilities. To overcome this problem, the presented automatic surface of PV panel/solar panel cleaning system with without water. In addition, it is equipped with two rough sponges and a water pump system that can be used to clean dust or debris found on PV panel surfaces. The efficiency of the PV panels before and after the cleaning process is also observed.

Keywords:

PV panels cleaning, Arduino Uno, ultrasonic sensing module, Motor Driver L293D.

1. INTRODUCTION:

Solar power, is a renewable, suitable and eco-friendly never ending energy resource, it has been expanding all around the world due to its advantages in both economical and technological aspects. Solar power is generally produced from solar/photovoltaic panels. Solar panel efficiency depends on heat and solar irradiation which is one of the important aspect in order to extract the maximum power available from the sun. There is a need for economical cleaning of solar panel surfaces in new large-scale solar/photovoltaic power fields. The deposition of dust and dirt on solar/ PV panel surface leads to power loss as it reduces the solar energy which is received by the collector and stored using generators by absorbing or dispersing the sunlight rays. Other than this, the efficiency of solar panels somehow decreases with time which is also added by other factors such as fallen leaves, bird wastes, patches of water etc [1][2]. Therefore, many efforts that have been made to optimize the cleaning strategies which includes wet or dry cleaning methods, automated or manual cleaning methods, different types of brushes or fabrics are used, also chemical additives are used for effective cleaning of the solar panels[3][4].

Automatic self-cleaning method has been adapted to overcome the difficulties that arise from traditional cleaning or manual cleaning methods and to avoid a lack of productivity of electricity due to the deposition of dust on the solar panels. There are several factors which affects the efficiencies of solar/PV panels, such as bird droppings, shadows, dust, snow, high temperatures in summer, and dirt. However, the main factor which mostly affects the efficiency of the solar/PV panel is accumulation of dust, which reduces its efficiency by almost 50%, which depends on the temperature and also the surrounding environment. For instance, here "Automated Solar Panel Cleaning Robot" is introduced that cleans solar/PV panels. The robot system moves on solar panel surfaces which cleans the panels and removes dirt from the panels.

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(3)

Review of the State-of-the-art Sewer Monitoring and Maintenance Systems Pune Municipal Corporation - A Case Study

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Abstract – **There is an increasing trend of using automated and robotic systems for the tasks that are hazardous or inconvenient and dirty for humans. Sewers maintenance and cleaning is such a task where robots are already being used for inspection of underground pipes for blockages and damage. This paper reviews the existing robotic systems and various platforms and algorithms along with their capabilities and limitations being discussed. A typical mid-size city in a developing country, Pune, India is selected in order to understand the concerns and identify the requirements for developing robotic systems for the same. It is found that major concern of sewers are blockages but there is not enough information on both real-time detection and removal of it with robotic systems. On-board processing with computer vision algorithms has not been efficiently utilized in terms of performance and determinations for real-world implementations of sewer robotic systems. The review highlights the available methodologies that can be utilized in developing sewer inspection and cleaning robotic systems.**

Keywords – **sewer monitoring, robotic artifices, review, computer vision, purview, AI techniques**

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1. Introduction

Sewers are important part of modern sewerage system that discreetly and safely carry waste and storm water away from the buildings to a treatment place. For the whole system to function securely, sewers have to be in good conditions. Regular maintenance and improvement of sewers are essential responsibilities of authorities that operate the system.

There are many practical causes that lead to early deterioration of the sewers. These include blockages, cracks, joint displacement, tree roots intrusions. Failure of sewer may result in large volume of leakage causing environment risk and public health issues. Sewer blockage is a big concern which causes overflowing of dirty water causing foul smell and health risks to people. Thus, a lot of money and manpower are spent by authorities to ensure proper functionality of sewer systems.

Sewer maintenance and cleaning issues have drawn attention of operators and developers around the world. In developing countries like India blockages have been removed by manual cleaning, which is an undignified method and also harmer health hazard for the persons involved. Thus, mechanical and chemical cleaning methods have replaced manual cleaning. Sewer inspection is an important part of sewer maintenance to identify potential problems and resolve them part of routine maintenance program. Over the time automated and robotic systems were developed. Earlier tele-operated robot platforms were controlled by the human operator and connected by cable with an external energy supply (Stein and Niederehe, 1992). Since then, several improvements were made and robotic systems are now widely available for inspection and cleaning of sewer systems. The robotic systems are a preeminent alternatives for navigation and performing a task in the dull, harmful, and unmanned area.

