

AN EXPERIMENTAL EVALUATION OF DEEP NEURAL NETWORK MODEL PERFORMANCE FOR THE RECOGNITION OF CONTRADICTIONARY MEDICAL RESEARCH CLAIMS USING SMALL AND MEDIUM-SIZED CORPORA

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58

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Article

A Novel Approach of Design and Analysis of a Hexagonal Fractal Antenna Array (HFAA) for Next-Generation Wireless Communication

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Abstract: The study and exploration of massive multiple-input multiple-output (MMIMO) and millimeter-wave wireless access technology has been spurred by a shortage of bandwidth in the wireless communication sector. Massive MIMO, which combines antennas at the transmitter and receiver, is a key enabler technology for next-generation networks to enable exceptional spectrum and energy efficiency with simple processing techniques. For massive MIMOs, the lower band microwave or millimeter-wave band and the antenna are impeccably combined with RF transceivers. As a result, the 5G wireless communication antenna differs from traditional

antennas in many ways. A new concept of the MIMO tri-band hexagonal antenna array is being introduced for next-generation cellular networks. With a total scaling dimension of $150 \times 75 \text{ mm}^2$, the structure consists of multiple hexagonal fractal antenna components at different corners of the patch. The radiating patch resonates at 2.55–2.75, 3.45–3.7, and 5.65–6.05 GHz (FR1 band) for better return loss (S11) of more than 15 dB in all three operating bands. The coplanar waveguide (CPW) feeding technique and defective ground structure in the ground plane have been employed for effective impedance matching. The deviation of the main lobe of the radiation pattern is achieved using a two-element microstrip Taylor antenna array with series feeding, which also boosts the antenna array's bandwidth and minimizes sidelobe. The proposed antenna is designed, simulated, and tested in far-field radiating conditions and generates tri-band S-parameters with sufficient separation and high-quality double-polarized radiation. The fabrication and testing of MIMO antennas were completed, where the measurement results matched the simulation results. In addition, the 5G smartphone antenna system requires a new, lightweight phased microwave antenna (μ -wave) with wide bandwidth and a fire extender. Because of its decent performance and compact architectures, the proposed smartphone antenna array architecture is a better entrant for upcoming 5G cellular implementations.

Keywords: 5G; multiband antenna system; antenna array; future handsets; smartphone antenna; defective ground surface

1. Introduction

The mobile wireless networking sector has advanced at a frenetic pace in recent times. The popularity of second-generation (2G) wireless cellular communication has prompted the introduction of broadband third-generation (3G) mobile phones as well as other wireless applications, such as wireless local area networks, Bluetooth, home radio

frequency (RF), and local multipoint distributed networks (LMDNs). The antenna is a critical component in any wireless transmission and reception system. Antennas with multifunctional, low-power, and multiband wireless applications are highly preferred for safety and mobility. All of these demands necessitate the creation of highly effective, small-sized, and low-profile antennas that can be integrated into wireless devices. It is anticipated that the commercial deployment of 5G will be approximately in the early 2020s [1–3].

One major difference in enabling technology for 4G and 5G communication is using millimeter wave (mmWave) frequencies, aiming for wider bandwidth and better spectral efficiency [4]. However, moving away from the current mobile service frequencies (<4 GHz), up closer to the mm-wave bands, introduces new features that require cautious consideration [5–7]. For wireless applications, Kaushik Mandal and Partha Pritam Sarkar [8] developed a wideband high-gain antenna in the shape of a U, with modified ground structures. To achieve multiband performance, a U slot patch antenna with an L feed probe was used [9]. Wei Xing Liu et al. [10] developed a small open-slot antenna that improves bandwidth while preserving ultra-wideband performance. One strategy for increasing bandwidth and antenna downsizing is to use fractal shapes. Fractal self-similarity and space-filling features are important for obtaining wide bandwidth [11,12].

