SZTrack

Craley et al. proposed a novel neural network architecture, SZTrack, to detect and track the spatio-temporal propagation of seizure activity in multichannel EEG. SZTrack combines a convolutional neural network encoder operating on individual EEG channels with recurrent neural networks to capture the evolution of seizure activity. These unique training strategy aggregates individual electrode level predictions for patient-level seizure detection and localization. They evaluated SZTrack on a clinical EEG dataset of 201 seizure recordings from 34 epilepsy patients acquired at the Johns Hopkins Hospital. The network achieves similar seizure detection performance to state-of-the-art methods and provides valuable localization information that has not previously been demonstrated in the literature. They also show the cross-site generalization capabilities of SZTrack on a dataset of 53 seizure recordings from 14 epilepsy patients acquired at the University of Wisconsin Madison. SZTrack is able to determine the lobe and hemisphere of origin in nearly all of these new patients without retraining the network. SZTrack is the first end-to-end seizure tracking network using scalp EEG [1].

1)
Craley J, Jouny C, Johnson E, Hsu D, Ahmed R, Venkataraman A. Automated seizure activity tracking and onset zone localization from scalp EEG using deep neural networks. PLoS One. 2022 Feb 28;17(2):e0264537. doi: 10.1371/journal.pone.0264537. PMID: 35226686.