**Master thesis project: Spatiotemporal network dynamics in primate brain networks.**

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The human brain contains 100 billion neurons each connected to approximately seven thousand of its neighboring neurons. Such brain connectivity could be represented in the form of a graph in which neuronal ensembles or modules are connected via functional or structural edges[1]. A critical open question in neuroinformatics lies in how neural units form clusters of reciprocal functional groups that shared coordinated activity during perceptual streams. For this project we aim to understand how structural and functional networks in non-human primate's (NHPs) form networks communities and how these network modules evolve over time during the continuous perception of visual scenes. Graph data was obtained from whole brain functional magnetic resonance imaging (fMRI) and diffusion tensor imaging (DTI) and is currently available for network analyses[2]. Successful completion of this project will enable the student to develop analytical strategies for exploring large-scale network neuroscience data. Importantly, the results from this project could uncover behaviorally-relevant network dynamics in neuroimaging data and will enable students to develop analytical strategies for network neuroscience. Consideration into expanding for a PhD project will be considered in the context of network perturbations with fMRI-targeted optogenetics in NHPs.

**References:**


1. Dworkin JD, Shinohara RT, Bassett DS. The landscape of NeuroImaging research. Neuroimage. 2018, 183, 872-883.
2. Kaiser M. A tutorial in connectome analysis: topological and spatial features of brain networks. Neuroimage, 2011, 57, 892-907.