The self-similarity attribute can be thought of as a division of a whole shape into subparts, each of which is a reduced replica of the whole. Antennas exhibit multiband and broadband behavior as a result of this. Because they have a long electrical length but aggregate into a compact physical volume and use space effectively, they have a space-filling property that causes them to shrink in size. The discontinuities caused by the fractal's complicated and ragged shape boost the antenna's bandwidth and effective radiation. Mohammad T. Islam et al. [13] proposed a circular-hexagonal fractal antenna for super wideband applications.

W.J. Lui et al. [14] presented a frequency-notched ultra-wideband (UWB) fractal-printed slot antenna with a Koch curve slot. A fractal microstrip antenna for current telecommunication systems was presented by A. Azari et al. [15]. Naresh K. Darimireddy et al. [16] used the ROGERS RT DUROID 5870 as a substrate to develop a miniaturized hexagonal-triangular fractal antenna for wideband applications. Ground structure is defined as a deficient ground structure with a rectangular open slot in the center. The patch is made out of hexagonal rings and triangular pieces that form a fractal pattern with the antenna. A partial ground plane reduces return loss when compared to a full ground plane.

M. Koohestani et al. [17] presented an ultra-wideband printed monopole antenna with a partial ground plane for UWB communication systems. Wideband features can also be obtained by changing patch and slot geometries, employing stacked patches, and using varied feed architectures. The first work by Mandelbrot et al. [18] found that fractals have a wide range of uses in various fields of science and architecture. One area is fractal electrodynamics, where fractal geometry satisfies electromagnetic assumptions to explore another category. The best in the most promising field of fractal electrodynamics questioned its application in speculation and receiving cable planning [19]. Traditional antenna frame research and structural methods are created in Euclidean geometry. Nevertheless, impressive measures have been taken to maintain interest in the possibility of new antenna devices. Fractals have been used in the designs instead of Euclidean geometric ideas [20].

From this rapidly evolving new research field has come the creation of fractal antenna cables. Since fractal geometry is an extension of established geometry, its constant representation provides a rare opportunity for construction to explore an infinite number of configurations that could not be achieved before, which are now used to encourage creative new antenna projects. There are mainly two dynamic research fields in the construction of fractal antenna devices [21]. These include the study of components of antenna devices formed by fractals and the use of fractals in the design of antenna device groups. The motivation behind this article is to outline the current progress in the assumptions and design of the components of fractal antenna devices represented by fractal antennas.

Prevention of Runtime Malware Injection Attack in Cloud Using Unsupervised Learning

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Abstract: Cloud computing utilizes various Internet-based technologies to enhance the Internet user experience. Cloud systems are on the rise, as this technology has completely revolutionized the digital industry. Currently, many users rely on cloud-based solutions to acquire business information and knowledge. As a result, cloud computing services such as SaaS and PaaS store a warehouse of sensitive and valuable information, which has turned the cloud systems into the obvious target for many malware creators and hackers. These malicious attackers attempt to gain illegal access to a myriad of valuable information such as user personal information, password, credit/debit card numbers, etc., from systems as the unsecured e-learning ones. As an important part of cloud services, security is needed to protect business customers and users from unauthorized threats. This paper aims to identify malware that attacks cloud-based software solutions using an unsupervised learning model with fixed-weight Hamming and Mexiannet. Different types of attack methodologies and various ways of malicious instructions targeting unknown files in cloud services are investigated. The result and analysis in this study provide an evolution of the unsupervised learning detection algorithm with an accuracy of 94.05%.

