POST-DOCTORAL ASSOCIATE IN MODELING, UNCERTAINTY QUANTIFICATION AND OPTIMIZATION OF TRANSCRANIAL MAGNETIC STIMULATION

PURDUE UNIVERSITY

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING:

Join a team that is working to improve computational dosimetry tools and optimize electromagnetic brain stimulation techniques. Ongoing projects involve transcranial magnetic stimulation (TMS), a non-invasive form of brain stimulation used widely as a neuroscience research tool as well as a treatment for psychiatric and neurological disorders. TMS is FDA approved for depression. Specifically, we are working towards:

- Developing novel fast methods for computational E-field dosimetry of TMS that can be practically applied to predict E-field uncertainty resulting from uncertainty in the TMS setup and to optimize coil placement.
- Generating computational models of the inherent uncertainty in the TMS setups (e.g. patient to patient variability, patient conductivity uncertainty, and coil placement uncertainty).
- Developing computational tools for individualized MRI/fMRI-based targeting of TMS for modulating brain circuits related to cognitive performance in humans.
- Designing and implementing novel TMS devices that improve the targeting relative to existing ones.

We seek a highly motivated individual who is interested in improving brain stimulation technologies (e.g. tDCS, tACS, and TMS). This is a full-time position and provides exceptional opportunities for interdisciplinary research and career development. This position will be primarily mentored by Luis Gomez, PhD with input from other faculty collaborators spanning various fields including medicine, engineering, and mathematics, providing exposure to both clinical and engineering research perspectives.

A PhD in biomedical engineering, electrical engineering, physics, neuroscience, math, or strong background in scientific computing is required, as are excellent communication skills. Previous experience in one (or more) of these areas: computational electromagnetics, fMRI data processing, uncertainty quantification, or brain stimulation computational modeling, is desired.

For consideration submit a CV and the names and contact information of three professional references as a .pdf file attachment to:

Luis J. Gomez, PhD (ljgomez@purdue.edu)

Assistant Professor of Electrical & Computer Engineering

https://engineering.purdue.edu/SublimeLab/