The background of the slide features a complex 3D surface plot representing brain wave activity. The surface is composed of numerous small, colored peaks and valleys, forming a grid-like pattern across the entire frame. The colors transition from deep blue at the lower frequencies and times to bright green and yellow at higher frequencies and times, suggesting a dynamic range of activity. The overall effect is a futuristic and scientific visualization of neural data.

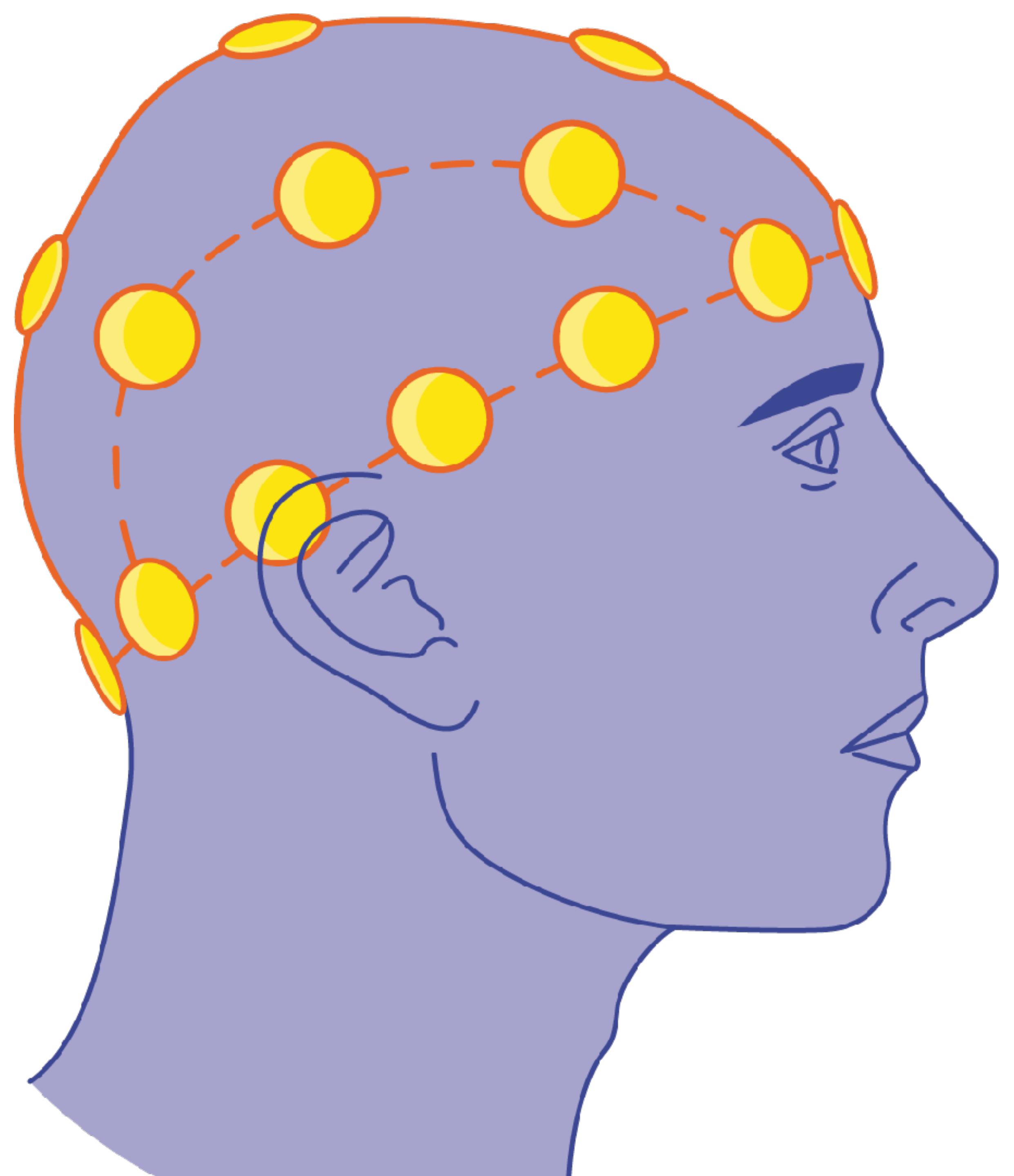
EEG Classification

Predicting seizures from electrical brain wave activity

Epilepsy

Epileptic seizures are defined as a sudden change in behavior due to a temporary change in the electrical functioning of the brain



