Workshop on Diffusion Weighted Imaging
June 8-9, 2022
National Neuroimaging Facility
Centre of Behavioural and Cognitive Sciences

University of Allahabad

The Centre of Behavioural and Cognitive Sciences (CBCS), University of Allahabad organized a Two-day Workshop on Diffusion Weighted Imaging (DWI) on June 8-9, 2022. DWI is a promising tool in neuroimaging research and provides useful information for clinical and cognitive neuroscience. DWI is an MR imaging modality, widely used to infer white matter neuroanatomical microstructure and connectivity in-vivo.

The Centre established the National Neuroimaging Facility in 2019, with a large-scale grant from the Department of Science and Technology, Government of India. The facility was inaugurated by Dr. Harshvardhan, Hon. Minister of Science and Technology, Government of India. The Centre had organized the first workshop on Cognitive Neuroimaging (hand on training with fMRI data acquisition, experimental design, and analysis) in February 2020.

The goal of this 2-day workshop was to provide hands-on experience with the acquisition of Diffusion weighted imaging (DWI) sequences, data pre-processing and analysis. Overall, the emphasis of this workshop was on how to use DWI in fMRI as a tool to address research questions in cognitive neuroscience and clinical neuroimaging. Diffusion tensor model and tractography was also discussed. Twenty scholars including Masters/PhD/postdoctoral fellows/young faculty from cognitive science/neuroscience/biochemistry/medical sciences from various institutions like IIT Kanpur, IIT Gandhinagar, IIT Delhi, IIT Madras, ICSSR, MLN Medical college, Allahabad, Dept of Electronics and Communication, and CBCS, UoA participated in the workshop.

Dr. Madhura Ingalhalikar, MRI Scientist, Clario, Texas and Adjunct Faculty, Symbiosis Centre for Medical Image Analysis, Symbiosis International University, Pune is the resource person for the workshop. Her extensive experience and expertise in cognitive neuroimaging and DWI will certainly aid in training and capacity building for fMRI research. Two of her PhD scholars, Archith Rajan and Apoorva Safai with training in diffusion imaging and machine learning assisted her.

The workshop started on June 8, 2022 with a scan session and an introductory talk on DWI by Dr. Madhura Ingalhalikar at 9 am. The inaugural session was held at 11:00 am and was Chaired by Prof. S. I Rizvi, Dean, Research and Development, University of Allahabad. The inaugural session began with a welcome address by Prof. Bhoomika R.

Kar, Head, CBCS and a brief introduction about the Centre, National Neuroimaging Facility at CBCS and the workshop. The resource person, Dr. Madhura Ingalhalikar gave a brief overview about the workshop. The Chair of the session, Prof. S.I Rizvi in his inaugural address emphasized the importance of such workshops to provide training in advanced techniques like DWI. He also highlighted the need for research on ageing and neuroplasticity using functional MRI and diffusion weighted imaging. The session ended with a vote of thanks proposed by Dr. Amrendra Singh, Assistant Professor, CBCS.

The hands-on sessions on preprocessing and analysis with the data acquired during the morning session were conducted in the lab with systems equipped with the required software, at the National Neuroimaging Facility, CBCS. The second day of the workshop focused on ROI analysis, tract based spatial statistics and diffusion tensor models. Such workshops on advanced techniques like Diffusion Imaging will help in capacity building for research in clinical/cognitive neuroscience and medical imaging.

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