Workshop on Graph-Based Network Analysis of Resting State fMRI

November 17-18, 2022

National Neuroimaging Facility

Centre of Behavioural and Cognitive Sciences, University of Allahabad

Venue

National Neuroimaging Facility
Centre of Behavioural and Cognitive Sciences
Senate Campus (Opposite Krishna Coaching)
University of Allahabad
Prayagraj – 211 002

About the Workshop

This workshop will provide hands-on training in the analysis of resting state data using graph theory approach. Resting state fMRI (rs-fMRI), is one of the increasingly popular methods used to study age and pathology-related changes in the brain. As opposed to task-based fMRI, rs-fMRI does not require participants to perform any specific task. The low-frequency oscillations of the rs-fMRI signal have been shown to relate to the functional architecture of the brain. Graph theory can be applied to rs-fMRI to visualize the brain as a network. Application of graph theory approaches to rs-fMRI has demonstrated non-trivial topological properties of functional networks in the human brain. Among these is the knowledge that the brain's intrinsic activity is organized as a small-world, highly efficient network, with significant modularity and highly connected hub regions. These network properties have also been found to change throughout normal development, aging, and in various pathological conditions.

This workshop will provide a primer on resting state functional connectivity and graph theory analysis. Participants will be guided through how to make a brain graph utilizing rs-fMRI data, compute certain graph theory measures such as modularity, connectivity strength and system segregation and visualize the results on a template brain. Alternate methodological approaches to make a functional brain graph will also be discussed.

Resource person
Dr. Shivangi Jain, Postdoctoral research scholar, Psychological and Brain Sciences, The University of Iowa

Dr. Shivangi Jain is an alumnus of CBCS, UoA. She has a PhD in Cognitive Psychology from Georgia Institute of Technology, Atlanta. She has postdoctoral training from Duke University Medical Centre, Durham and the University of Iowa, Iowa City. Her research focuses on the neurocognitive mechanisms of physical activity and cognitive training based cognitive changes in aging. She employs neuroscientific methods such as functional and structural brain connectivity, task-related functional activation, white matter lesion load analysis, and brain iron load estimation.

Dr. Shivangi Jain

No. of seats: 20

Participants: Advanced Masters and PhD students with research interests in cognitive neuroscience.

Registration fee: Rs. 2500/- (to be paid on site in cash)

Accommodation will be provided to all outstation participants.

Applicants are requested to fill the Google Form https://forms.gle/3u31khsGhikTc7Q87 latest by October 25, 2022. Students will be notified about the acceptance of their participation by October 31, 2022.

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