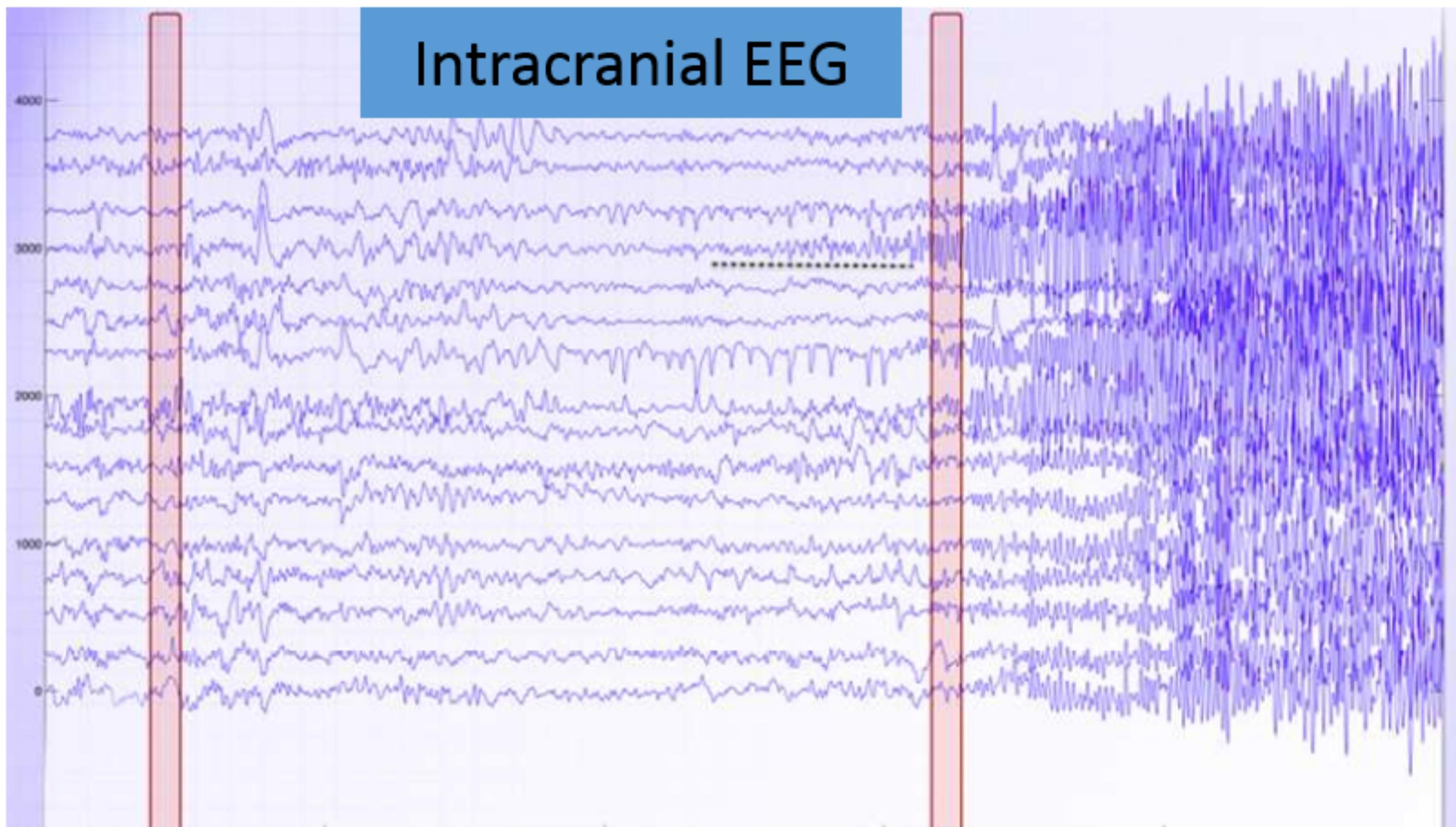


EEG

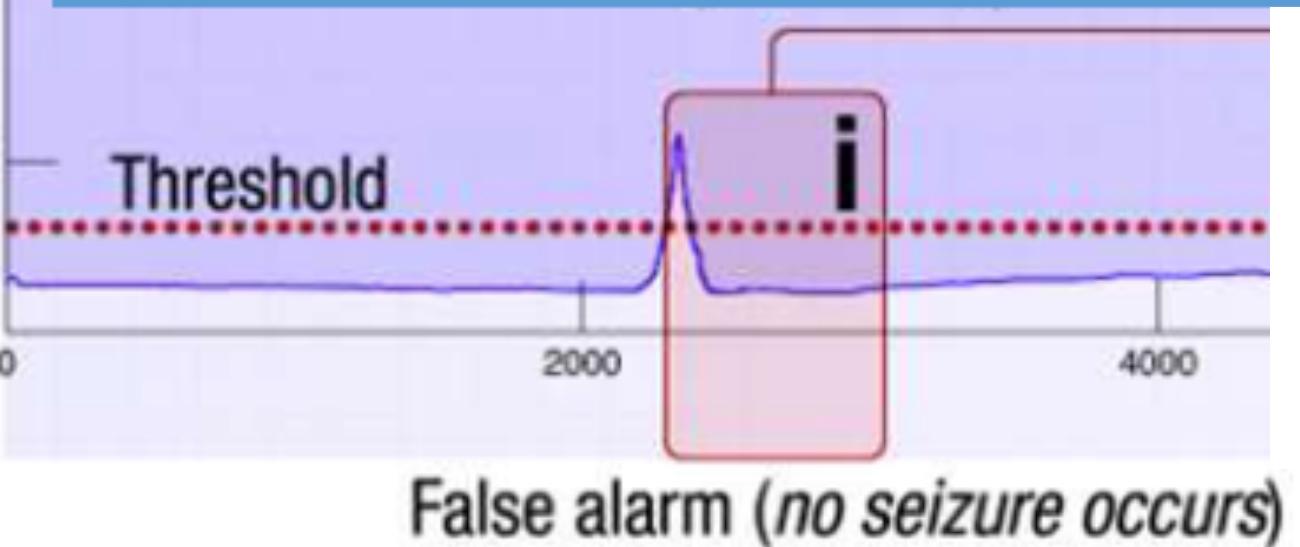
Data that is collected using non-invasive electrode placement on the scalp that records electrical functioning within the brain.

