DeSOZ: Automatic Detection of Seizure Onset Zone from scalp EEG Signals in Children with MRE

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Many children with epilepsy seizures are proven medically resistant and respective surgery is the only remaining treatment alternative. This is performed for removing/deactivating a small portion of brain tissue, usually the Seizure Onset Zone (SOZ), which is usually detected using intracranial electroencephalographic (iEEG) recordings. iEEG monitoring, however, has its limitations, which are mainly found in its invasiveness, cost, and the limited spatial sampling.

During the last few years, high-frequency oscillations (HFOs above 80 Hz) have emerged as a new promising biomarker in pre-surgical diagnosis of epileptogenicity. Despite the findings, HFOs are not used in clinical practice, mainly for the lack of studies addressing their detection and analyses with non-invasive methods (standard or high-density EEGs).

This studentship will focus on the automatic detection and localization of HFOs recorded by high density EEG from children suffering from medical refractory epilepsy.