Criteria 3 - Research, Innovation and Extension

Key Indicator 3.3 - Research Publication and Awards

3.3.3.1 Total Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during the year

INDEX

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Exploration on Learning Disorder using Machine Learning

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Exploration on Learning Disorder using Machine Learning

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Abstract- **A particular type of learning difficulty called dyslexia is most prevalent in children under age of twelve. Being not able to compete with their friends might make them feel hopeless, unmotivated to complete tasks, or depressed. Having trouble keeping up with youngsters that are different when it comes to terminology, numbers, and symbols. This research has made an effort to examine a number of machine learning algorithms for early detection and group classification. The evaluation techniques employed in this project include ensemble, neural network, SVM, and Naive Bayes. The assessment and assessment were conducted using MATLAB-2021. The EEG dataset encompasses 65 young people's facts, organized into 4 classes and 12 traits, of which 22 have been tested and 43 have been trained. In a 10-fold validation with 67% data split, the confusion matrix demonstrated that the SVM was the most effective version for both training and testing, with an accuracy of 52.5% for tests, and an excellent validation accuracy of 58.45% for ensembles. SVM has a 77% specificity, however ensemble has a 71% specificity.This study demonstrates that the dataset's performance indicates that the categorization parameter is dependent on gender, age, and mixed handedness of the group.**

Keywords—Machine learning, Depressed, Dyslexia, Support Vector machine ,Naive bayes

I. Introduction

A neurological disorder known as learning disability is common among Indian school-age children who are regarded as sluggish learners with poor reading and writing abilities. [2]. Since most learning disorders, such as dyslexia, are related to reading and writing, they make students set distinctive outside of the classroom. [1]. Genetically, 23–65% of dyslexic children have inherited this alignment from their ancestors. [5] . Learning disabilities are of primary sorts dyslexia, dyscalculia, dysgraphia [4]. A specific issue with hearing and interpreting words caused by a deficiency in phonological processing is dyslexia. An arithmetic disorder called dyscalculia is typified by difficulties with numbers or other mathematical activities. Typically, dysgraphia is marked by poor motor skills and unreadable handwriting that blends upper- and lowercase characters. The brain's left hemisphere serves as a major hub for language processing and reading.

The reasons listed below support the necessity for study, which is a first step in this direction.

- ✓ The identification of dyslexia is crucial for enhancing learning capacity and is primarily the responsibility of three parties: medical professionals, parents, and the community.
- ✓ An increasing number of people suffer with dyslexia, and parents should be aware of the early indicators so they can help their kids receive the help they need.
- ✓ When dyslexic people receive appropriate counselling, they can also demonstrate more competency with others. Ultimately, early detection and treatment of dyslexia can assist society as a whole overcome future obstacles.
- ✓ Dyslexia is frequently misdiagnosed

II. Related Work

There are many researches occurring the on dyslexia analysis but few techniques are value effective

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for presenting the research paper entitled "Preliminary Study of Dyslexia Using Machine Learning Algorithms" in the 2023 Fourth International Conference on Advances in Physical Sciences and Materials (ICAPSM 2023) held at KPR Institute of Engineering and Technology, Coimbatore, Tamil Nadu, India during 17 - 18, August 2023.
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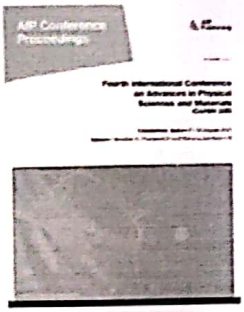

FOURTH INTERNATIONAL CONFERENCE ON ADVANCES IN PHYSICAL SCIENCES AND MATERIALS: ICAPSM 2023
17–18 August 2023
Coimbatore, India