Interictal

Baseline

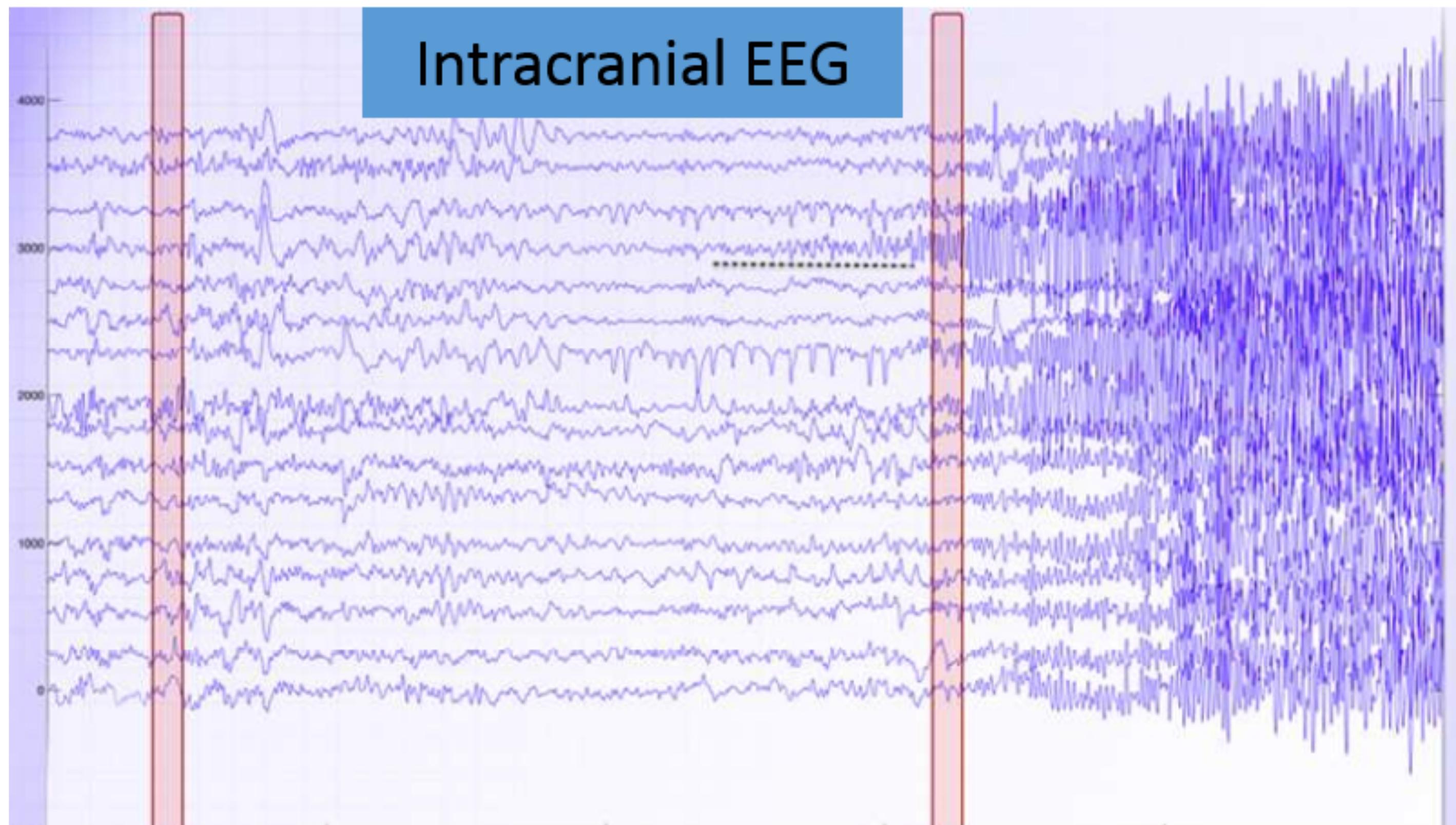


Time series of warnings

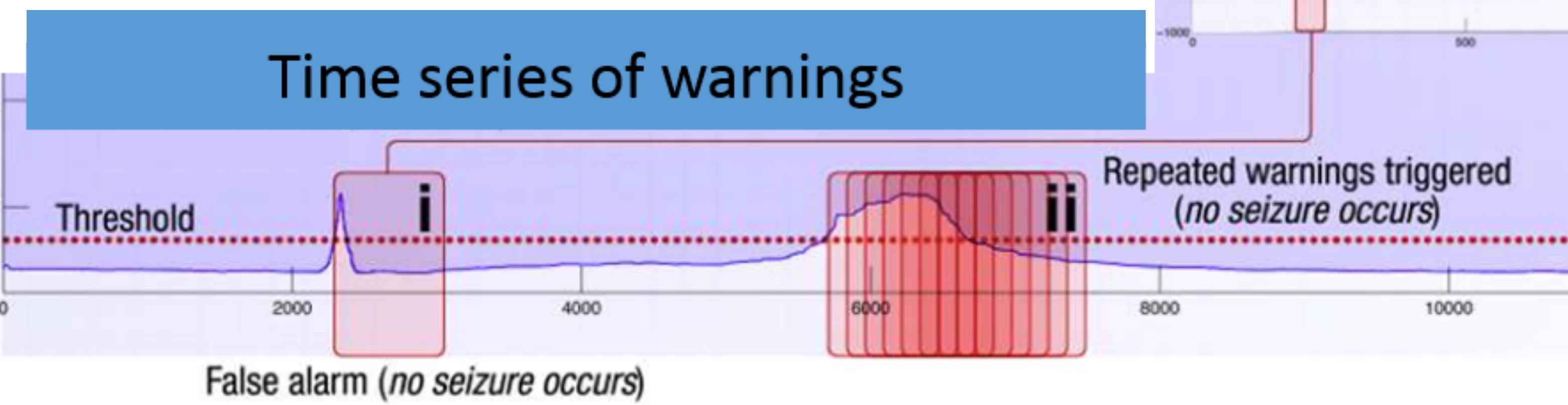


Preictal

Warning of imminent seizure



