IJARSCT



International Journal of Advanced Research in Science, Communication and Technology

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 5, Issue 5, May 2025



Brainwave Analysis for Autism Detection: A Transfer Learning Approach

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Abstract: Autism Spectrum Disorder (ASD) is a complex neuro developmental condition characterized by challenges in social interaction, communication, and restricted or repetitive behaviours. Early diagnosis and intervention are crucial for improving outcomes, yet ASD diagnosis remains a multifaceted process that can be challenging due to its heterogeneity and overlapping symptoms with other developmental disorders. In recent years, there has been growing interest in leveraging advanced technologies, particularly machine learning, to enhance ASD detection and improve user accessibility in diagnosis and management. This paper explores the integration of multimodal data, including genetic, neuroimaging, behavioural, and environmental factors, with deep learning algorithms to develop more accurate and efficient diagnostic tools for ASD. By combining information from diverse sources, researchers and clinicians can gain a comprehensive understanding of the underlying medical, facial factors contributing to ASD, thereby enabling earlier detection and personalized treatment approaches. Furthermore, the concept of user accessibility is integral to addressing the diverse needs of individuals with ASD and their families throughout the diagnostic process. In this we can input the three types of datasets which includes Brain MRI, Face photos and real time face streaming data. Then build the model file for each dataset by using deep learning algorithm named as Convolutional neural network algorithm to improve the accuracy in autism detection

Keywords: Autism spectrum disorder, Deep learning, Convolutional neural network, Disease prediction, Real time face recognition, Grassmann algorithm

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DOI: 10.48175/IJARSCT-26671



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