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3.3.1 Total Number of research papers published per teacher in the Journals notified on UGC care list during the last five years

Year	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018
Number	5	5	11	12	8

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S.No	TITLE OF THE PAPER	NAME OF THE AUTHOR	DEPT OF THE AUTHOR	JOURNAL NAME	ISSN NO	I.F
1	Prognostication of Diabetic Retinopathy using Transfer Learning of Alex Net	Dr.S.Anita	ECE	International Journal of Mechanical Engineering	0974-5823	1.53
2	Prognostication of Diabetic Retinopathy using Transfer Learning of Alex Net	Mrs.D.Umamaheswari	ECE	International Journal of Mechanical Engineering	0974-5823	1.53
3	Surface alloying characteristics of WS2/Cu composite electrodes deposited on an aluminium alloy by electrical discharge coating	Mr.K.Shanmugam Elango	MECH	Journal of Adhesion and Technology	0169-4243	
4	Mathematical model for early stage identification of Parkinson's disease using neurotransmitter: GABA	Dr. R. Arokiadass	MECH	International Journal of Information Technology	2511-2112	2.22
5	Mathematical model for early stage identification of Parkinson's disease using neurotransmitter: GABA	Dr. S. Anita	ECE	International Journal of Information Technology	2511-2112	2.22

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Prognostication of Diabetic Retinopathy using Transfer Learning of AlexNet

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Abstract–Diabetic Retinopathy (DR) is one of the complicationswhich affects the retina and may lead to blindness in diabetes mellitus patients which can be avoided if diagnosed and detected early. Though it is often asymptotic if detected early is very much treatable. A computer vision-based algorithm can help the doctors and the patients for a faster and more precise diagnosis for treatment. Such algorithms can potentially have better accuracy in detecting different stages of the disease. However, developing such algorithms can be computationally expensive and to some extent complex in terms of extracting highly non-linear features. Applying deep learning in such scenarios increases the problem-solving capacity of the system significantly. Deep Learning algorithms have their own challenges often being dependent on corpus of labelled data. In the medical imaging field getting such large amount of labelled data can be expensive and time consuming but once completed and optimised would give a robust system for diagnosis..In this study a robust framework for the classification ofDR and healthy images were implemented. This framework using the feature map of AlexNetgives us promising results in terms of Accuracy80%.

Index Terms – AlexNet,Deep Learning,Diabetic Retinopathy.

1. INTRODUCTION

Diabetes being a chronic disease worldwide affects one out of eleven adults globally. Around 40-45% diabetes patients have a good chance of developing the diabetic retinopathy (DR) [1]. Diabetes Mellitus is a disorder which causes high chronic concentration of glucose in the blood [2]. In an estimate, more than 370 million people worldwide have a high possibility of being affected by this disease. The estimated indicate that this number can go as high as 600 million by the year 2040[1]. If this condition is not detected in the early stages, the diabetic retinopathy could potentially cause blindness [2]. The consultation of an ophthalmologist or an optometrist is required within the 3-5 years in diabetes type 1 patients after its onset.

A blood sugar control, healthy diet and lifestyles are recommended precautionary measures to avoid DR developments [3]. DR at its early stages is usually asymptomatic and often goes undetected until patients feel vision related problems such as distortions, blurs, or floaters [3]. This makes the detection of DR in its early stages highly significant for the diagnosis as well as the treatment of the patients [3].An automatic system with a deep learning algorithm for the detection of DR would help to reduce the burden on the medical professional to diagnose and on the other hand the efficiency would help them to treat more patients. The model aims to classify the DR into twoclasses in terms of Retina as shown in Fig1. There are 5 different classes onto which we could classify the DR severity. The 5 classes being: no DR, mild, moderate, severe, proliferative. To some extent this model can be made into a binary classification by fusing categories to get non-referable which is no to mild DR or (DR and no DR) versus referable which is moderate to worse DR [2].

. In order to make the diagnosis process easier to machine learning techniques used. Conventional machine learning techniques require an expert to identify the features manually. Such conventional methods depend heavily on the expert's accuracy on the feature extraction [4]. Recent developments in deep learning have been widely appreciated and applied in the domain of medical image analysis [5]. The previously complex high-level features are increasingly more understandable in advancing deep learning algorithms [5].

