

Workshop on Graph-Based Network Analysis of Resting State functional MRI

National Neuroimaging Facility

Centre of Behavioural and Cognitive Sciences, University of Allahabad, Prayagraj

November 17-18, 2022

The Centre of Behavioural and Cognitive Sciences (CBCS), University of Allahabad has organized a two-day workshop on Graph-Based Network Analysis of Resting State (brain state in the absence of a stimulus or task) functional MRI. Graph theory can be applied to the resting state fMRI (rs-fMRI) to visualize the brain as a network. Brain's intrinsic activity is organized as an efficient network with highly connected regions. These network properties have been found to change throughout normal development, aging, and in various pathological conditions.

The goal of this 2-day workshop is to provide hands-on training with the acquisition of Resting state fMRI data, data pre-processing and analysis. The focus of this workshop is on the use of Graph theory Analysis on Resting State fMRI as a tool to address research questions in Cognitive Science/Network neuroscience. Participants are learning to make a brain graph utilizing rsfMRI data, compute measures such as modularity, connectivity strength and system segregation and visualize the results on a template brain.

Dr. Shivangi Jain, an alumnus of CBCS, currently a Postdoctoral research scholar at Psychological and Brain Sciences lab, The University of Iowa is the resource person for the workshop with her experience and expertise in fMRI and Graph Theory Network Analysis on the Resting brain. She did her Masters at CBCS and PhD at Georgia Institute of Technology, Atlanta, USA. She uses neuroscientific methods such as functional and structural brain connectivity, for her research on Aging and working memory and effect of cognitive training on neuroplasticity.

This workshop is targeted at advanced Masters, PhD and postdoctoral level scholars from Cognitive science/Neuroscience/Psychology. Twenty scholars from institutions like IIT Kanpur, IIIT Allahabad and CBCS, UoA are participating in the workshop.

The workshop started on November 17, 2022 with an introductory talk on Resting State fMRI and Graph Theory by Dr. Shivangi Jain followed by sessions on Data Acquisition on fMRI scanner at the National Neuroimaging facility of the Center by Dr. Amrendra Singh and PhD Scholar Sanchita Mohindru. The hands-on sessions on preprocessing and analysis with a data set were conducted in the lab at the National Neuroimaging Facility, CBCS, UoA. The second day of the workshop focused on Building brain connectivity matrices, Compute graph theory measures, and Visualization of modules on a template brain.

We believe that workshops on advanced techniques like Graph Theory Network Analysis on Resting state fMRI will certainly aid in training and capacity building for Network Cognitive Neuroscience research in India.



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National Neuroimaging Facility, CBCS, UoA