

International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

Volume 2, Issue 1, April 2022

## Review on Computer Aided System Approach for Predictive Diagnosis of Neurological Disease

Ku. R. S. Dhote<sup>1</sup>, Prof. A. P. Thakare<sup>2</sup>

P.G. Student, Department of Electronics and Telecommunication Engineering<sup>2</sup>
Professor, Department Of Electronics and Telecommunication Engineering<sup>1</sup>
SIPNA College of Engineering and Technology, Amravati, Maharashtra, India

Abstract: Neurological conditions in human brain affecting human body's cognitive function leading to the mental diseases like Alzheimer's disease, Parkinson's disease, multiple sclerosis, brain tumor, epilepsy, dementia, headache disorders, neuro infections, stroke and traumatic brain injuries. Alzheimer's disease is an irreversible neurological condition that affects the human body's cognitive functions. A previous diagnosis of Alzheimer's disease will aid in the treatment of the condition. Many mathematical and machine learning models have been used in studies supporting the disease. Magnetic resonance imaging (MRI) is a common method used to diagnose disease clinically. However, because to changes in its MRI samples and their stability in healthy people, it faces certain difficulties in diagnosis. Machine learning algorithms are currently being utilized to assess fundamental brain alterations in magnetic resonance imaging (MRI). Ensemble Learning (EL) also demonstrated its benefits by incorporating many models into the learning system's resilience. By forecasting the sickness, a machine learning system can help solve this problem. This paper presents a review of computer aided system approach for predictive diagnosis of neurological disease.

**Keywords:** Neurological Disease, Artificial Intelligence, Machine Learning, Ensemble Boosting, Image processing, Magnetic Resonance Imaging (MRI), Alzheimer's Disease, Cognitive Functions.

## REFERENCES

- [1]. Harkawalpreet Kaur, Avleen Kaur Malhi, Husanbir Singh Pannu. Machine learning ensemble for neurological disorders, Neural Computing and Applications. Neural computing and Applications.
- [2]. Ning An, Huitong Ding, JiaoyunYang . Deep ensemble learning for Alzheimer's disease classification.
- [3]. Massimiliano Grassi, Nadine Rouleaux, Daniela Caldirola, David Loewenstein, Koen Schruers, Giampaolo Perna, Michel Dumontier and the Alzheimer's Disease Neuroimaging Initiative. Novel Ensemble-Based Machine Learning Algorithm to Predict the Conversion from Mild Cognitive Impairment to Alzheimer's Disease Using Socio-Demographic Characteristics, Clinical Information, and Neuropsychological Measures. Original Research Published: 16 July 2019 | https://doi.org/10.3389/fneur.2019. A 00756
- [4]. Thomas W. Rowe, Ioanna K. Katzourou, Joshua O. Stevenson-Hoare, Matthew R. Bracher-Smith, Dobril K. Ivanov and Valentina Escott-Price. Machine learning for the life-time risk prediction of Alzheimer's disease: a systematic review. Brain Communications, Volume 3, Issue 4, 2021, fcab246, https://doi.org/10.1093/braincomms/fcab246Published: 21 October 2021.
- [5]. M.Rohini, D.Surendran. Classification of Neurodegenative disease stages using Ensemble Machine Learning Classifiers. International Conference On Recent Trends In Advanced Computing 2019, ICRTAC 2019.
- [6]. Lucia Billeci, Asia Badolato, Lorenzo Bachi and Alessandro Tonacci. Machine Learning for the Classification of Alzheimer's Disease and Its Prodromal Stage Using Brain Diffusion Tensor Imaging Data: A Systematic Review. Received: 21 July 2020; Accepted: 24 August 2020; Published: 1 September 2020.
- [7]. Sergio Grueso and Raquel Viejo-Sobera. AccessMachine learning methods for predictingprogression from mild cognitiveimpairment to Alzheimer's diseasedementia: a systematic review. SpainGrueso and Viejo-Sobera Alzheimer's Research & Therapy (2021) 13:162 https://doi.org/10.1186/s13195-021-00900.

## IJARSCT



International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

## Volume 2, Issue 1, April 2022

- [8]. Jyoti Islam and Yanqing Zhang. Brain MRI analysis for Alzheimer's disease diagnosis using an ensemble system of deep convolutional neural networks. Islam and Zhang Brain Inf. (2018) 5:2 https://doi.org/10.1186/s40708-018-0080-3.
- [9]. Manan Binth Taj Noor, Nusrat ZerinZenia, M Shamim Kaiser, Shamim A Mamun and Mufti Mahmud. Application of deep learning in detecting neurological disorders from magnetic resonance images: a survey on the detection of Alzheimer's disease, Parkinson's disease and schizophrenia. Noor et al. Brain Inf. (2020) 7:11 https://doi.org/10.1186/s40708-020-00112-2.
- [10]. Andr'es Ortiz† and Jorge Munilla‡ Juan M. G'orriz§ and Javier Ram'ırez. Ensembles of Deep Learning Architectures for the Early Diagnosis of the Alzheimer's Disease. International Journal of Neural Systems, Vol. 26, No. 7 (2016) 1650025 (23 pages) c World Scientific Publishing Company DOI: 10.1142/S0129065 716500258.