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Blood Glucose Monitoring System Using Convolutional Neural Network Algorithm

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Abstract— Blood glucose level wishes to be monitored frequently for dealing with the fitness situation of hyperglycemic patients. the present day glucose dimension tactics still depend upon invasive techniques which are uncomfortable and lift the risk of contamination. to facilitate day by day care at home, we propose an smart, non-invasive blood glucose monitoring machine that can differentiate a user's blood glucose stage into everyday, border-line and caution based on blood snap shots. in this project, we modified theWeights of neurons of the hidden layer in this kind of way that it offers high accuracy in calculating the depth of the enter photo. the thermal pix are pre-processed and segmented the usage of dwt. then they are subjected to function extraction and labeled the usage of cnn classifier. accuracy of proposed device with consumer described dataset is located to be 98.05%..

Keywords—DWT, CNN classifier, image processing, hyperglycemic patient, blood glucose

I. INTRODUCTION

Diabetes takes region while a person faced trouble in balancing the body glucose level in distinct prandial states. diabetes is as a result of the deficiency of insulin with admire to the generated glucose within the frame. it can be due to demolition of insulin which is produced with the aid of beta cells in pancreas . diabetes may also be due to insulin resistance. this is a situation wherein the muscle mass, fats and liver cells of the body do no longer consume insulin successfully [4]. diabetes is assessed into3 elements: kind 1 diabetes, type 2 diabetes and gestational diabetes [5]. in kind 1 diabetes, the immune machine of the frame assaults and destroys the cells of the pancreas which produce insulin [6]. this results in the affected character who may be unable to generate insulin clearly. type 2 diabetes is the maximum commonplace diabetic level which is most generally visible inside the people over the arena. on this kind of diabetes, the pancreas could be capable of generate some amount of insulin. gestationalDiabetes occurs in girls inside the later degrees of pregnancy. most not unusual symptoms of diabetes are the excretion of urine within quick periods, continually hungriness, thirsty, surprising weight loss, tiredness and vision adjustments [2]. the lengthy length of diabetes with none treatment may reason kidney disease, stroke, heart ailment, nerve damages and blindness. after being those problems, chance of death with diabetes has emerge as 50% better than without diabetes in adults [7].

DiabetesMay be managed through physical workout, weight loss program, and right use of insulin regimen. oral medicinal drugs also are beneficial to manipulate for an early level of diabetes. controlling of diabetes additionally consists of reduction of chance elements for cardiovascular sickness together with lipid profile, high systolic and diastolic blood stress. in most instances of adults, 5 % kind 1 diabetic sufferers were considered about in all identified case. while, 90-95 % kind 2 diabetic patients have been taken into consideration forRemedy. therefore, it's far critical to develop the device of blood glucose size for rapid and common prognosis of diabetes [8]. people may be extra conscious of controlling blood glucose with common tracking. conventional blood glucose detection approach for diabetic sufferers is a chemical manner using a drop of blood.

A diabetic affected person needs to degree blood glucose regularly [2]. interplay of lancets with blood can also increase the risk of blood-related sicknesses and trauma.Frequent use of invasive tool complements the opportunity of blood contamination through lancets [9]. subsequently, such form of invasive technique for glucose measurement is not recommended in case of common blood glucose tracking. consequently, it have become critical to design the non-invasive tool for scientific tests. that's useful for fitness care. designing a non-invasive blood glucose monitoring tool includes spectroscopy techniques. spectroscopy is the interplay among remember and opticalRadiation. the powerful and inexpensive answers are the important thing enabler of smart healthcare inside the huge photograph of smart towns [10]. these are being anticipated to preserve the populace migration to city areas [10]. clever healthcare gadget contains of ambient intelligence, nice of provider and additionally gives non-stop guide of the tracking of critical sicknesses [11, 12].

The smart healthcare machine is most demandable for far flung tracking of diabetic sufferers with low value and rapidDiagnosis [13]. traditional blood glucose size is unable to serve each person's need in a rural and far off place. no matter having appropriate diagnostic centres for scientific check facility within the city region. clinical offerings aren't approachable to anybody at a far off region. it is vital to monitor blood glucose of diabetic sufferers where the analysis facility isn't without problems to be had. the immediate diagnoses of blood glucose and frequent monitoring are the recent demanding situations within the cleverHealthcare device.