Preliminary study of Dyslexia using machine learning algorithms

J. Jincy, P. Subha Hency Jose
+ Author & Article Information

AIP Conf. Proc. 3122, 030005 (2024)
https://doi.org/10.1063/5.0216006

Dyslexia the phonological disability is predominantly located in kids under the age of 12. The inability to compete with their friends can result in depression, lack of motivation to do matters or lead them to feel low. Difficulty with phrases, numbers, and symbols makes it tougher to keep up with different kids. Therefore, the detection of Dyslexia in its early degrees may be beneficial for children to adopt other mastering strategies to keep up. Therefore, the detection of dyslexia in its early degrees may be beneficial for children to adopt other mastering strategies in an effort to keep up. Thispaper has tried to examine various Machine Learning Algorithms for early detection and categorize the input into various classes. The algorithms used for evaluation in this assignment are Support Vector Machine (SVM), Ensemble, Discriminant Analysis, and Nearest Neighbor-KNN. The evaluation and assessment have been made in MATLAB-2021. The EEG dataset consists of facts of 65 youngsters with 12 attributes and 4 classes of which 40 were trained and 20 had been examined. The various models is compared based on their precision, and confusion matrix in 5-fold cross validation. Nearest Neighbor-KNN proved to be the exceptional model for both training and trying out displaying accuracy of 58 .8% and 69. Five% for schooling and checking out and 58.8 % and 59.9 % respectively for SVM. Based on Confusion Matrix, Support Vector Machine (SVM) and K-Nearest Neighbor (KNN) are the optimized algorithms providing better positive and negative cases of

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Design and Simulation of Miniaturized Wi-Fi Logo Shaped Microstrip Patch Antenna for Ka-Band Application

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Abstract: **The novel miniaturized Wi-Fi logo slotted microstrip antenna application for 28 GHz is presented in this paper. The operating frequency is 28GHz-Ka-band application. The antenna is modeled by using substrate material of Rogers RT/Duroid 5880 with the relative permittivity value ε_r=2.2. The proposed antenna design has return loss parameters S_{11}<-10dB. The proposed design works in the frequency range: 28GHz. The radiation pattern is uni-directional and good gain is obtained. Slot configuration enhances the bandwidth of the antenna. It has a multiband response. The proposed design is simulated using HFSS (High-Frequency Simulation Software) simulator. It is a compact antenna with a size of 7x7mm a thickness of 0.8mm, a wide operational band, and good gain. The performance of the antennas in terms of return loss, bandwidth, efficiency, gain, and directivity are analyzed.**

Index Terms: Wi-Fi logo, Miniaturized, Ka-band, microstrip antenna,28 GHz

I. INTRODUCTION

"Antenna plays a vital role in the Communication". Communication began with the evolution of 1G-5G till now. The 1st generation of wireless technology which is analog in nature in the frequency of 150MHz to 900MHz.1G is used for voice communication but has bad voice quality and poor battery life. Then we moved on to 2G, the second generation of wireless technology which is based on GSM (Global System for Mobile Communication).2G requires strong digital signals to help mobile phones.2G started with SMs text messages but did not enable the picture message and data transfer so then we moved on to 3G, the third generation of mobile phone standards and technology superseding 2G and preceding 4G. It is based on ITU. It requires high bandwidth and expensive 3G phones. It was used for wide-band wireless networks that increase clarity. Then it was 4G fourth generation of wireless technology which is yet to be implemented in India.4G was developed to make the transition for carriers easier from 3G to 4G. The technology increases the bandwidth speeds and network capacity 4G users get speedsup to 100Mbps. 5G fifth-generation mobile technology increases communication capacity. This brings the need for advanced antenna design. Performing an antenna with high gain, low loss, low cost, and high radiation efficiency leads to various design considerations [1]. Different spectrums that can transport enormous quantities of data over short distances may be used by 5G technology. The next 5G technology will offer incredibly quick download and latency times. Its applications include the fields of smart cities, the electricity grid, transportation, and economic growth. [2].

A Microstrip antenna is a "Printed antenna" which is the most common type of antenna made up of metal patches placed on a dielectric and fed by microstrip lines. one of the most practical microwave antennas (f > 1 GHz). It typically consists of a grounded dielectric substrate with a metal "patch" on top of it. The most typical shapes for the patch are rectangular and circular, however it can take on other forms as well.This antenna was designed on a printed circuit board (PCB) using photolithographic processes. A sort of inside antenna that has a primary frequency of usage is the microwave. A substrate, ground, patch, feedline, and port made of metal foil in a variety of forms are the components of a single microstrip antenna. It is Invented by Bob Munson in 1972 (but earlier work by Deschamps goes back to 1953). Became popular starting in the 1970s.It is used in Satellite communications, Microwave communications, Cell phone antennas, and GPS antennas.A ground plane is positioned on the opposite side of the dielectric substrate from the thin surface that makes up a microstrip patch antenna. A rectangular patch-like truncated microstrip transmission line is the most often used microstrip antenna [3]. The various types of Microstrip antennas are namely Loop antenna, Dipole antenna, Slot antenna, and Patch antenna. The most common type of microstrip antenna is commonly known as a patch antenna. The feed techniques in the MSA are Inset