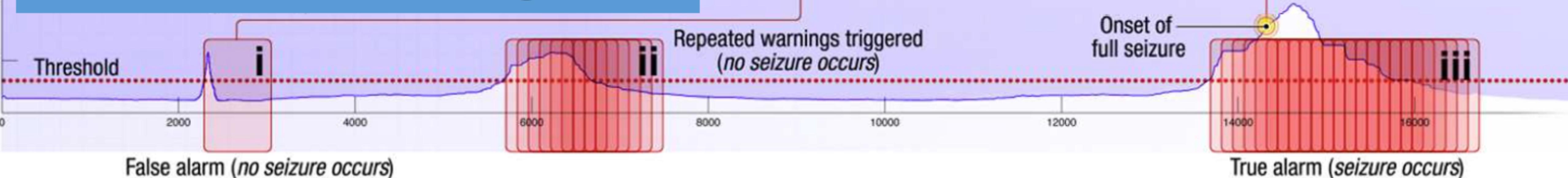
Time series of warnings



Ictal

Seizure

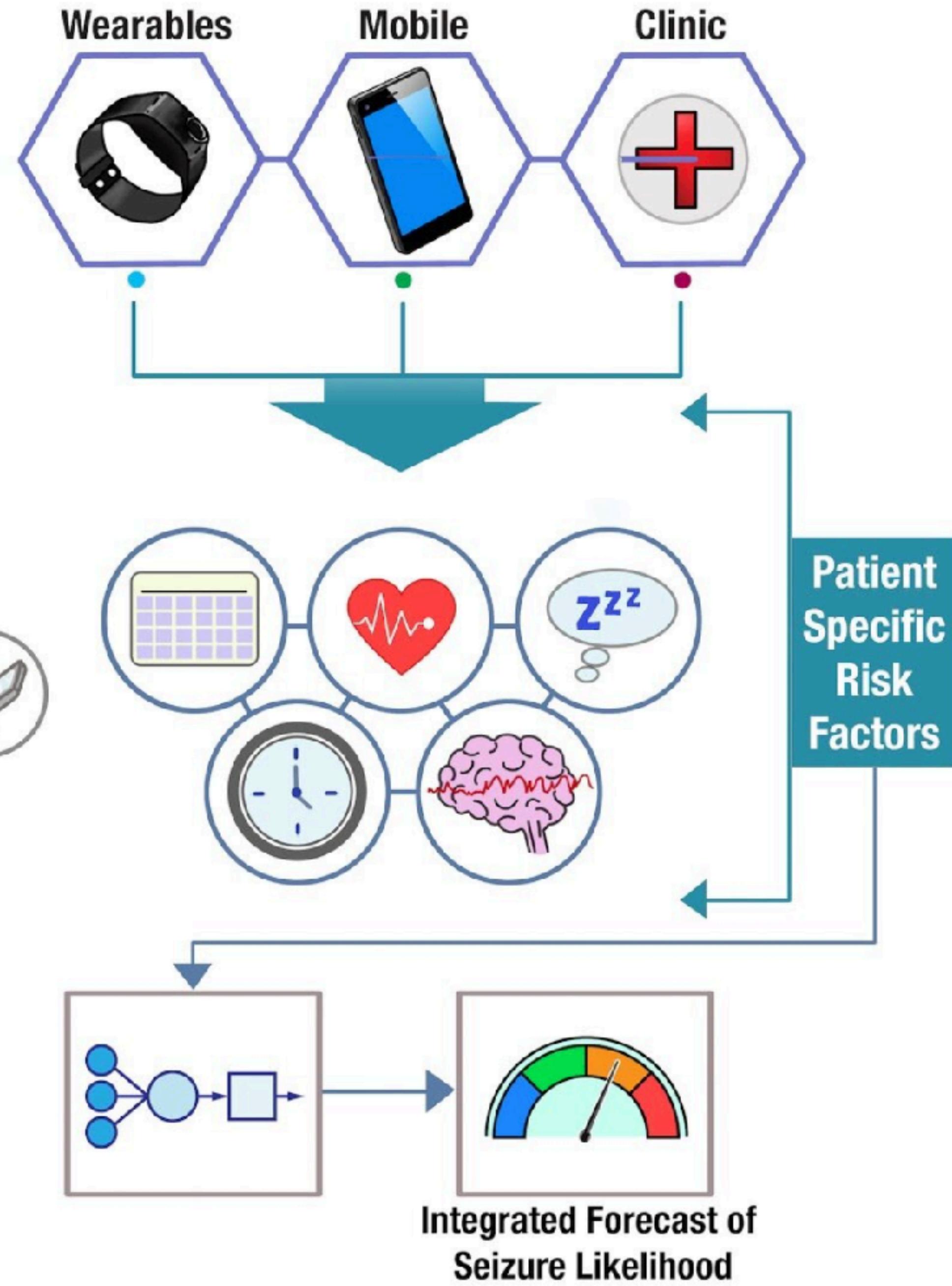
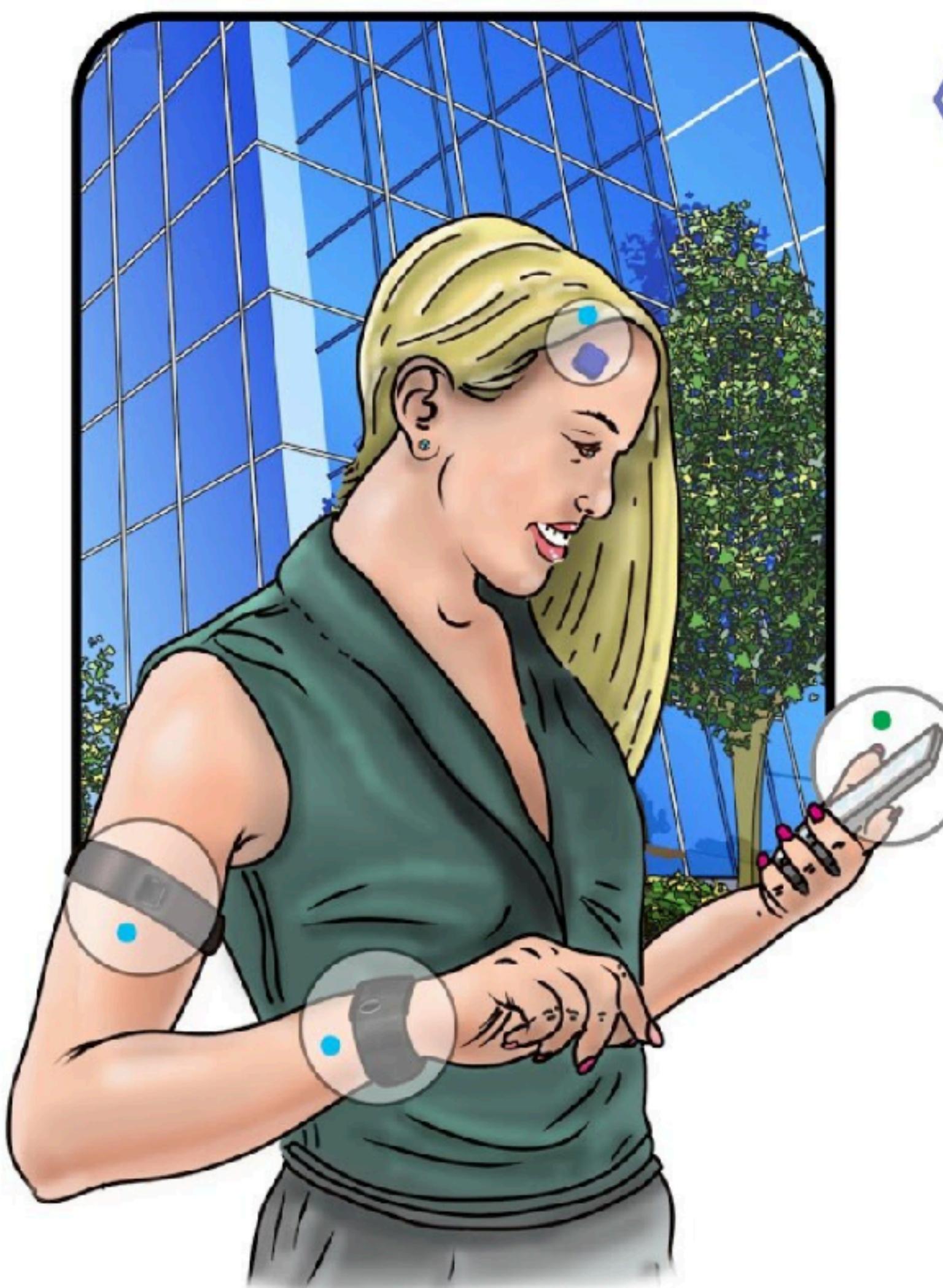
Time series of warnings



