

Navigating BrainFocus iEEG: A Cloud-based Software to Assist Clinicians in Identifying Seizure Onset Zone(s) in Drug-resistant Patients

The standard pre-surgical diagnostic procedure in drug-resistant epilepsy usually involves visual inspection of long stereo-EEG (sEEG) recordings to identify epileptogenic regions. This is a very time-consuming and demanding procedure that might lead to inconclusive interpretations, resulting in mistakes and incomplete diagnosis. In this context, we developed BrainFocus iEEG (BF), a web-based computational tool to help clinicians identify SOZs and plan resective surgery with more confidence. BF features an own developed automatic epileptogenic detection algorithm that reveals the spectral signatures of emerging seizure-specific onset patterns and pinpoints a list of regions that most likely lie or are connected to the seizure onset zone. The algorithm's performance has been validated 30 intracranially-monitored patients against the standard diagnostic information and is under ongoing validation including TLE and non-TLE epilepsy cases. BF also includes highly requested tools to visualize sEEG recordings more efficiently, such as frequency-dependent seizure activation maps and an interactive 3D model of the patient's brain. BF potential lies in its ability to extract epileptogenic relevant information that might be hidden to the human eye in challenging cases, for which is having a good reception among neurologists. For these reasons, the use of BrainFocus can assist clinicians in the diagnosis of epileptic patients with iEEG. In this presentation, we will navigate through the platform, illustrate its user experience and, hopefully, demonstrate the potential applications of research in computational neuroscience.