II. LITERATURE SURVEY

A non-invasive blood glucose monitoring gadget based totally on cellphone ppg signals and machine getting to know algorithms is brought by using gaobo zhang et al. it builds up a terrific foundation for actual-time tracking offHuman physiological parameters in the home environment. firstly, a left-hand index finger video is recorded using a telephone and ppg alerts are extracted from the video. after that the fsw algorithm removes baseline go with the flow and divides the pre-processed indicators into single periods. the end result of the segmented ppg

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Original Article

Design Study of Smart Robotic Framework for Sewer Conservation

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Abstract *- Technology has revolutionized different human endeavors to take advantage of a clean, comfortable, safe life. In this paper, the proposed work introduces a robotic system that can navigate through buried sewers to detect isolated blockages using camera sensors and embedded vision. AI detection algorithms YOLOv3 and YOLOv4 have been trained with newly created imagery datasets and are a major aspect of this development. This robotic system will also solve the problem of human hygiene by removing the obstructions in the sewer in real-time with the help of a newly developed cutter. The linkage mechanism, cutting tools, the central frame and three separate crawler modules developed in Catia V5 R21 ED2 are also crucial parts of the proposed robotic system. The system provided is one of the best achievements in the field of sewer robotics that works to detect and remove barriers for real-world application. The methodologies in the presented system are revealed to specify the concepts and advantages.*

Keywords *- Sewer robotics, Central frame, Linkage mechanism, Computer vision, Embedded system, Artificial intelligence.*

1. Introduction

The underground drainage system is essential to modern development to maintain a safe and clean environment. However, despite many benefits, underground systems have several problems such as blockages, corrosion and cracks in pipes causing leaks and tree roots intrusions. Periodic maintenance is required to keep sewers in good condition.

Government authorities maintain the sewerage system in India, and the Government of India has presented standard operating procedures (SOP) for maintaining sewerage systems [1], [22]. The practice of manual scavenging continues in some places in India, although the government banned manual scavenging in 2013. Technological solutions, including robotics and remote-controlled devices, should be used to avoid this practice permanently.

In this regard, mechanical methods and sewer robotic systems are available and reviewed in earlier work [2]. The KARO [19], PIRAT [21], KANTARO [16], SIAR [17], KURT [18], MAKRO [20] are some instances in the sewer robotic field. The previous survey details were also analysed based on computer vision methodologies for the assessment of sewerage systems [23], [24], [25]. The mechanical systems are also used for water quality monitoring [26][28]. These robotic systems used sensors, computer vision, onboard remote control processing unit, and navigation assembly. Many existing systems are operated to solve distinct sewer defects to maintain sewerage [12]. In contrast, blockage is the most common concern in the real-world scenario in underground sewers [3]. There is not much information on detecting various sewer blockages, so necessary remedial actions are selected.

This paper collected a set of sewer blockage images, and the dataset is used to train YOLOv3 and YOLOv4 detection models on the darknet to detect sewer blockages. The linkage mechanism, cutting tools, the central frame and three separate crawler modules of the robotic framework are also presented for modelling purposes and highlighting the features required to work in underground infrastructure.

This paper describes the proposed methodology of dataset formation, training outcomes for YOLOv3 and YOLOv4, and hardware modelling in the proposed system.

2. Methodology

The block diagram shown in figure 1 details the assembly of the proposed sewer robotic system. The key aspects of the systems are a new imagery dataset for training

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AUTONOMOUS VEHICLE FOR POLLUTED WATER QUALITY MONITORING AND CONTROLLING STRATEGIES

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ABSTRACT

Water is one of the most precious resources. However, industrial development has made water pollution a critical problem today and thus water quality monitoring and surface cleaning are essential for water resource protection. This paper highlights about the various water pollutants like chemicals, heavy metals etc and the available sensor used to monitor the water contamination level. In this study, the sensor fusion technology is used as a basis to develop a multi-function unmanned surface vehicle for obstacle avoidance, water-quality monitoring, and water surface cleaning. We equip the autonomous boat with the following functions: (1) autonomous obstacle detection, avoidance, and navigation positioning, (2) water quality monitoring, sampling, and positioning, (3) water surface detection and cleaning, and (4) remote navigation control and real-time information display. The developed an autonomous water quality monitoring boat helps to monitor water parameters like pH, turbidity, temperature, and TDS (Total dissolved sloid) with detection and avoidance of living and non-living obstacle. The developed model is tested with ten water samples collected and the detected water parameters are communicated to the cloud server for further action.

I. INTRODUCTION

Water is one of the most precious resources. However, with industrial expansion water pollution is becoming a life-threatening problem, and therefore the monitoring of water quality and the cleaning of surfaces are more challenging areas. Indian rivers such as the Ganges contribute over 40% to water for the Indian population in 11 states, serving approximately an estimated population of 500 million people which is very high compared to the other rivers of India but had been classified as the second most polluted river in the world in 2017. The government initiated a project called the "Namami Ganges Program" in 2014 with a budget of around 20,000 crores to clean the holy river the Ganges. Likewise, there are many problems regarding water pollution under the Godavari River, which affects human life and the beauty of the Godavari River. Likewise, many projects are undertaken by the government to regulate pollution. The impact of water pollution is widespread. It causes many serious waterborne diseases in humans such as diarrhea, trachoma, hepatitis, etc. According to the WHO, 22% of all communicable diseases are waterborne diseases [1].