Keywords: Security; malware; Hammingnet; Mexiannet; SaaS; PaaS

1 Introduction

Cloud computing is a major development field in the computer sector. Cloud is the space for storage, whereas cloud computing, based on internet usage per hour, helps deliver on-demand services. Utilizing a network to access servers that are hosted on the internet is one alternative to accessing a local server to perform operations like retrieving, storing, managing, and processing data. The objective of cloud computing is to share resources between the client and a server through cloud providers, cloud consumers, partners, and vendors. The resource sharing is achieved at various levels like infrastructure cloud (IT infrastructure management, i.e., platform as a service), business cloud (business as a service), software cloud (software as a service), and application cloud (application as a service). Currently, the market for mobile phones is increasing. Consequently, mobile cloud computing will be an inevitable



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Prevention of Runtime Malware Injection Attack in Cloud Using Unsupervised Learning

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Abstract: Cloud computing utilizes various Internet-based technologies to enhance the Internet user experience. Cloud systems are on the rise, as this technology has completely revolutionized the digital industry. Currently, many users rely on cloud-based solutions to acquire business information and knowledge. As a result, cloud computing services such as SaaS and PaaS store a warehouse of sensitive and valuable information, which has turned the cloud systems into the

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Facial Age Estimation Using Machine Learning Techniques: An Overview

by Khaled ELKarazle ^{1,*} Valliappan Raman ² and Patrick Then ¹

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Gender-specific Facial Age Group Classification Using Deep Learning

Valliappan Raman¹, Khaled ELKarazle^{2,*} and Patrick Then²

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Abstract: Facial age is one of the prominent features needed to make decisions, such as accessing certain areas or resources, targeted advertising, or more straightforward decisions such as addressing one another. In machine learning, facial age estimation is a typical facial analysis subtask in which a model learns the different facial ageing features from several facial images. Despite several studies confirming a relationship between age and gender, very few studies explored the idea of introducing a gender-based system that consists of two separate models, each trained on a specific gender group. This study attempts to bridge this gap by introducing an age estimation system that consists of two main components. The first component is a custom-built gender classifier that distinguishes females and males apart. The second is an age estimation module that consists of two models. Model A is trained only on female images, while model B is trained only on male images. The system takes an input image, extracts the facial gender then passes the image to the appropriate model based on the predicted gender label. Our age estimation models are based on the Visual Geometry Group (VGG16) networks and have been modified to fit the nature of our problem. The models produce accuracies of more than 85% individually, and the system achieves an overall accuracy of 80%. The

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Understanding the Usability of a Literature-Based Discovery System Among Clinical Researchers in Sarawak, Malaysia

Celina Sze Jun Phang (Swinburne University of Technology, Sarawak, Malaysia), Wan-Tze Vong (Swinburne University of Technology, Sarawak, Malaysia), Yakub Sebastian (Charles Darwin University, Australia), Valliappan Raman (Swinburne University of Technology, Sarawak, Malaysia) and Patrick Hang Hui Then (Swinburne University of Technology, Sarawak, Malaysia)

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Remote Arrhythmia Detection for Eldercare in Malaysia

by Kevin Thomas Chew¹ ✉️, Valliappan Raman² ✉️ and Patrick Hang Hui Then^{1,*} ✉️

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Survey of Promising Technologies for Quantum Drones and Networks

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ABSTRACT Due to recent advancements in quantum drones, the Internet of Quantum Drones (IoQDs), and Drone-to-Satellite connectivity, several advantages have been anticipated for real-time applications. This work examines quantum computing issues, including quantum data processing, techniques, circuits, and algorithms important for quantum drones or their networks. Here, we discussed the current research trends on quantum computing, quantum-safe computing, or post-quantum cryptography important to quantum networks, followed by the numerous advantages, limitations, future advancements, and research issues connected with quantum technologies, drones, and their network. This work has also prepared a taxonomy of quantum-related areas depending upon the logic of their learning, followed by a review of each of these areas. We review the most recent work over quantum algorithms used in various-quantum-related areas and networks, the role of quantum satellites for drone-based networks and communications, how quantum artificial intelligence and quantum machine learning are important for quantum drones, networks and futuristic applications, quantum attacks, quantum genetic algorithms, and the importance of post-quantum and quantum-safe cryptography. The challenges and research directions in these domains are explored as well. Lastly, this work presents an overview of the current state of knowledge in various promising technologies that are recently found to be important for quantum drones and networks.