Intracranial EEG

Wearable Technology

- life enhancing
- live saving



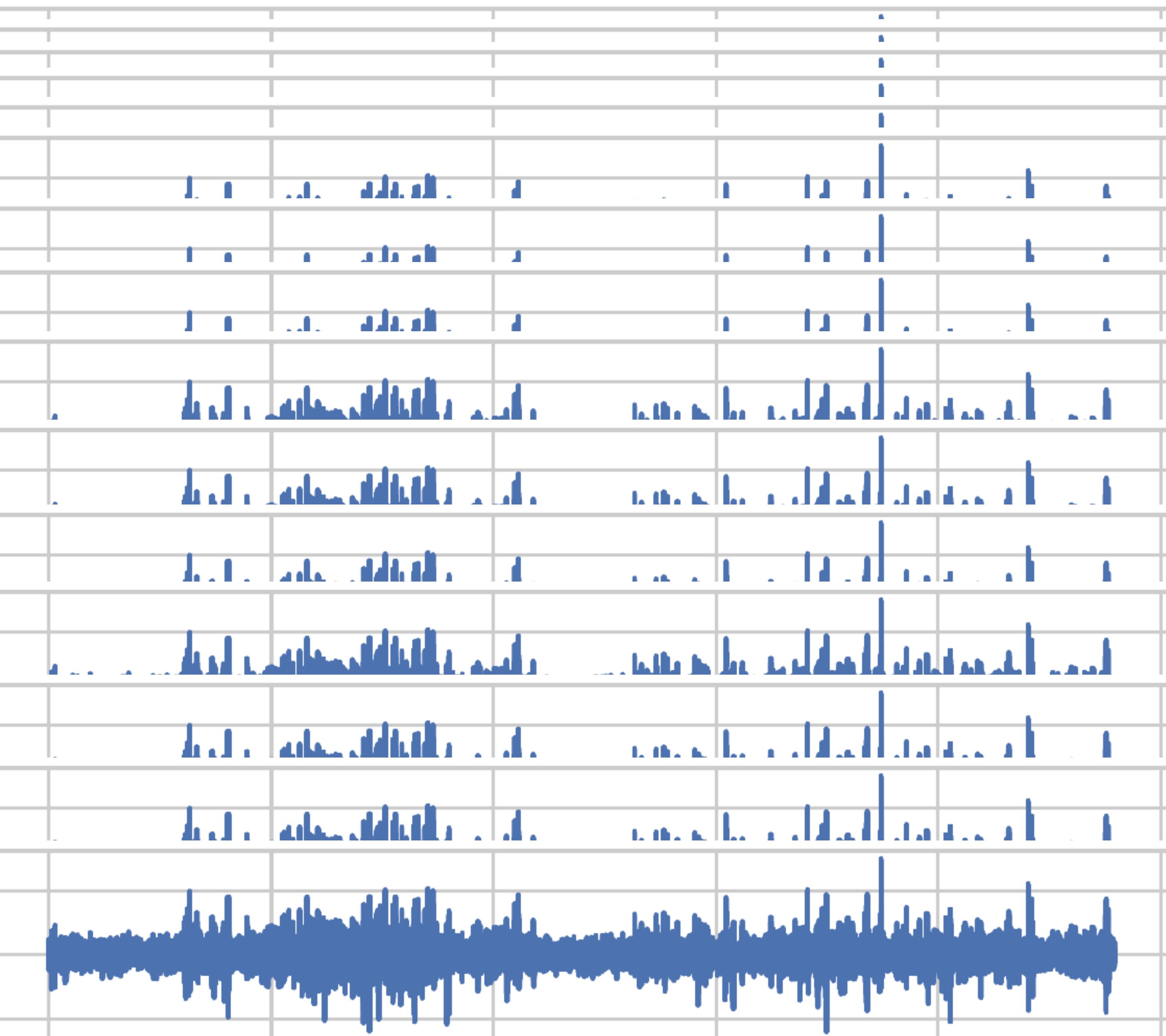
Data

American Epilepsy Society Seizure
Prediction Challenge



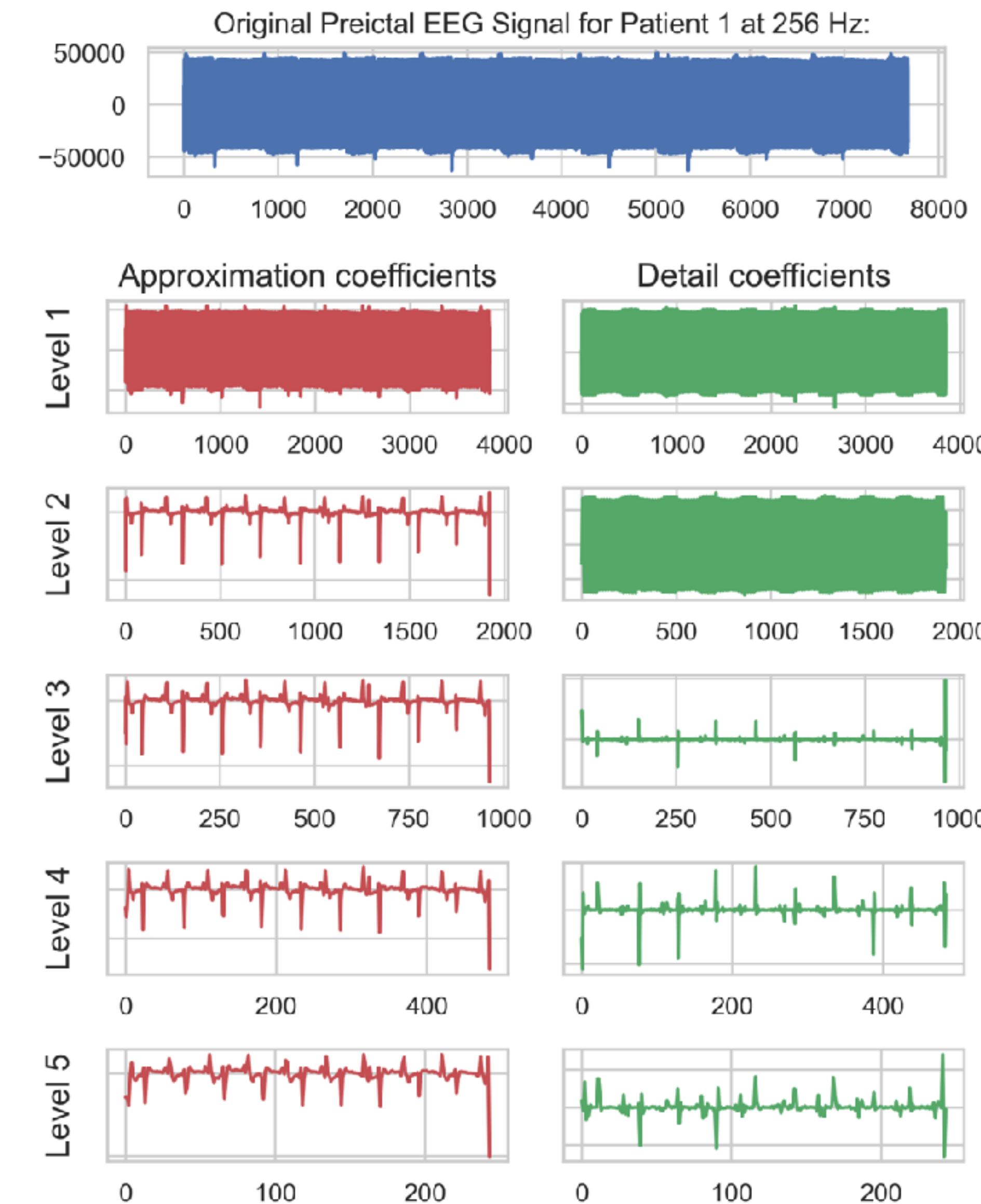
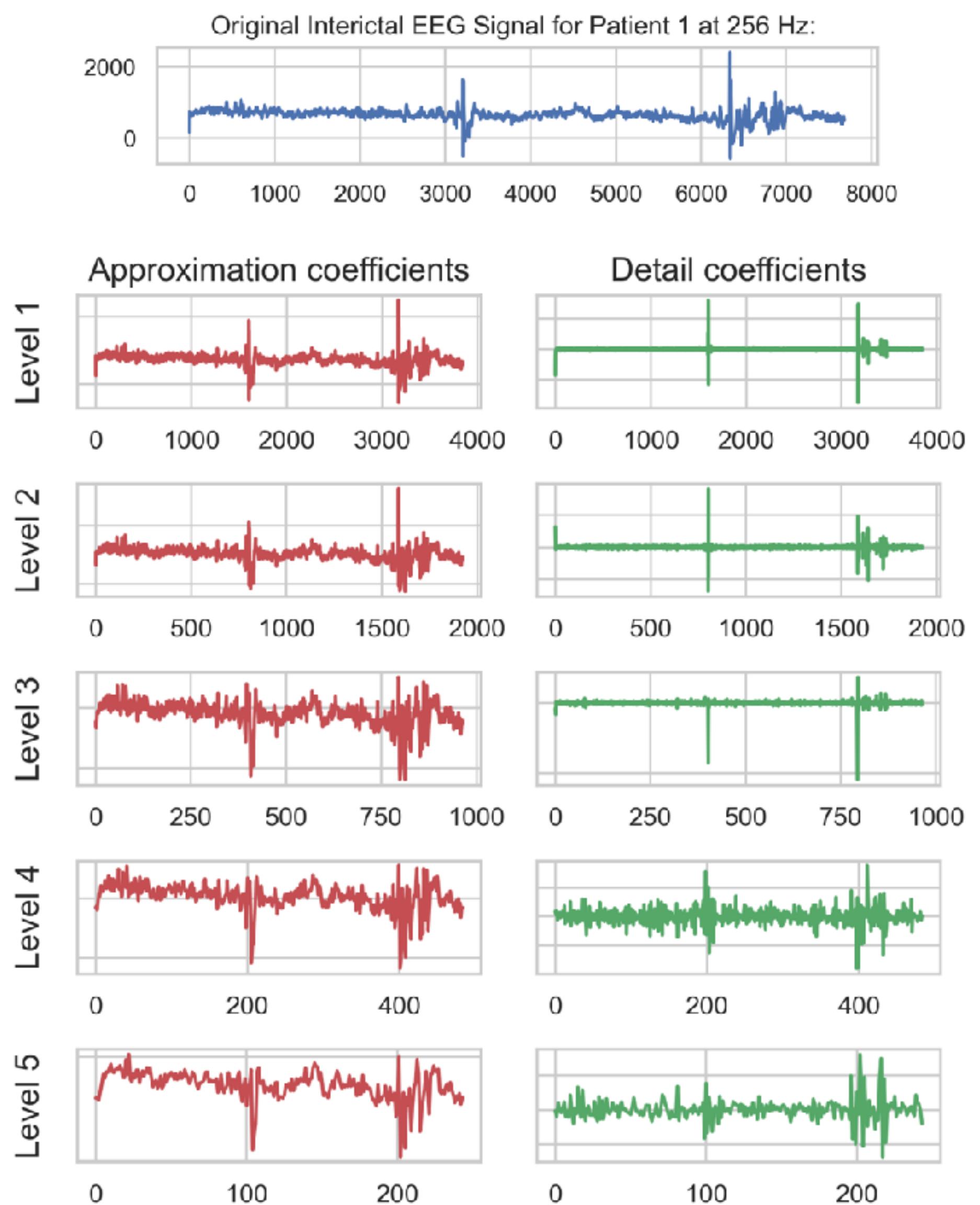
Data