The greatest impact is on marine animals because their survival is totally linked to water. Due to the abundant growth of algae, the oxygen content in the water decreases, which can lead to the death of fish and other marine organisms. Covering about 71% of the earth's surface, oceans, and rivers are home to billions of types of aquatic life, but humans have not treated the aquatic environment in a friendly way. The various chemical contaminants present in water are color less so it cannot be detected by observing human eye. The main chemicals available in water are pH, dissolved oxygen-O2, temperature, electrical conductivity Oxidation reduction potential, turbidity and dissolved ions like Fluoride, Calcium, Nitrate, Chloride, Iodide, Sodium, Lithium, Magnesium, Bromide, Silver, Fluoroborate, Ammonia, Nitrite, Potassium, etc. [2]

Industrial waste, sewage, radioactive materials, and plastic waste are the pollutants found in the water bodies. Hence, it has become necessary for researchers to develop unmanned surface vehicles (USVs), autonomous surface vehicles (ASVs), and autonomous underwater vehicles (AUVs) with lower development costs and higher resolution in time and space measurements, route planning, and navigation, obstacle clearance, monitoring of water quality and water cleaning of surfaces. Traditionally, water quality sensing was done manually where polluted water samples were sent for examination to laboratories, which takes time, cost, and human resources. These techniques do not provide real-time data. Sampling and laboratory techniques are traditional methods for characterizing water quality [3].

In this study, Sensor fusion technology is presented for the development of a multifunctional unmanned surface vehicle for obstacle avoidance, monitoring of water quality, and cleanliness of the water surface. The developed self-directed vessel comes with the following functions: (1) autonomous obstacle detection, navigation avoidance, and positioning, (2) water quality monitoring, sampling, and positioning, (3) water surface detection and cleaning, and (4) remote control navigation and real-time information display. To overcome the mentioned

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AN ASSESSMENT - WATER QUALITY MONITORING PRACTICES AND SEWER ROBOTIC SYSTEMS

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Abstract: Water pollution has become a global issue and creating a severe problems due to contamination of various water sources such as agricultural waste, industrial waste, and sewage waste etc. So, the available sensory systems, nodes, and techniques plays a crucial role in identification of harmful pollutants in distinct water resources. The water pollutants monitoring techniques with prospered tools and sensors have been unfolded to find gap for future research maneuver. The need of real-time newer sensory system has been put forwarded for identification of mostly occurring harmful pollutants such as BOD, COD, TSS, and Hydrogen sulfide in examination of water quality.

In this modern advancement, robotic systems have taken an intrinsic stand in diverse fields of humankind. An underground infrastructure is a base of modern society. In this paper, the existing methodologies and developed sewer robotic systems have been discussed and concluded on their applications, limitations and impact on realistic scenarios. Also, the cardinal point is revealed that previous art work focused only on sewer defect identification but not standardized work on sewer blockages detection and removal. So, the sewer robotic system with features of cost effectiveness and standardized accuracy matrix should be developed to resolve sewer blockage issues and followed by human scavenging. The survey outcomes extend a province of sewer robotics to resolve blockages issues of buried sewers of distinct diameters in real-time with substantial methodology.

Keywords: **Water quality sensors, Water Monitoring techniques, Sewer Robots, Sewer Examination Methodologies, Assessment, Discernments**

1. Introduction

Polluted water needs to be clean and pure by removing the hazardous pollutants to protect human health from various types of diseases. The clean water is contaminated due to impurities added by industrial and agricultural discharge. The amount of largest discharged of sewages into the lakes and rivers affects not only on environment but also on human beings leading to various health issues and diseases. Chemical Pollution occurs when chemicals resulting into the environment by human activity. The water, soil, acid rain, greenhouse gases and ozone gas contaminating air are some examples of it. Chemical contaminants present in water are color less so it cannot be detected by observing human eye. The main chemicals available in water are pH, dissolved oxygen-O2, temperature, electrical conductivity, Oxidation reduction potential, turbidity, and dissolved ions etc. in [1].

The universally, every nation spend a large amount on assessment of buried infrastructure. The complex issues have to face during these assessment campaigns. So, the sewer robotics has become a comprehensive research area from earlier. The no autonomy, semi-autonomy, and full autonomy are the crucial types of robotic systems. The PIRAT, KARO, KURT, MAKRO, and KANTARO are traditional sewer robotic inspection systems as well as modern SIAR Project, which all clarify about attempts. All these systems focused only on defect identification but not tried to resolve any issue in real-time. Most commonly used sewer assessment techniques such as the SSET, CCTV, and Laser Scanning. The computer vision methodologies also have been put forwarded to be cognizant of recent approaches in sewer inspection techniques.