Query Aware Routing Protocol for Mobility Enabled Wireless Sensor Network

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Abstract – Mobility Enabled Wireless Sensor Network (MEWSN) plays a significant role in different fields including environmental control, traffic control and healthcare. The performance of MEWSN is dependent not only on sensing but also on routing. Multiple research works are carried out by different researchers in the domain of routing in MEWSN, but still the performance of MEWSN gets lacked. Poor routing is the root cause for the performance degradation of MEWSN. In this paper, a new routing protocol namely Query Aware Routing Protocol (QARP) is proposed to balance the load in MEWSN to prevent congestion and exhausted power utilization. Normal routing protocols either seek to match load or route, but both are considered in QARP. Also, identified routes are classified based on an enhanced relevant vector machine classification algorithm which assists in minimizing the delay and energy consumption. Using NS2, QARP is evaluated against previous routing protocols with standard performance metrics namely throughput, delay, packet delivery ratio and energy consumption. The packet delivery ratio achieved by QARP is 92.6%, where the existing routing protocols IFLIP and PARP has achieved 62.8% and 75.4% respectively.

Index Terms – WSN, MEWSN, Routing, Query, Load, Congestion.

1. INTRODUCTION

One of the emerging ad-hoc wireless networks is Mobility Enabled Wireless Sensor Network (MEWSN). MEWSN is a kind of infrastructure-based network made up of sensing nodes that provide an administrating person a capability to scrutinize and respond to action and event in a specific

atmosphere [1], [2]. The sensing atmosphere may be a physical environment, a framework based on organic, or fully based on information technology-based structure. The frameworks of the sensor network are taken care by different teams. Regular sensor applications incorporate the accumulation of information, checking, reconnaissance, and medical-related information [3], [4]. Also sensing the atmosphere frequently is additionally inspired by control and enactment. The four essential elements of MEWSN are (1) assembling of sensors; (2) an interconnecting system; (3) grouping of data; and (4) centralized collection of information for clustering to deal with information relationship, occasion slanting, enquiring the status, and mining of data. Regarding the specific circumstance, the nodes that are for sensing and computing are viewed as a component of the Wireless Sensor Networks WSN [5].

Receiving support for a range of applications like traffic control, home automation, clever battlefield, environment tracking, and many more, Wireless Sensor Networks (WSN) have been developed. For the achievement of computing operations, MEWSN includes multiple sensors spread around a single node. Routing in MEWSN is an extremely critical job to be done with care [6]. To achieve better results, a novel routing technique is required to send data between the sensor nodes and the base stations. The primary criterion based in this paper is the application-dependent routing protocol [7], [8]. The problem with routing results in lower network



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ABSTRACT

Image and textual sentiment analysis is raising more and more attention with the increasing tendency to express emotions through images and text description. Recently social media users are using images and videos more to express their opinions and share their experiences. Sentiment analysis of such large scale visual content can help in better extracting user sentiments toward events or topics from those memes. While this technology is being progressing, little

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Document Sections

I. Introduction

II. Related Work

Abstract:

Social media play a vital role in this information era. Twitter is one of the important microblogging platform where people can share information known to them. Often these tweets are about local events. News agencies report on local events, but the time taken for an agency to analyse, investigate and report on the event can be substantial. Twitter users share their views and information about a particular event by posting tweets. These tweets can be used to identify whether the event occurred or not. Event detection from twitter data has

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Location Based Twitter Emotion Classification for Disaster Management

Publisher: IEEE

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S Devi ; K Naveenkumar ; S Shakthi Ganesh ; S Ritesh [All Authors](#)

84

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I. Introduction

II. Literature Review

Abstract:

Nowadays, smart phones and social media are very powerful. Twitter has become a major communication in social media, particularly in the modern world. In 2021, Twitter was found to be used by 330 million active users and 145 million daily users, mainly young people. Almost everyone's access to smart phones gives them easy access at any time to social media. This