15 - 24 Electrodes per 10 minute recording



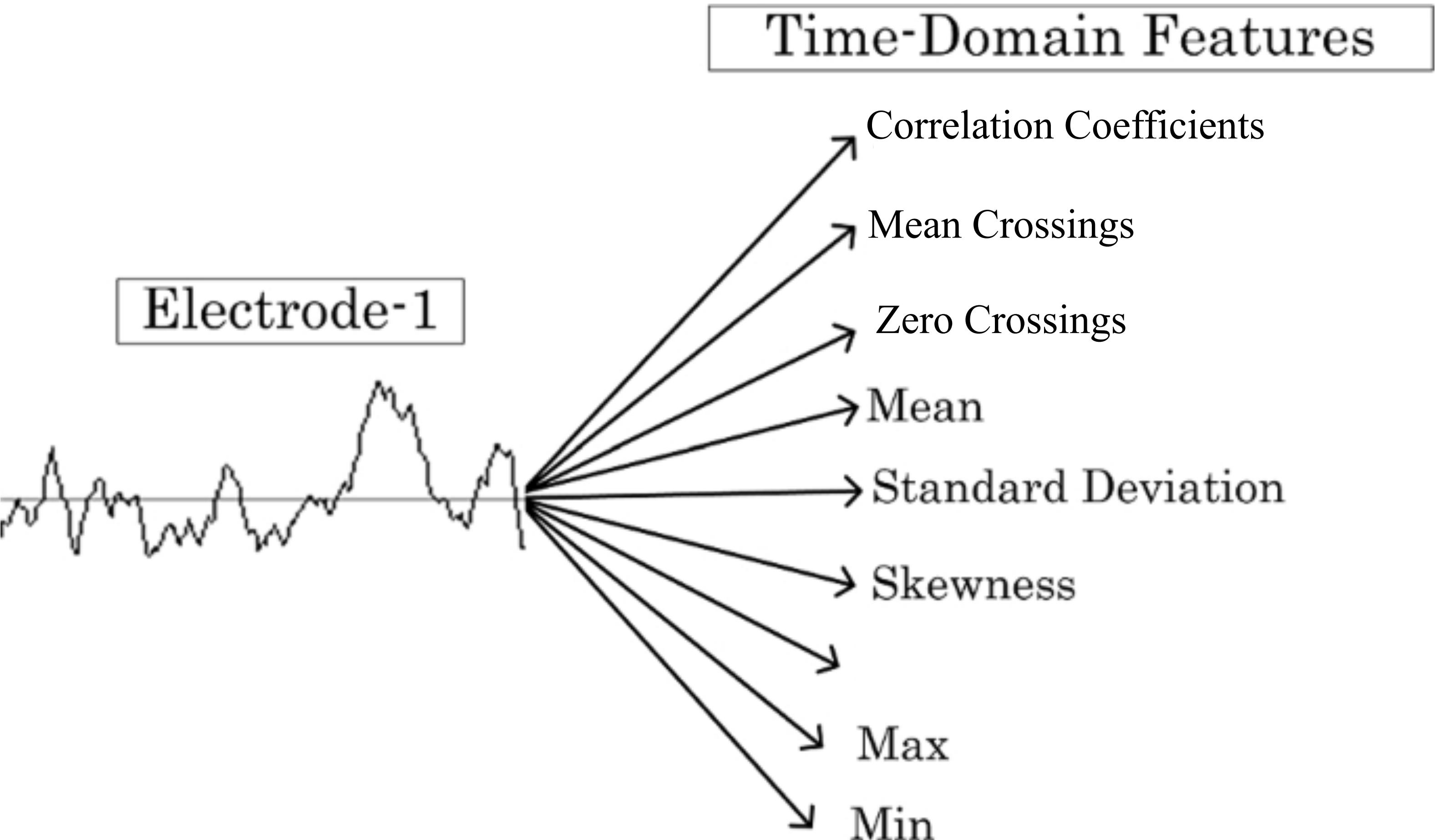
Data

Wavelet Transformation



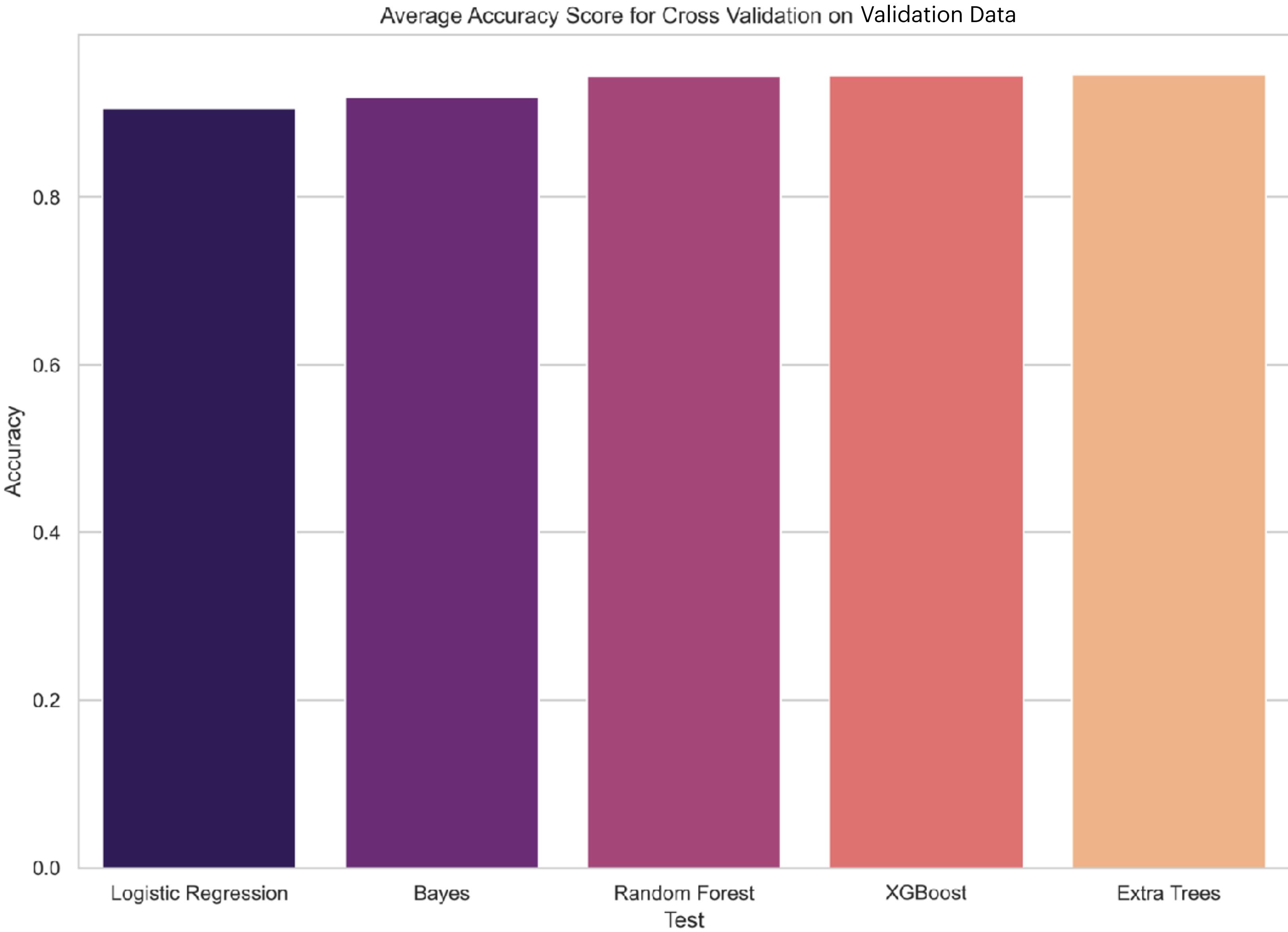
Data

Statistical Analysis



Accuracy Score