The paper is presented into six section. The preceding exploration on water quality monitoring has been specified in section 2 and sensor-based pollutant detection approaches in section 3. The section 4 investigates about earlier implemented sewer robotic systems whereas inspection methodologies and PMC survey report have been stated clearly in section 5. All in all, the assessment has been concluded in section 6.

2. Previous Art work on Water Quality Monitoring

Naturally, few water pollutants occur mostly such as heavy metals, nitrogen oxide etc. and few are formed during their chemical reaction with naturally occurring components in agriculture or pharmaceuticals industries. The given research clarifies about it.

R. Karthik Kumar et al. have developed a solar monitoring system by using wireless sensor networks to provide power supply to sensor network by using MATLAB [2]. Pradeepkumar M et al. introduced the architecture of

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Fire Extinguisher Vehicle Using Android Application

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ABSTRACT: In recent years, there has been an excessive need for sophisticated equipment for extinguishing fire. The field of robotics is growing every day and not all devices can be taken care of by humans. They often depend on other's help to move from one place to another. Providing human labour for extinguishing fire at difficult places is the biggest problem all over the world. With the help of proposed device, user can move fire extinguishing vehicle on their own by just giving commands through Android Application over Bluetooth. If any obstacle is detected while moving it informs the user and stops. It detects fire and smoke through sensors, if detected it sends signal to the user and receives command to switch on the motor for dispersing water. A prototype is developed by incorporating all the features in a single module.

KEYWORDS: Arduino UNO, ultrasonic sensor, Bluetooth module, Android Application.

1. INTRODUCTION

Fire is one of the most frequently occurring and destructive disasters and it is extremely serious hazard to people life safety. It is an undesirable mishap which emits heat, smoke or flame and gets converted in the huge fire. Over the last few years, the demand of fire safety systems has taken a drastic increase due to the public awareness. The system will be able to locate the victim location and intimation to various stations to be included in the fire control the fire exposures. Fire extinguishers are vital equipment to stop the massive fires in emergency situations and minimizing the mishaps. By implementing the proposed system in a particular area, it is possible to spot the fire within small course of time, and extinguish it without risking human lives.

Objective of System can be to design the android operated vehicle with help of microcontroller, to develop it to be operated with help of command given through mobile phone, to equip the vehicle for fire extinguisher mechanism and to develop the fire extinguisher vehicle and save human lives.

II.RELATED WORK

M. Meena Kumari and S. Shimi, "Voice Operated Intelligent Fire Extinguisher Vehicle International Journal of Emerging Engineering Research and Technology, vol. 5, no. 8, pp. 14-16, 2017.This paper exhibits the exploration and usage of voice operated fire extinguisher vehicle. The vehicle is controlled through associated discourse input. The dialect input permits a client to collaborate with the robot which is recognizable to a large portion of the general population. The upsides of discourse actuated robots are sans hands and quick information input operations. The discourse acknowledgment framework is prepared in a manner that the robot is controlled in view of the guideline through the Speech Commands. The entire framework comprises of three subsystems, the speech recognition system, transmitter area furthermore, the collector segment (on vehicle). The outcomes demonstrate that proposed robot is equipped for controlling flame, evading obstructions what's more, comprehension the importance of speech orders.

Patel, M.K. and Pancholi, M.B.K., 2017. Survey on Implementation Methods of Fire Fighting Robot. International Research Journal of Engineering and Technology. Detecting the fire and extinguishing it is a dangerous job and that puts lives of fire fighters at risk. There are number of fire accidents in which fire fighter had to lose their lives in the line of duty each year throughout the world. Increase in the number fire accidents are due to expanding human population and growing industrialization. The physical limitations of humans to deal with these kinds of destructive fires make fire extinguishing a complicated task. The research and development in the

Efficient Use of Convolutional Neural Networks for Classification of Sugarcane Leaf Diseases

Swapnil Dadabhau Daphal and S. M. Koli

Abstract Early identification and diagnosis of plant diseases are more crucial for holistic development of the agriculture sector in India. Farmer's general estimates and observations are time costly, sometimes vague and misjudged. For this purpose, a appropriate deep neural network is proposed for the automatic identification of sugarcane disease. The classification involves 5 types of diseases and 1 healthy class. Experimentation is performed over the manually collected dataset of size 1470 images. Performance estimation of the network is dependent on the choice of optimization. In this paper comparative analysis for different optimizers stochastic gradient descent, Adadelta and Adam is given.

Keywords Sugarcane disease · Deep neural network · Classification · Test accuracy

1 Introduction

Sugarcane is widespread crop taken in India due to commercial importance. Significant portion of Indian farming population is involved in sugarcane farming. However, many foliar and stem disease reduced the quantity and quality of net agriculture pro-

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(9)

Single Shot Detector for Multi-vehicle Detection and Tracking in Different Lighting and Weather Conditions

Shilpa Jahagirdar and Sanjay Koli

Abstract Intelligent communities use innovative ideas to make human life better. Smart transportation is one of such idea to be implemented in smart cities. As number of vehicles are increasing too fast, need of smart transportation is increasing day by day. Vehicle detection and tracking has become essential part of such smart transportation systems. Self-driving car, accident detection, traffic flow statistics, license plate recognition are some related research works which can be undertaken based on vehicle detection and tracking. This paper compares different approaches of vehicle detection techniques. Multiple vehicle detection and tracking in various atmospheric and lighting circumstances by making use of deep learning-based single shot detection algorithm is described in detail by authors.

Keywords Vehicle detection · Tracking · SSD · Surveillance videos

1 Introduction

Multiple vehicle detection plays important role in smart transportation system. By correctly detecting and tracking multiple vehicles from CCTV videos, numerous types of research work can be undertaken.

Obviously, various techniques for detecting and tracking vehicles is the base for all such research work. Vehicle detection and tracking becomes more challenging if it is to be achieved in different visual conditions [1].

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Real Time Human Gesture Recognition: Methods, Datasets and Strategies

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Abstract. Gestures are universal means of communication without any language barrier. Detecting gestures and recognition of its meaning are key steps for researchers in computer vision. Majority of the work is done in sign language already. Sign language datasets are compared with respect to their usability and diversity in terms of various signs. This paper highlights the available datasets from three dimensional body scans to hand action gestures. Their usability and strategies used to achieve the desired results are also discussed. Major neural networks are evaluated in terms of varied parameters and feutures. A Methodology for effective gesture recognition in real is proposed. Lastly Results achieved through an Open CV in combination with Sci-kit learn library based technique for gesture recognition are presented and analyzed in terms of efficacy and efficiency.

Keywords. Gesture Recognition, Datasets, Open CV, Hand Gestures, Sci-Kit Learn

1. Introduction

Gestures facilitate a user to interact with given environment. Gestures not only allow front end interaction with others with no language barrier but also remote interactions with a smart screen, virtual-reality and augmented-reality objects. Digital computing is made possible thanks to gesture-based human-computer interfaces[1] from everyday life physical objects like lights, mirrors, doorknobs, notebooks to the specific and focused tasks like driving a car or a medical surgery. Gesture study helps to further understand semantic meaning with contextual information about a person's behaviour and reactions. Among a plethora of various gestures which include hand, body and head gestures, hand gestures stand class apart as they simply carry more information due to multiple combinations than the other types of gestures.

Gestures play a vital role to help people with speaking and hearing disabilities as it replaces voice as the primary means of communication[2]. Dynamic gesture recognition through video processing is tedious due to the complications in the gesture background, ambiguity of video devices and the non-uniformity in a collected data. Enhanced requirements for computing devices especially in the recent lockdowns increased the volumes and necessity of easy to use computer interfaces.

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Medicine Recommend System Using Machine Learning

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ABSTRACT

Most people tend to live a long and healthy life, but people are busy in their day-to-day life and it is not possible for everyone to visit doctors for minor symptoms of a disease. Many people do not know about medicines and to visit a doctor and consult for minor symptoms for medicines is a time-consuming process. AI and machine learning like emerging technology can help us to create a recommended system that will prescribe medicine and this system can accurately predict a medicine to use. In this paper proposes the medicine recommendation system which will predict disease and medicine according to symptoms entered by patients/users.

Keywords: Recommendation system, Machine learning, Medicine, Healthcare

I. INTRODUCTION

Nowadays, people are busy in their day-to-day life, and it is not feasible for everyone to visit a doctor for minor symptoms of a disease. Visiting a hospital is a time-consuming process. Since Covid-19 pandemic has started, inaccessibility of clinical resources is at its peak, like the shortage of doctors and healthcare workers, lack of medical equipment and medicines etc. The entire medical ecosystem is in distress, which results in numerous individual's demise. Due to unavailability of doctors, many people started taking medication independently without consultation, it makes the health condition worse than usual. Precision medicine plays an important role to provide quality treatment and individually care for each patient. Now as the era of Artificial intelligence (AI) comes into existence the area of computer applications gets significantly boosted up. The concept of artificial intelligence is nothing but the simulation of human intelligence processed in computers. The development of artificial intelligence is based on the process of machine learning which includes getting information, evolving rules for extracting the information, illustrating approximate or definite inferences and verification. The successes of artificial intelligence are based on the accuracy of machine learning algorithms. The accuracy of machine learning algorithms is mainly based on the availability of a significant training dataset. Nowadays, we have enormous data for training a system. In this work, we are trying to analyze data and to build a Machine Learning based system that can suggest the medicine according to the symptoms that are entered by the user.

The entire medical fraternity is in distress, which results in numerous individual's demise. Due to unavailability, individuals started taking medication independently without appropriate consultation, making the health condition worse than usual [1]. One of the most concerned and searched topics on the internet is about health information. According to the Pew Internet and American Life Project, almost 60% of grownups are looking for enough health information on the web with 35% of respondents concentrating on diagnosing ailments online only [2]. Recommender System (RS) is one of the most popular

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Smart Door Lock System Using Face Recognition

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Abstract: ***Currently, we're facing security issues in every aspect. So, we've to resolve these issues by using streamlined technology. In this project, we're using the Face recognition module to capture human images and to compare with stored database images.***
The most important of characteristic of any home security system is to discover the people who enter or leave the house. Instead of monitoring that through passwords or pins, unique faces can be made use of as they're one's biometric characteristic. We aim to make a smart door, which secures the gateway on the base of who we are. The goal of this project is to help users improve the door security of sensitive places by using face detection and recognition.
The proposed system consists of basically the following subsystems:
Face Detection, Face Recognition and also automatic door access control.
Keywords: Face Detection, Face Recognition, Authentication, Convolutional Neural Networks

I. INTRODUCTION

Biometrics is unique to an individual and is used in numerous systems that involve security. In the face recognition approach, a given face is compared with the faces stored in the database in order to identify the person. The aim is to search out a face in the database, which has the most similarity with the given face. The field of smart home technology has grown by hops and bounds over the last several ages.

As a result, there are a number of new products available that can add convenience and security to any home. Numerous people became aware of smart home devices with the introduction of the smart thermostat. Today, smart thermostats are only the beginning. Smart devices are helping people manage their schedules, their grocery lists, their home lighting, and indeed their home security. Ideally, all these devices will work together to make life a bit easier, and a bit safer, too. One group of smart home security devices that are gaining in popularity are smart door locks. Smart door locks are also seeing a bit of innovation lately, with some companies adding facial recognition capability. Facial recognition makes it possible to operate a door lock with nothing but your face.

II. LITERATURE REVIEW

Facial recognition is a way of relating or attesting an existent's identity using their face. Facial recognition systems can be used to identify people in prints, videos, or in real- time. Facial recognition is an order of biometric security. Other forms of biometric software include voice recognition, point recognition, and eye retina or iris recognition.

The technology is mainly used for security and law enforcement, still there is adding interest in other areas of use. For decades, for science society using the smart home isn't a new term. As there's an advance in technology there's a fast increase in the field of home security automation.

The control of smart systems for automatic door lock systems is done through Bluetooth, the internet, etc. Most of the laptops, tablets, mobiles have built-in accessories which in turn reduce the cost of the system, but it controls within the Bluetooth range. The system which is based on Machine Learning has only three building blocks i.e., Camera, Arduino Uno, Laptop.

III. SYSTEM ARCHITECTURE

A Convolutional Neural Network (ConvNet/ CNN) is a Deep Learning
algorithm which can take in an input image, assign significance (learnable weights and impulses) to varied aspects/ objects in the image and be fit to separate one from the other. The pre-processing needed in a ConvNet is much lower as compared to other classification algorithms.

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RESEARCH TRENDS IN LASER BEAM WELDING TECHNOLOGY: A REVIEW

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ABSTRACT

The purpose of this review is to check the status of research and development took place in the area of laser beam welding technology. Various investigators carried out the analytical or experimental work and delivered their results. Laser Beam Welding processing parameters are the controlling parameters for the process efficiencies which include: welding penetration and geometry, laser power, beam diameter, welding speed, focal point position, laser beam reflectivity, thermal diffusivity, surface tension, content of volatile elements, edge surface roughness, atmospheric pressure, shielding gas flow rate, laser injected plasma and plume etc. Many researchers worked upon study and optimization of some of these parameters for different materials although lot of scope is there to work upon new possibilities of research. The major drawbacks of laser beam welding technology are hot cracking due to HAZ and porosity. Various researchers studied and investigated to reduce the effect of same on final welding quality. In this paper the efforts are being made to review the overall research work in laser beam technology and compile the same at one place.

Keywords: Laser, Welding, Beam, Metals, Alloys etc.