Fake News And Tampered Image Detection In Social Networks Using Machine Learning

Publisher: **IEEE**

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S Devi ; V Karthik ; S Baga Vathi Bavatharani ; K Indhumadhi **All Authors**

1

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Fake News detection is much needed in today's world as it has a large impact in our social as

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October 2021

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RDA- CNN: Enhanced Super Resolution Method for Rice Plant Disease Classification

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Received: 29 July 2021; Accepted: 30 August 2021

Abstract: In the field of agriculture, the development of an early warning diagnostic system is essential for timely detection and accurate diagnosis of diseases in rice plants. This research focuses on identifying the plant diseases and detecting them promptly through the advancements in the field of computer vision. The images obtained from in-field farms are typically with less visual information. However, there is a significant impact on the classification accuracy in the disease diagnosis due to the lack of high-resolution crop images. We propose a novel Reconstructed Disease Aware-Convolutional Neural Network (RDA-CNN), inspired by recent CNN architectures, that integrates image super resolution and classification into a single model for rice plant disease classification. This network takes low-resolution images of rice crops as input and employs the super resolution layers to transform low-resolution images to super-resolution images to recover appearance such as spots, rot, and lesion on different parts of the rice plants. Extensive experimental results indicated that the proposed RDA-CNN method performs well under diverse aspects generating visually pleasing images and outperforms better than other conventional Super Resolution (SR) methods. Furthermore, these super-resolution images are subsequently passed through deep classification layers for disease classification. The results demonstrate that the RDA- CNN significantly boosts the classification performance by nearly 4-6% compared with the baseline architectures.

Keywords: Super-resolution; deep learning; interpolation; convolutional neural network; agriculture; rice plant disease; classification

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
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AN ALGORITHMIC APPROACH TO IMPLEMENT GRACEFUL LABELED CYCLE-STAR GRAPH

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Abstract. Graph theoretic solutions aids to a greater extent in solving many real-life practical problems. Graph labeling has become a popular research interest for a broad range of applications in recent era due to its disambiguated trait. Graceful labeled graph selects distinct vertex labels which in turn induces

FEATURE EXTRACTION METHODS AND RE-RANKING WITH CLICK-BASED SIMILARITY FOR WEB IMAGES.



Authors: M. Sreerajawari and M. Rajalakshmi
Date: June 2021



From: Dynamic Systems and Applications (Vol. 30, Issue 6)
Publisher: Dynamic Publishers, Inc.



Document Type: Article
Length: 7,003 words
Lexile Measure: 1490L



EXPLORE

Abstract :

Web-scale image search engines mostly depend on surrounding text features. It is difficult for them for user's intention prediction only with query they are giving and this leads to ambiguous and noisy search results from the search engines which are far from satisfactory. In this research work, the proposed approach performs system on web image retrieval by implementing a system of searching through word-based as well as features and multiple features with different modalities. Correlating terms along images, textures and color in web are performed with modalities accordingly. Color feature extraction is performed by using the RGB, YUV model. In sequence, cooccurrence matrix is performed by extraction of texture feature. Then Click-based Multi-feature Similarity Learning (CMSL) performs re-ranking organization that follows the feature extraction. Whereas the conduct Incremental Spectral Clustering (ISC) for clustering visually and semantically alike images into similar group. At last, Multiple Support Vector Machine with Kernel Learning (MSVM-KL) is proposed for combing modalities of several visually holds distinct as well as integrated similarity space. The final list of re-ranked are

Computers, Materials & Continua
DOI:10.32604/cmc.2021.018159
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Monarch Butterfly Optimization for Reliable Scheduling in Cloud

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Received: 27 February 2021; Accepted: 03 May 2021

