



TASMC (Tel Aviv Medical Center) Pre-surgical mapping: epilepsy

purpose

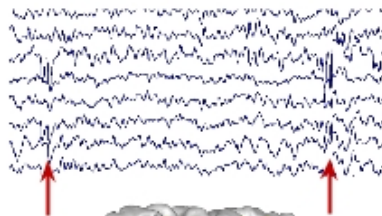
Localization of seizure focus:
where to resect

Preserving brain function
where to protect

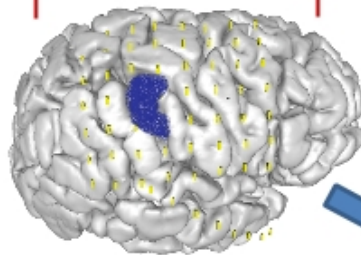
Unique noise reducing EEG-fMRI cap



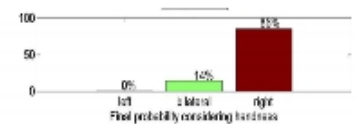
Machine learning for EEG epileptic spike detection (with DFKI)



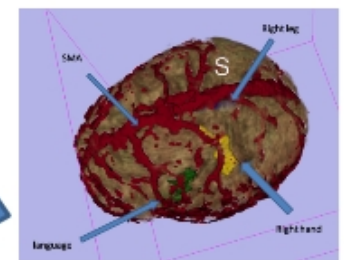
Unique algorithms for localization of epileptic foci



A novel EEG cap ("Dual Array EEG") along with novel accompanying algorithms for EEG-fMRI was utilized for mapping epileptic networks in 30 patients. Dual array allows cleaning of movement artifacts tampering EEG clinical reading. Validation from invasive monitoring was available for 5 of these patients and correspondence to EEG-fMRI maps was reached in 4 of these 5 patients. Additionally, a machine learning algorithm was created to automatically detect epileptic activity within the EEG.



Surgery (Robot/human)



Semi-supervised probabilistic machine learning for language fMRI of 76 patients with the invasive gold standard language lateralization. The algorithm provides each patient's language dominance for left, right or bilateral language dominance. The algorithm classified all but three patients.