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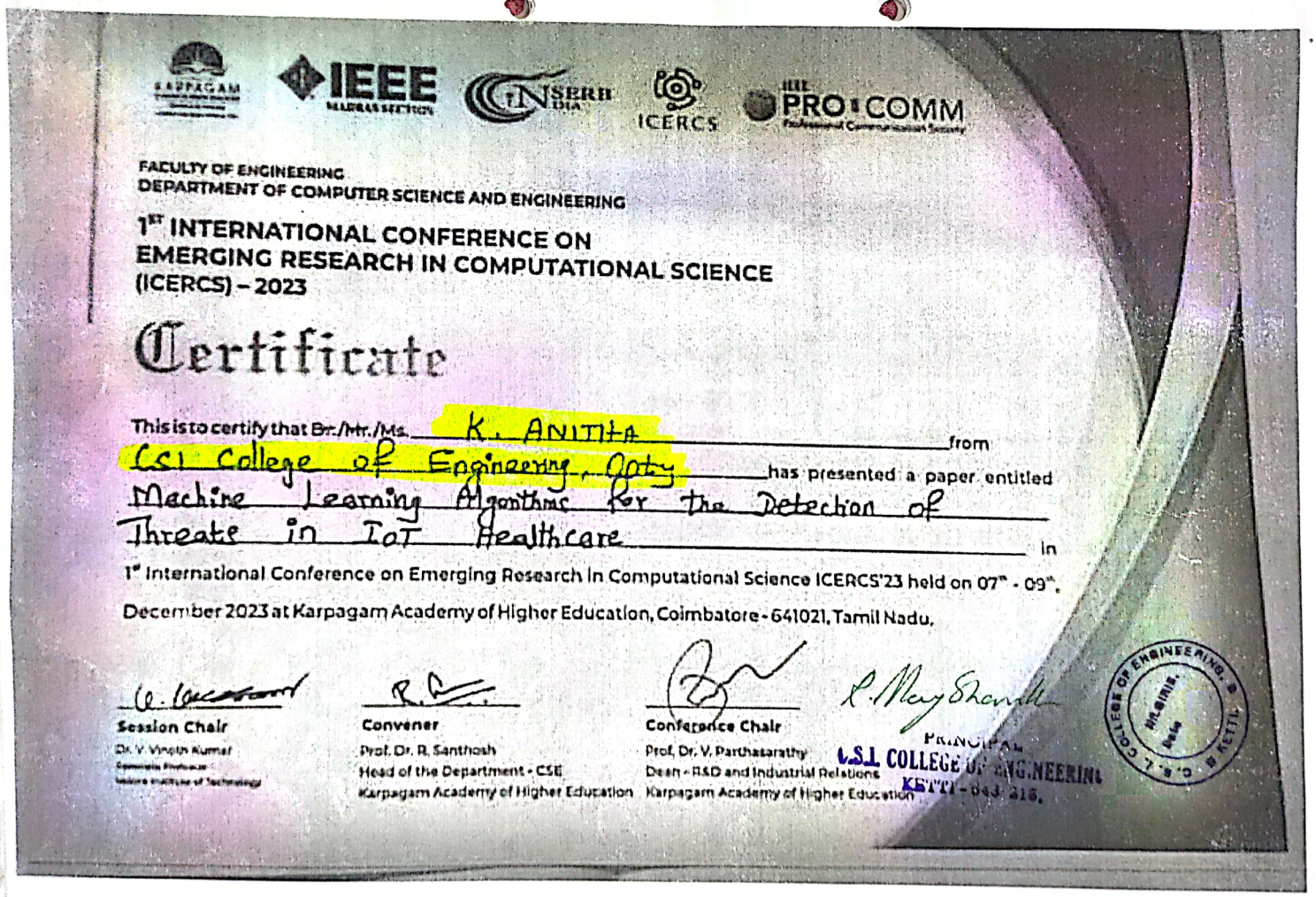

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