Abstract: Enterprises have extensively taken on cloud computing environment since it provides on-demand virtualized cloud application resources. The scheduling of the cloud tasks is a well-recognized NP-hard problem. The Task scheduling problem is convoluted while convincing different objectives, which are dispute in nature. In this paper, Multi-Objective Improved Monarch Butterfly Optimization (MOIMBO) algorithm is applied to solve multi-objective task scheduling problems in the cloud in preparation for Pareto optimal solutions. Three different dispute objectives, such as makespan, reliability, and resource utilization, are deliberated for task scheduling problems. The Epsilon-fuzzy dominance sort method is utilized in the multi-objective domain to elect the foremost solutions from the Pareto optimal solution set. MOIMBO, together with the Self Adaptive and Greedy Strategies, have been incorporated to enrich the performance of the proposed algorithm. The capability and effectiveness of the proposed algorithm are measured with NSGA-II and MOPSO algorithms. The simulation results prompt that the proposed MOIMBO algorithm extensively diminishes the makespan, maximize the reliability, and guarantees the appropriate resource utilization when associating it with identified existing algorithms.

Keywords: Improved monarch butterfly optimization; cloud computing; makespan; reliability; fuzzy dominance; task scheduling

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Enhanced Evolutionary Feature Selection and Ensemble Method for Cardiovascular Disease Prediction

V. Jothi Prakash & N. K. Karthikeyan

Interdisciplinary Sciences: Computational Life Sciences **13**, 389–412 (2021) | [Cite this article](#)

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Abstract

Cardiovascular Disease (CVD) is one among the main factors for the increase in mortality rate worldwide. The analysis and prediction of this disease is yet a highly formidable task in

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Deep Learning Classification to Improve Diagnosis of Cervical Cancer Through Swarm Intelligence-Based Feature Selection Approach

[S. Priya](#) & [N. K. Karthikeyan](#)

Conference paper | First Online: 01 June 2021

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Research Article-Computer Engineering and Computer Science | Published: 10 July 2021

Load Balancing in DCN Servers through SDN Machine Learning Algorithm

[G. Sulthana Begam](#) & [M. Sangeetha](#) & [N. R. Shanker](#)

Arabian Journal for Science and Engineering 47, 1423–1434 (2022) | [Cite this article](#)

325 Accesses | 1 Citations | [Metrics](#)

Abstract

Development in Internet technologies increases Internet users exponentially. Increase in users leads to more data center network (DCN) and heavy data traffic in servers. Data traffic in servers is managed through software-defined networking (SDN). SDN improves utilisation of large-scale network resource and performance of network applications. In SDN, load balancing technique optimises the data flow during transmission through server load

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Figures

[Abstract](#)

[Introduction](#)

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Fuel Prediction Based on Driving Behavior using Machine Learning Techniques

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Abstract : The fuel consumption prediction based on driving behavior is very important in automobile industry. As there is a hike in fuel price on daily basis, it is important to know the amount of fuel consumed by the vehicle. Each vehicle running on road have a default mileage rate that is determined by the manufacturer with the help of initial vehicle conditions but it varies with the driving styles exhibited by the driver. In the proposed method the pre processed dataset is passed to the two ML (machine learning) algorithms, LR(Linear Regression) and RF(Random Forest). This

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Machine Learning for Plant Species Classification using Leaf Vein Morphometric

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International Journal of Computational Intelligence Systems

ABSTRACT

1. INTRODUCTION

2. LITERATURE STUDY

3. DATASET DESCRIPTION

4. MATERIALS AND METHODS ▼

5. PROPOSED METHODOLOGY ▼

6. RESULTS AND DISCUSSION ▼

7. CONCLUSION

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Volume 13, Issue 1, 2020, Pages 1092 - 1100

A Heuristic and ANN based Classification Model for Early Screening of Cervical Cancer

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Deep Learning Approach for COVID-19 Meme Categorization

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R. Sandhiya & Seeram Ramakrishna

Materials Circular Economy 2, Article number: 13 (2020) | [Cite this article](#)

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A [Correction](#) to this article was published on 10 June 2021

This article has been [updated](#)

Abstract

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