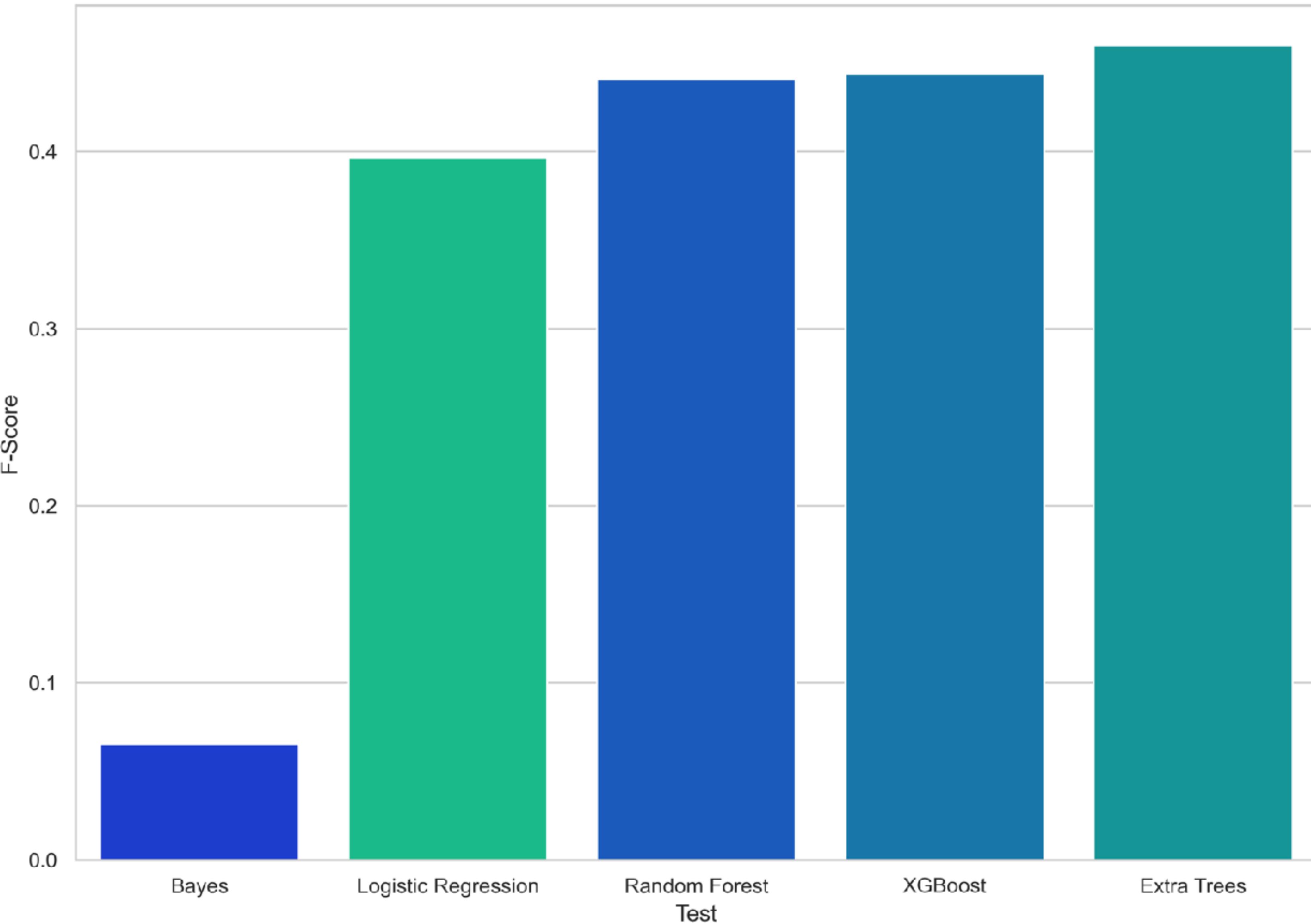
Same Metric used in Kaggle Competition



F-Score

Important for identifying interictal
EEG signals

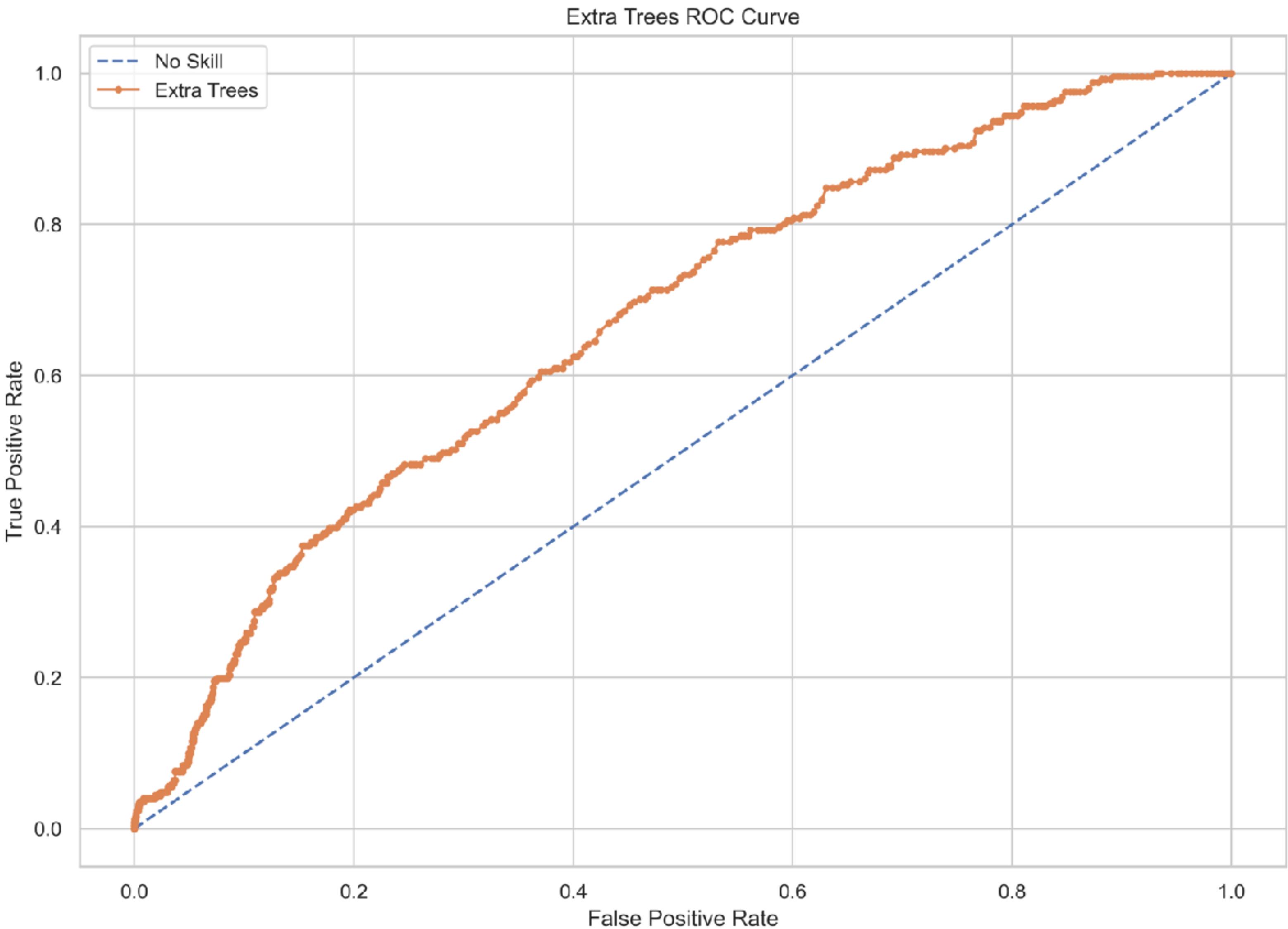
Average F Score for Cross Validation on Validation Data



