Titolo (provvisorio): large-scale effect of radio-frequency thermo-coagulation procedures in drug-resistant focal epileptic patients

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Descrizione

Motivazione e campo di applicazione

Radio-frequency thermo-coagulation is a stereotactic ablation technique used in neurosurgery aimed at disconnecting pathological from healthy tissues. Since pioneering experiments in late 80s, many works proved that RFTC is a safe procedure and it is largely applied in focal epilepsy treatment. Despite recent attempts, current literature lacks accurate computational or in vitro models to study local and global effects and, at larger extent, to verify (and possibly predict) the clinical outcomes.

Obiettivi generali e principali attività

The thesis aims at studying the effect of node disconnection performed through radio-frequency thermo-coagulation (RFTHC) in large-scale brain networks. By comparing static network properties (e.g. topology and node strengths) as well as dynamical network properties (e.g. time-varying connectivity metrics) before and after RFTHC, this thesis aims at elucidating the effect of node disconnection at the level of large-scale brain networks.

Obiettivi di apprendimento (strumenti tecnici e analitici, metodologie sperimentali)

The successful candidate will learn about advanced signal processing techniques as well as element of graph theory and critical systems. Finally the successful candidate will also improve his/her programming skills developing dedicated tools in Python/Matlab.

Luogo/i in cui si svolgerà il lavoro: DIBRIS, University of Genoa

Informazioni aggiuntive

Numero massimo di studenti: 1