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Automatic Machine Learning-Based Epilepsy Detection

Mr. Satish Ukade and Dr. S. K. Sonkar
Department of Computer Engineering
Amrutvahini College of Engineering, Sangamner, Maharashtra, India
satish.ukade@gmail.com and sonkar83@gmail.com

Abstract*: Epilepsy is a neurological condition characterized by disrupted nerve cell activity in the brain, leading to recurrent seizures that can significantly disrupt an individual's daily life. The communication between nerve cells, intricately interconnected, is perturbed in epilepsy, resulting in atypical functioning. Electroencephalogram (EEG) and Electrocorticography (ECoG) monitoring are commonly employed to evaluate this disorder. EEG captures brain signals through images, offering insights into abnormal brain activity. Machine learning systems utilizing these monitored signals aim to assist in diagnosing epilepsy. Through the analysis of vast data volumes, machine learning classifiers and statistical features are applied to classify this disorder. A Convolutional Neural Network (CNN) system is implemented to process large datasets containing EEG signal images, facilitating the classification of epilepsy. Ongoing research evaluates system performance using various classifiers and features to enhance the accuracy and effectiveness of epilepsy diagnosis.*

Keywords: epilepsy detection, brain disorder, EEG signals, Image processing, CNN

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