Competition Data

Results

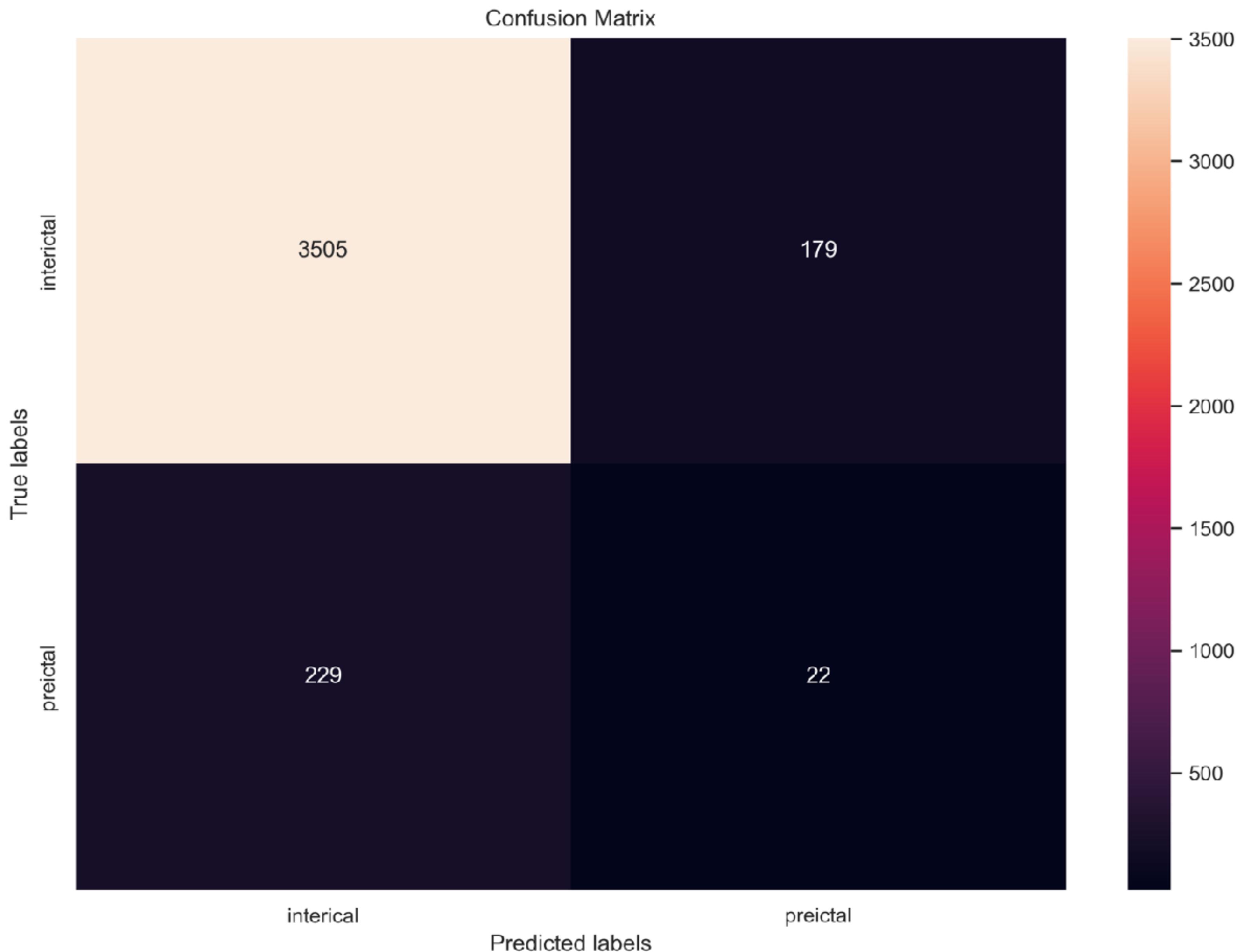
Accuracy Score: 89.6%
F Score: 9.7%



Competition Data

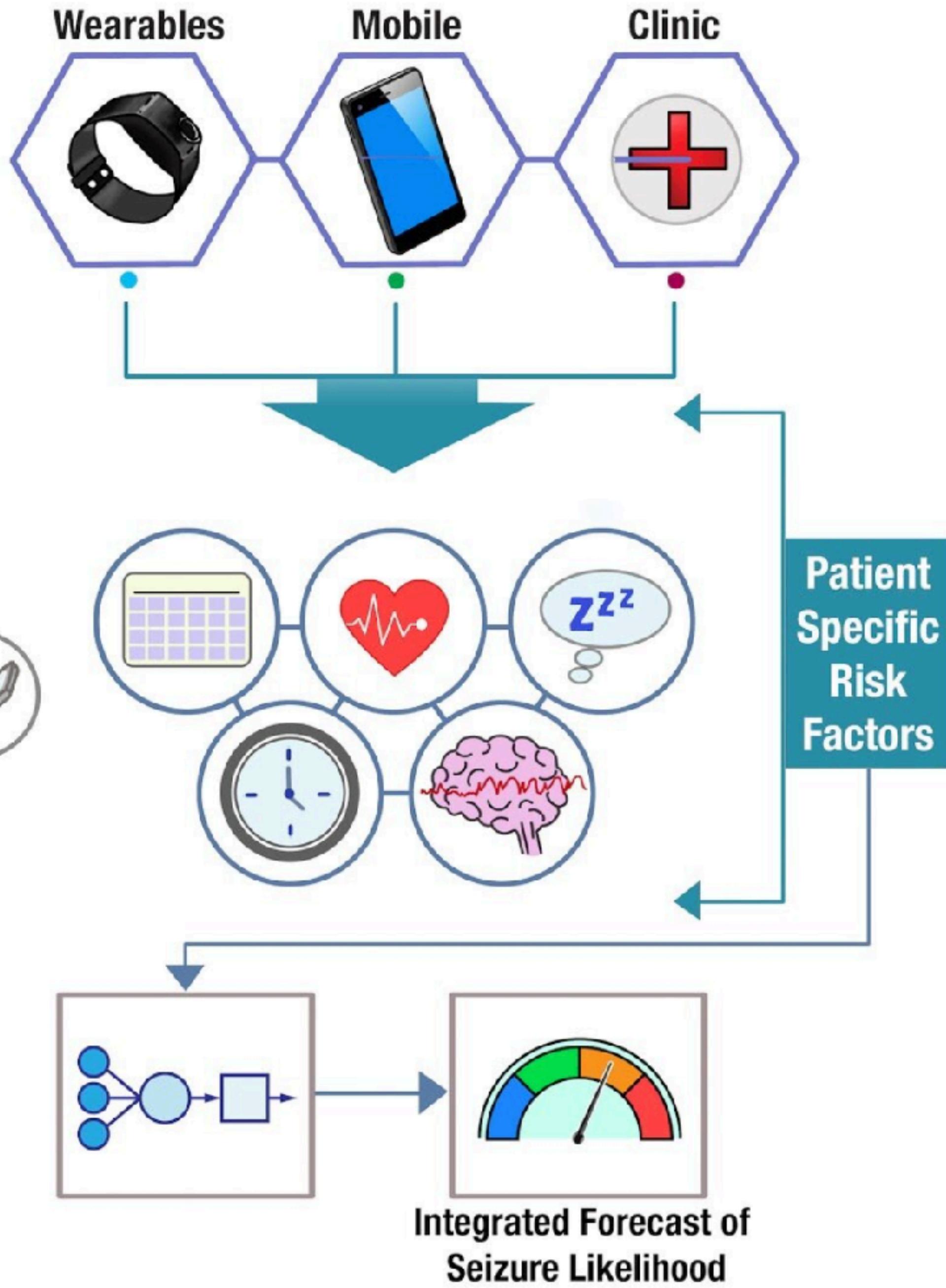
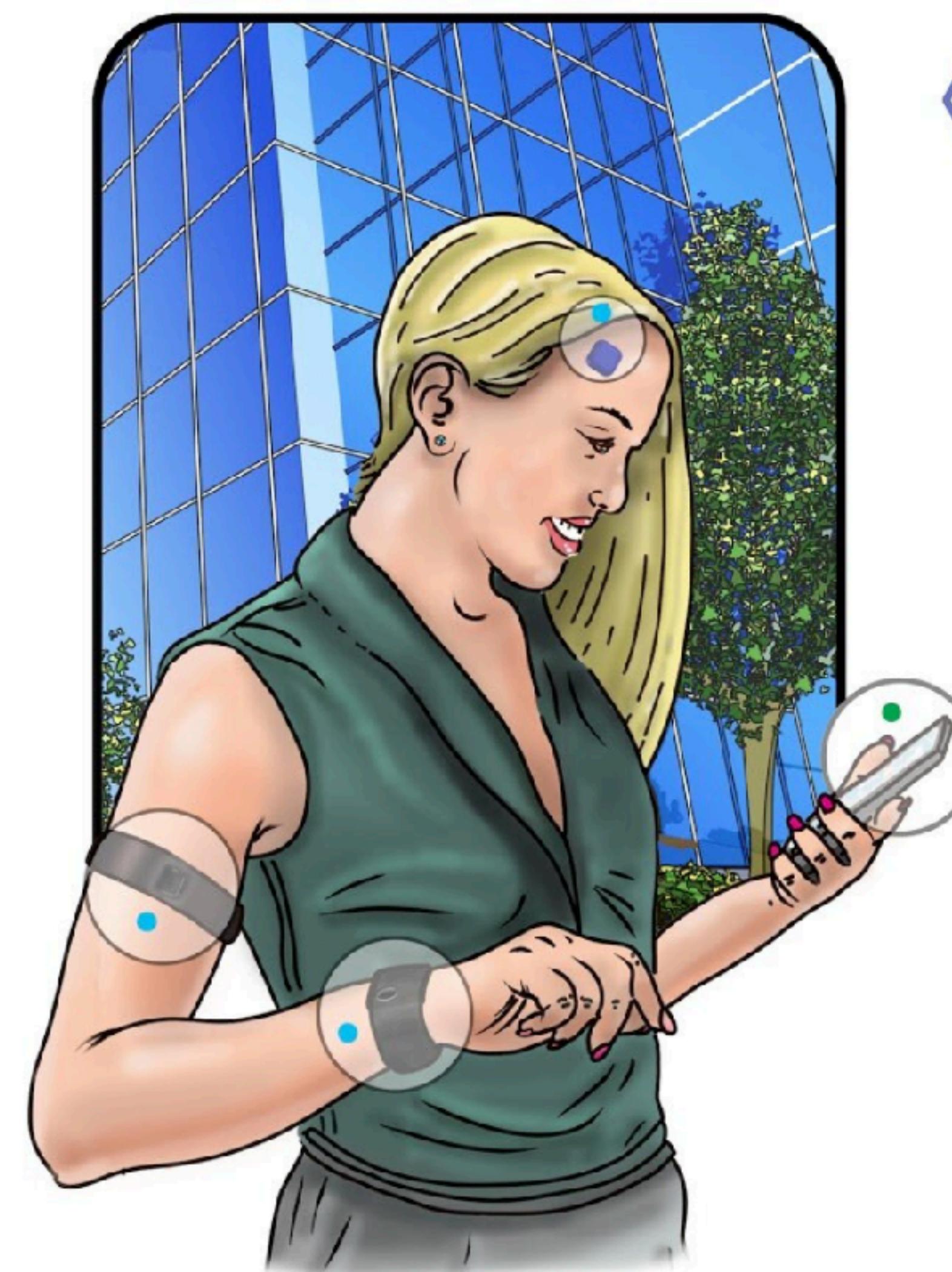
Results

Baseline Prediction: 95.14%
Pre-Seizure Prediction: 8.7%



Next Steps

Patient Specific Algorithms





EEG Classification

Any Questions?