Abstract

Epilepsy is considered to be a neurological disorder caused by unoriented signal emissions from brain, leading to seizures. Prior identification of occurrence of seizures is made possible by measuring the signal emissions at certain parts of the brain, known as EEG. Fast detection of preictal signals can alert patients to prevent catastrophe. However, EEG signals are voluminous and have very high velocity rates, making the prediction process complex. This paper presents an effective seizure prediction model, that enhances predictions by identifying frequency based features and performs two level data reduction to enable faster processing. The processed data is then passed to GBT, a boosted ensemble model for prediction. Experiments were conducted with data obtained from American Epilepsy Society. Results indicate good performances in terms of ROC and PR. A comparison with an existing parallel bagging based seizure prediction model indicates improved accuracy levels in the proposed model.

References
Real-Time Customized Seizure Prediction on Streaming EEG Data using Attribute Extraction and Feature Identification Techniques


19. Melbourne University AES/MathWorks/NIH Seizure Prediction


Index Terms

Computer Science | Signal Processing

Keywords

Seizure Prediction; Feature Identification; Attribute Elimination; Gradient Boosted Trees; EEG