

Probabilistic Mapping of the Effect of Deep Brain Stimulation in the Ventral Thalamus for Essential Tremor from Intraoperative Stimulation Data: a Proof of Concept

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Background

Deep brain stimulation (DBS) is commonly used as complement to medication in the management of symptoms of movement disorders such as Parkinson's disease (PD) and essential tremor (ET). Electrical stimulation is delivered in the brain via multi-contacts electrodes to structures of the basal ganglia. Stimulation tests during awake surgery allow to observe the symptomatic response. This approach has been the standard procedure for several decades, and generates large amount of data, with many contact positions and amplitudes tested. Most studies in the literature focus on analyzing data after surgery, which is less detailed in the spatial and stimulation amplitude dimensions. We present a pipeline for creating probabilistic stimulation maps and exemplified it on the data from 6 essential tremor patients.