Ekansh Sareen

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Education

Indraprastha Institute of Information Technology, Delhi (IIITD) — New Delhi, India
*Bachelor of Technology in **Electronics and Communication Engineering*** — *Aug 2015 – May 2019*
Institute Gold Medalist in Research

Research Experience

Research Assistant — July 2019 – Present
SBILab, IIIT-Delhi — *New Delhi, India*

PI: Prof. Anubha Gupta

- Investigating functional brain connectivity in Intellectual Developmental Disorder during music perception
- Characterization of cognitive load and selective attention using ERP methods
- Developed a network neuroscience-inspired and permutation-based statistical framework for limited subject studies
- