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Performance evaluation of electric discharge machining of titanium alloy-a review

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Abstract

Titanium alloy has a high specific resistance, excellent machining performance is non-corrosive, and the capability to withstand greater temperatures while maintaining outstanding mechanical properties. This alloy is, therefore, the right choice for aerospace, maritime, biomedical, and industrial applications. But machinability of titanium alloy is challenging as a result of its poor thermal conductivity, highly chemically reactive, and low elastic modulus hence it is treated as a difficult-to-cut material. Fast tool wear is observed during the machining of titanium alloy in conventional machining methods. Therefore, unconventional processing methods are used for the treatment of titanium alloy. Electric discharge machining (EDM) is one of these unconventional machining processes which are used for cutting with high precision, having a high degree of machinability, and getting a better surface finish. It is considered the best choice for machining titanium alloy. In the EDM process, different techniques are used to understand the effects of process parameters such as polarity, peak current, electrode type, pulse on time, and gap voltage on material removal rate, tool wear rate, surface roughness, and wear ratio. This paper critically investigates different types of EDM processes, experimental setups used for machining of titanium alloy, the effect of different tool electrodes and dielectric media on machining parameters, machined surface characteristics, and metal removal rate and tool wear rate.

Keywords: Electric discharge machining, Titanium-alloy, Wire EDM, Die-sinking EDM, Hybrid processes, Surface integrity, Dielectric fluid

Introduction

New challenges in the manufacturing sector, have lead manufacturers to development of reliable and high-quality products as per requirements. Nowadays, to enhance productivity and maintain the surface quality of complex parts, researchers have focused on high-speed machining technologies that involve electron beam machining (EBM), computer numerical control (CNC) machining, chemical machining, laser beam machining (LBM), and electric discharge machining (EDM) [1]. Chemical machining creates a hazardous environment while EBM and LBM need significant investments relative to EDM [2]. Therefore, EDM is the highly preferred machining process to cut very hard materials and worked on the electro-thermal principle [3]. This process is highly popular in manufacturing industries because of its ability to produce desired

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Design and Development of Hybrid Electricity Generation for Highway Charging Station

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Abstract

The power of highways is the idea to transform highways into renewable energy sources by using the dynamics of the city. The system will generate energy by using the winds created by the vehicles as well as the natural winds and sunlight. The vertical axis wind turbine in this system uses the wind pressure generated by the fast-moving vehicles on roads that helps to rotate its blade. It is designed with vertical long blades such that it will use the utmost quantity of wind energy. The turbine used in the prototype covers less space on the ground and is simple to handle and can easily be assembled and disassembled which makes it more durable. Solar panel is also fixed at the top of the turbine to generate electricity; further this energy can be used to supply the EV charging stations for the charging of EV.As observed the shortage of coal and water in the country is increasing day by day so this idea can be used to help the existing power generating plants so that the load demand is fulfilled. We can also satisfy the need of household energy by simply putting it on a terrace or roof of the house as this is combination of both wind generator which will use the natural air to produce energy and a solar panel which will generate electricity from the sunlight. In absence of one element it is still able to generate sufficient energy to supply the household power consumption.

Keywords: *Renewable Energy, Wind turbine, Solar Panel, Charging Station*

1. Introduction

Keeping in mind the entry of electrical vehicles in the Indian markets along with the charging stations to charge them, the demand of electricity will increase and so will the load on the existing generating stations. To help the existing generating system the idea is to transform highways into renewable energy sources by using the dynamics of the city. The system will generate energy by using the winds created by the vehicles as well as the natural winds and sunlight. The vertical axis wind turbine in this project uses the wind pressure generated by the fast-moving vehicles on roads that helps to rotate its blade. It is designed with vertical long blades such that it will use the utmost quantity of wind energy. The turbine used in the prototype covers less space on the ground and is simple to handle and can easily be assembled and disassembled which makes it more durable. Solar panel is also fixed at the top of the turbine to generate electricity; further this energy can be used to supply the EV charging stations for the charging of EV.The proposed method is to design and develop a hybrid renewable

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Design and Simulation of monitoring system for windturbine using low power wireless sensor network

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Abstract

The wind turbine can be seen as alternative source of energy generation as nowadays we are going for green energy generation. It is also a natural source of energy generation. So monitoring of wind turbine becomes essential and crucial. The parameters like blade position, vibration, wind speed, rotor condition, and power output are to be monitored continuously. The system consists of low power wireless sensor nodes assembled on wind turbine which forms the WSN and are controlled through embedded system and IoT. In case of errors the system reacts accordingly and tries to avoid the fault.

Key Words: *Wireless Sensor Network, Wind Turbine, Renewable energy, Python*

I. INTRODUCTION

To address the climate change, gas emission reduction, biodiversity protection and renewable technology development nowadays the world wide priority is to improve the energy conversion and efficiency. Wind energy is fastest growing sector in terms of installed capacity in all renewable energy sources. Wind turbines are located at remote place, unmanned. [9] They are always exposed to harsh environment, weather conditions as compared to conventional power generators. Due to this changing external environment the wind turbine undergo constant load changes giving rise to mechanical stress. The wind turbine is a three blade system driven by the wind. The blade and rotor transmit energy via the main shaft through gear box to generator. The maintenance costs approx 10 to 20 % of total cost of energy. The wind turbine requires a high degree of maintenance to provide reliable and cost effective power output. The maintenance of the wind turbine can be classified as predictive maintenance, preventive maintenance,and corrective maintenance. Under preventive maintenance category the condition monitoring of wind turbine is used which will determine optimum point between corrective and scheduled maintenance. While doing condition monitoring the most popular method used is SCADA (Supervisory Control and Data Acquisition) system. In this system the condition monitoring is carried out using documented data. The different parameters are monitored on regular basis. The system is good in practice but does not necessarily provide warning for the operators to carry out the maintenance. The

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Deep learning for classification and progration of Alzheimer disease: Literature Review

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ABSTRACT

Objective: Alzheimer disease (AD) is memory loss and another severity is dementia, this kind of syndrome reduces the memory power and thinking capabilities. We aimed to conduct an organized literature review of studies that applied Machine Learning and deep learning methods on data to detect progression of AD dementia.

Method: We review some of the recent articles on Alzheimer disease considering machine learning and deep learning approaches. Some deep learning techniques are also discussed and a brief overview of different feature extraction techniques that are used in diagnosing Alzheimer disease is provided. Finally, key findings from the reviewed articles are summarized and a number of major issues related to machine learning and deep learning based brain disease diagnostic approaches are discussed. Through this study, we aim at finding the most accurate technique for detecting different brain diseases which can be employed for future betterment.

Keywords—Alzheimer Disease, Dementia, Machine Learning, Deep learning

I. INTRODUCTION

Alzheimer's disease (AD) is the most common and a leads to progressive loss of neurons in the brain with Indiscernible Appearance [1 -3] accounting for 50–60% of all patients. Due to Alzheimer's disease changes in memory, cognitive function and behavior of patient. The damage to the brain is usually irreversible in AD. After about 3-5 years, the patient will die [4]. This disease has gradually attracted people's attention and become a hot issue in society. According to the development of cognitive model and the degree of impaired function, the onset of Alzheimer's disease can be divided into four stages: normal (control), mild (incipient), moderate (moderate) and severe.

Artificial Intelligence (AI) has many applications in computer vision, Natural Language Processing and speech recognition .in medical image processing also AI has a vast application, AI also made brain disease prediction and detection more accurate and precise that is why we can say Artificial Intelligence leading to 4th Industrial Revolution.

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A Review on Investigation of Effect of Floating Column and Infill Wall on the Seismic Performance of RC Structure

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Abstract - *In the present scenario of the construction there is huge range developments. Floating columns are columns which is rest directly on beam with holding continuity. Discontinuity of the framed element column and presence of infill masonry wall change the performance of building. Infill wall presence in the structure which is plays important role in building. Infill masonry wall have more beneficial effect on seismic behaviour of structure.*

Buildings that having some columns or walls in a particular storey or with some tall storey tends to collapse which is initiated in that storey. Floating columns are common to accommodate parking floors at ground floor or open halls at different floors in structure. The analysis of work is completed mostly for G+ various floors. ETABS2020 software is use for the analysis and design work. The work in terms of shear at base, Displacement, story drift is basically carried out in design and analysis work. The work is carried out for checking of the safe building design. Response spectrum method is going to be used to check the seismic performance of building. This paper is meant to review the concept of the structure is with and without floating column and with and without infill walls

***Key Words*: with and without Floating Column, Infill Wall, ETABS, Response spectrum**

1.INTRODUCTION

The construction is going to be huge development. Construction work is developed vertically with requirement of more space and for good view. More space is good along with strength if important in structure.

In case the floating situation various load come from above structure is act as vertical point load on beam then column is floating column and to increase the stability of frame of structure walls are used and wall which is mostly use to separate the rooms from one other is infill wall. In case of floating column with infill gives good strength having less quantity of steel requirement. But in case of floating without infill steel in beam increases but in case of infill with floating required more steel. The behaviour of building or any structure is depending on its Shap, size and geometry. Buildings which are not present with some framed element column or wall have some columns or walls in a any storey or with unusually tall storey tends to damage or collapse in that relative story.

1.1 Infill Wall

Infill masonry wall is nothing but closed barrier element of open space between framed structures which is use for to close the perimeter of building. It's separate the rooms from each other such as one other and also to provide more lateral stability and strength.

1.2 Floating Column

The structural element column is vertical member to transfer vertical load from above structure. Floating column is vertical structural member but it break the continuity of load transfer way that's why reduce the performance of building. This column transfer load directly on the beam as vertical point load which going to be increase beam depth and steel quantity in structure.

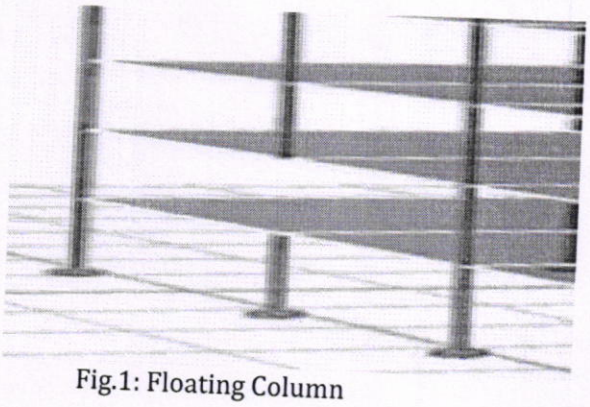

Fig.1: Floating Column

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Detection of Phishing Sites using ML

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ABSTRACT: Nowadays Phishing becomes a main area of concern for security researchers because it is not difficult to create the fake website which looks so close to legitimate website. Experts can identify fake websites but not all the users can identify the fake website and such users become the victim of phishing attack. Main aim of the attacker is to steal banks account credentials. In United States businesses, there is a loss of US$2billion per year because their clients become victim to phishing. [3].The general method to detect phishing websites by updating blacklisted URLs, Internet Protocol (IP) to the antivirus database which is also known as "blacklist" method. To evade Blacklists attackers uses creative techniques to fool users by modifying the URL to appear legitimate via obfuscation and many other simple techniques including: fast-flux, in which proxies are automatically generated to host the web-page; algorithmic generation of new URLs; etc.[3]

KEYWORDS: Detection, Phishing, Legitimate, Algorithms, Blacklists, Phishing Attacks, Machine Learning.

I. INTRODUCTION

Phishing is that the fraudulent plan to obtain sensitive information like username, password and credit card details, often malicious purposes, by disguising as a trustworthy entity in an electronic communication [1]. Nowadays Phishing becomes a main area of concern for security researchers because it is not difficult to create the fake website which looks so close to legitimate website. Experts can identify fake websites but not all the users can identify the fake website and such users become the victim of phishing attack. Main aim of the attacker is to steal banks account credentials. In United States businesses, there is a loss of US$2billion per year because their clients become victim to phishing. [3] In 3rd Microsoft Computing Safer Index Report released in February 2014, it was estimated that annual worldwide impact of phishing could be as high as $5 billion. Phishing attacks are becoming successful because lack of user awareness. Since phishing attack exploits the weaknesses found in users, it is very difficult to mitigate them but it is very important to enhance phishing detection techniques. [3] In this attack, Phisher makes a fake web page by copying contents of the legitimate page, so that a user cannot differentiate between phishing and legitimate sites. Social engineering schemes prey on unwary victims by fooling them into believing they are dealing with a trusted, legitimate party, such as by using deceptive email addresses and email messages. [1] The general method to detect phishing websites by updating blacklisted URLs, Internet Protocol (IP) to the antivirus database which is also known as "blacklist" method. To evade Blacklists attackers uses creative techniques to fool users by modifying the URL to appear legitimate via obfuscation and many other simple techniques including: fast-flux, in which proxies are automatically generated to host the web-page; algorithmic generation of new URLs; etc.[3]

II. PROPOSED DEFINITIONS

Different kinds of phishing attacks:

It is possible to use machine learning to understand data and build great data products. The project aims to explore this area by showing a use-case of detecting phishing websites using machine learning. [13] Machine Learning (ML) methods, can also be used in application development for information security. Optimization, classification, prediction and decision support system and great benefits can be provided to the person who isresponsible for information security. [3]

Phishing can be done through email phishing scams and spear phishing hence user should be aware of the consequences and should not give their 100 percent trust on common security application. Machine Learning is one of the efficient techniques to detect phishing as it removes drawback of existing approach. [3]This is a field of artificial intelligence and it has ability to learn without explicitly programmed. Various machine learning techniques are Supervised learning, Unsupervised learning and Reinforcement learning.

Voice Assisted Navigation System for Visually Impaired

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Abstract
Vision is one of the most vital and important senses that human beings possess. Millions of people across the globe face issues related to eyesight and use spectacles to tackle this issue but the subcategory including those hundreds or thousands who can't see at all, lead a difficult life. What they actually need are technologies and gadgets that can help them traverse with greater speed, comfort, and most importantly confidence. This project, "Voice Assisted Navigation System for Visually Impaired" aims to make life less problematic and easier for them. The project includes multiple modules which mainly help in obstacle detection, object identification using Machine Learning, GPS location gathering and sending trigger mail of coordinates and most importantly voice assistance.

Keywords: *Object detection, Machine Learning, GPS, Voice Assistance, Visually Impaired*

1. Introduction

Navigation is the art and science of determining the position of a person, plane or another vehicle and guiding it to a specific destination. A navigation system is a computing system that aids in navigation. A voice assistant is a digital assistant that uses voice recognition, language processing algorithms, and voice synthesis to listen to specific voice commands and return relevant information or perform specific functions as requested by the user.

According to WHO there are more than 39 million blind people in world who face a lot of challenge in their day-to-day life to traverse for their needs. It is expected to surge up to 115million by 2050.

The proposed system is the innovation that settles the issues looked at by conventional or existing techniques for the blind people upto some extent using sensors that are small, lightweight and is more efficient.

- This project helps blind people to run their life in a normal manner. The device can detects the obstacle that come in their way. This project is more efficient than the

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A Thorough review on Med Bot using Deep Learning

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Abstract - *Good heath is one of the most important and an essential aspect of any individual's life. Being healthy and fit is an amazing experience and can improve the quality of life of a person considerably. Health is most of the times equated to wealth which is a very apt comparison as having a good health can have a myriad range of benefits that are irreplaceable. The health allows the individual to achieve increased productivity and the peace of mind that is difficult to achieve in a compromised health. With the recent pandemic and the rise in the number of individuals that are suffering from various illnesses which can be attributed to the lifestyles which have become hectic and highly stressful. This makes the individuals highly susceptible to infections and other diseases which can detrimental to their overall well being. There is also a high demand for achieving remote diagnosis which can be helpful for the doctor as well as the patients. Therefore, the previous approaches on this topic have analyzed effectively implement the paradigm of Disease prediction and suggestion through the realization of a medical Chatbot which will be detailed in the next set of research papers on this paradigm.*

Key Words: **Pearson Correlation, k Nearest Neighbors, Linear Regression, Hidden Markov Model and Decision Tree.**

1.INTRODUCTION

A good health is extremely vital to the overall well being and the improvement in day to day activities and tasks that are performed by that individual. Being healthy allows the person to work at their maximum potential which can lead to a much satisfying experience. The maintenance of health is a complex and a conscious endeavor which requires an individual to lead a very healthy lifestyle. But due to the activities of the modern world, there are a considerable section of the population that do not lead a very healthy life and have a lifestyle that does not allow for an effective maintenance of the health. This has led to a considerable increase in the illnesses and other ailments that could have been prevented by leading a better lifestyle.

The increase in the illnesses have been noticed across the world with the development of the cities and the lack of work and life balance. This kind of lifestyle leads to a lot of stress and the lack of care for one's health. Health care system is among the motivating factors that might impact a person's ability to make effective use of certain available resources to them. Medical management might be tremendously advantageous in a multitude of areas, particularly effective technological developments and a significant rise in living standards of the people. As a consequence, medical organizations and the bio medicine industry have been recognized as among the field's biggest important and important themes. Large-scale innovations have primarily focused on medical breakthroughs that have been shown to be effective in extending and enhancing a human's life expectancy. This has only been accomplished by routinely preserving human health and removing extremely damaging ailments and serious disorders.

The advancements are and have been immensely valuable in maintaining human health and wellness potentially fatal disorders. Scientists may now facilitate the learning and collaborate on countless novel therapies and other precautionary measures in a relatively short time thanks to the emergence of the digital service, which has made significant contributions to this field of study. The notion that the World Wide Web has aroused an essentially ubiquitous response from customers, with the majority of the public being connected to this global communications architecture, has broad implications. This link has fostered increasing involvement amongst individuals since the internet infrastructure can be used for communicating effectively. As a response, a number of chatbots and other digital medical assistance websites have been created to aid the wider population with their health complications.

With the massive amount of people suffering from chronic ailments all over the globe, the medical system is under mounting pressure to provide appropriate health care to this growing population. Medical providers have been put under a lot of pressure to help these people be diagnosed and treated as quickly as possible. Physicians are under a great deal of stress due to their heavy schedule, which can result in a lot of human mistakes and other issues. Add to that the reality that almost all individuals with physical challenges are unable to travel hundreds of miles to see their doctor for a definitive reading and regular exams. As a result, this technique has been useful in comprehending past efforts for medical chatbot deployments, as well as in attaining our strategy, which will be detailed in future installments of this research.