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1. INTRODUCTION

A laser is a narrow but powerful, monochromatic and directional electromagnetically radiated beam. Laser welding is a high power density fusion of joining process that produces high aspect ratio welds with a relatively low heat input compared with arc welding processes. The laser beam is supplied to the laser welding machine by the use of optical fibers. Laser welding can be performed out of vacuum and the fiber optic delivery of near infra-red solid state laser beam. It provides increased flexibility compared with other joining technologies. Laser welding equipment and associated technology is quite different from other welding techniques. The

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STUDY OF THERMAL ANALYTICAL CHARACTERISTICS OF *Gymnema sylvestre* PLANT BY TGA-DTA TECHNIQUE

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Abstract:
A well-known antidiabetic *Gymnema sylvestre* is one of the medicinal plants, whose therapeutic value has been studied in different systems of traditional medication. The plant used for the management of different disease and ailments of human beings. In modern system of herbal medicine, drug standardization is essential in order to assess quality and purity of herbal drug. TGA-DTA thermal analysis technique has employed in order to study physical and chemical changes of various herbal drugs. In this study thermal chemical characteristics of powdered leaves, stem and root of *G. sylvestre* were studied by using TGA-DTA techniques. TGA and DTA curves were taken from the range 35^0C to 700 ^{0}C and shows decomposition pattern of *G. sylvestre* plant material. In DTA curve, Endothermic peak in all samples at 101 °C is due to water loss from surface and pores of the powder. Second weight loss between 350-400 °C is associated to degradation of cellulose and hemicellulose present in plant. In further analysis there is possibility of degradation of lignin between 450-700 °C by further extending the analysis temperature. TGA analysis of powdered leaves, stem and root of provides information about stability and composition of medicinal plant *G. sylvestre*. The result of analysis gives supportive information which can be used for identification and standardization of *G. sylvestre* medicinal plant in herbal drug analysis.

Keywords: Thermal (TGA-DTA) analysis, *Gymnema sylvestre* leaves, stem and root.

Introduction:
Gymnema sylvestre Wild R.Br belongs to family Apocynaceae (Subfamily: Asclepiadaceae), an herbal Indian medicinal plant used in traditional medicine to treat diabetes[1]. In ancient times, Gymnema was known as 'Gurmar', which literally means sugar killer. This plant is used by India healers for nearly 2000 years as part of the Ayurvedic traditional system[2].
TGA-DTA analysis is important technique mainly used in standardization of herbal drug in Phytochemistry[3]. Thermal analysis gives qualitative and quantitative information of volatile and non-volatile compounds present in plant material. The overall composition and Thermal stability of plant can also be determined by TGA-DTA technique [4,5]. Recent research articles shows that apart from leaves, stem and root of *G. sylvestre* has medicinally importance and can be used as herbal drug [6,7].

Materials and Methods:
Collection and Authentication of plant material: *Gymnema Sylvestre* plant material (5 Kg) was collected from Mulashi, Pune in bulk for research study. The plant was authenticated by Botanical Survey of India, Pune (BSI). The material has been deposited at AHMA herbarium at BSI (Voucher No.SVS-1/783).
Preparation of Sample for TGA-DTA analysis: The leaves, stem & root of *G. sylvestre* were separated and washed thoroughly in water to remove soil, foreign particles and all other contamination adhered to surface. The plant materials are allowed to dry at room temperature. The air-dried plant materials were cut into small pieces and ground into fine powder using
grinder. Each plant part powdered sample was sieved through a 0.5 mm diameter sieve. All the three samples are stored in air tight container and used for further analysis as shown in Fig. 1. The sample has to be weighted before the analysis and then placed in TGA device and start to run the experiment.7.0 mg of each powdered sample was used for TGA-DTA studies.

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Additive manufacturing with shape changing/memory materials: A review on 4D printing technology

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Abstract

The purpose of this article is to review modern developments in four-dimensional (4D) printing, discuss what it is, investigates new applications that have been suggested and discovered its future impact. Additive manufacturing of intelligent/ smart dynamic structures, i.e. 4 Dimensional Printing technologies have attracted interest day to day since it was conceptualized first in the year 2013. This technology uses the creation of live 3D objects from multi-material 3D printers.4D printing technique uses the conversion of static 3D printed structure from smart materials (Shape changing/memory materials) into a dynamic one by application of external stimuli like heat, water, light pH, magnetic field etc. Nowadays, these dynamic 4D printed structures are widely used for manufacturing smart devices, actuators, smart textiles, smart shoes, and smartphones. This emerging field is becoming popular, day to day because it finds significant applications in Engineering as well as in biomedical fields like biomimetic printing, tissue engineering, smart sutures, drug delivery, artificial stents etc. A detailed review of 4DP technology, its processes, materials used with applications in different fields is carried out in this paper.