Presentation Title: Imaging and modulating the human brain with multi-modality technologies

Speaker: Han Yuan, Ph.D.

Abstract:

Mapping the human brain is one of the grand scientific challenges of the 21st century. My research has been aimed at advancing neuroimaging technology by combining multiple modalities (magnetic resonance imaging, near infrared spectroscopy and electrophysiology) or multiple image contrast (structure, blood flow, metabolism and direct neuronal activity) to achieve improved spatial and temporal resolutions and provide multifold solutions for medical purposes. In this presentation I will introduce the principle of multimodal imaging and describe the methodologies for acquiring and integrating multimodal data. I will then demonstrate examples of novel imaging biomarkers that can be used to diagnose brain disorders and diseases, and evaluate the state of conditions. I will also discuss how to utilize the imaging markers for guiding neuromodulation technologies including transcranial magnetic stimulation.