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Cognitive Disability Prediction & Analysis using Machine Learning Application

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Abstract



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A person with mild cognitive disability (MCD), a kind of memory loss that affects both memory and thinking skills, may be at an increased risk of acquiring dementia broug... **View more**

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Abstract:

A person with mild cognitive disability (MCD), a kind of memory loss that affects both memory and thinking skills, may be at an increased risk of acquiring dementia brought on by Alzheimer's disease or other neurological diseases. MCD affects between 13 and 19% of those who are 60 years of age or older. People who suffer from cognitive abnormalities should seek therapy and diagnosis as soon as they can. The major effect of MCD on the target is its effect on memory. Accurate MCD diagnosis is quite challenging with the current approaches. A hybrid approach is put forward in this study to identify MCD at an early stage. EEG data from MCD individuals and healthy controls was collected for this purpose. With the use of machine learning models including Support Vector Machines (SVM), Decision Trees (DT), k-Nearest Neighbour (KNN), and the hybrid approach ACO KNN, Renyi entropy (RE) and Discrete Wavelet Transform (DWT) characteristics were retrieved (combined Ant Colony Optimisation with k-Nearest Neighbour). The performance of the system is assessed based on an accuracy comparison with machine learning models. When compared to other models, RE and ACO KNN had an accuracy of 85.0%.

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 **Contents**

I. Introduction

Patients with Alzheimer's disease (AD) mostly experience memory loss, which may become life-threatening in severe instances [1]. However, memory issues are often brought on by the destruction of brain neurons, which slows down the storing, remembering, and retrieval of memories [2]. Forgetfulness may be a sign of Mild Cognitive Impairment (MCI), which is the period of transition between cognitive deterioration and normal ageing, and it may sometimes cause significant dementia that progresses to Alzheimer's disease [3]. The signs of MCD will be present in the patient.

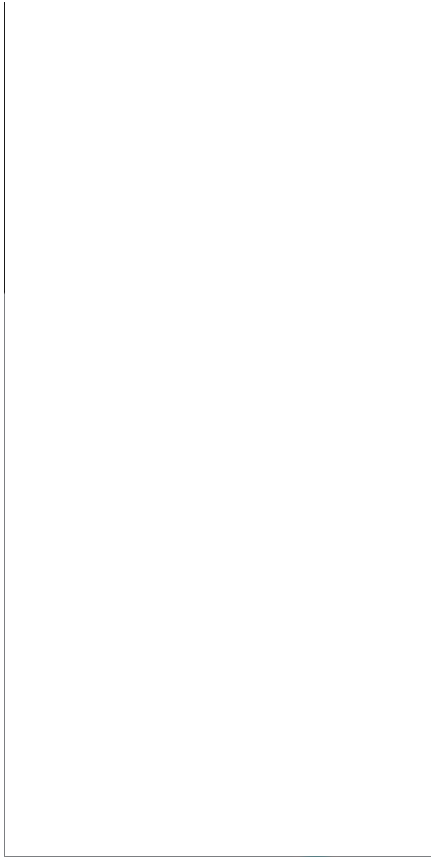
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