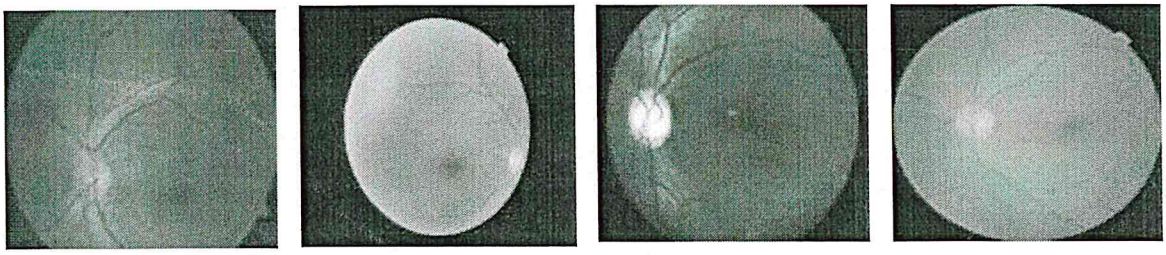

Fig1a.Sample Input Images taken for Healthy patients' Experimental Results

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Surface alloying characteristics of WS_2/Cu composite electrodes deposited on an aluminum alloy by electrical discharge coating

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ABSTRACT

Electrical discharge machining (EDM) is a widely used non machining technique for machining difficult-to-machine materials. Electro discharge coating (EDC) has been utilized to convert the surface of workpieces using standard electro discharge equipment by transferring electrode material to the workpiece using reverse polarity. Nowadays there is an increasing demand for lightweight materials such as aluminum (Al) alloys are widely used in aerospace as well as in automobile components due to reduction in weight to improve performance and efficiency. Nevertheless, the surface qualities such as hardness and wear resistance, of aluminium alloy are insufficient to meet the needs of a wide range of applications. As a result, the current research looked into the EDC of aluminium alloy utilizing a green compact WS_2/Cu electrode to alter the surface properties. Experiments were designed utilizing a response surface approach and a central composite rotatable design. The following significant EDC variables current, pulse on time, and pulse off time, determine the coating characteristics such as deposition rate (DR) and electrode wear rate (EWR). The most significant variables were determined using analysis of variance. A scanning electron microscope was used to explore various surface morphology that occurred during EDC. Energy-dispersive spectroscopy measurements were taken to validate the successful deposition of several elements on the workpiece surface.

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KEYWORDS
Electrical discharge coating; solid lubricant; deposition rate; electrode wear rate

1. Introduction

Aluminium alloys have found rapid adoption in industrial applications due to its exceptional qualities, such as light weight and high specific strength, resulting in the rapid replacement of ferrous materials, particularly in the aviation and automobile sectors. This has resulted in weight and fuel consumption reductions, as well as improved performance and efficiency. Surface qualities like wear resistance, corrosion resistance, and abrasion resistance are essential properties that do not fail owing to surface degradation caused by the environment when subjected to demanding conditions like high

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ORIGINAL RESEARCH

Mathematical model for early stage identification of Parkinson's disease using neurotransmitter: GABA

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Abstract Diagnosing the neurodegenerative disorder called Parkinson's disease (PD) is based on the symptoms that could be found only when 60% of dopamine content is lost (advanced stage) in the midbrain. The disease has no clinical tests in its earlier stage which leads to investigate an innovative method to diagnose PD in its early stage. The novelty of the work is to frame a mathematical model for the neurotransmitter called Gamma Amino Butyric Acid (GABA) to diagnose PD in an early stage. The mathematical model is framed using Regression Analysis (RA) and Neural Network (NN) as a fitting tool, considering Striatal Binding Ratio value (SBR), a quantitative measure of dopamine, as input parameters for the model. The model performance is valued using normal probability curve, analysis of variance (ANOVA), and residual plots for RA, regression, and Mean Square Error (MSE) plot for NN fitting method. This ensures that the model is highly significant in identifying the disease. Extreme Learning Machine (ELM) with the kernel function called Radial Basis Function (RBF) offers better performance of accuracy 95.34% than the other classifiers. The mathematical equation is constructed which aids the neurologists to find out the early stage disease.

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Keywords Early PD · Striatal binding ratio · GABA · Regression analysis · Neural network

1 Introduction

Parkinson's disease (PD) is neurological movement syndrome that progressively deteriorates the neurons in the midbrain. The region of mid brain is called as substantia nigra. The disease is medically diagnosed by the significant signs or symptoms of rigid muscles, tremor at rest, slowed movement, postural instability, cognitive problems and psychiatric disturbances. The symptoms are easy to identify when the PD is in progressive stage. But it is quite tough to identify in the early stage. This demands the advanced technique in effective patient management in neurodisorders [1–4].

The neurotransmitter called dopamine is responsible for human motor system. Degeneration of such a neurotransmitter in substantia nigra (SN) leads to PD [5]. Assessing the deficiency of dopamine in Caudate and Putamen of SN plays the crucial role in diagnosing PD from other neurodegenerative disorders and HC. Thus, assessing dopamine deficit is named as Striatal Binding Ratio (SBR) [6–8]. Although SBR plays a vital role in detecting PD, the rate of misdiagnosis is increased. This indicates that the SBR cannot be considered as the only biomarker for diagnosing Parkinson's disease [3]. Hence the neurotransmitter GABA is identified as a new biomarker to decrease the rate of misdiagnosis.

GABA is the inhibitory neurotransmitter which calms down the neurons in the human midbrain. Deficiency in GABA creates non-motor symptoms including depression, loss of sense of smell, Sleep disorder and psychiatric problems. The decreased level of GABA in the central nervous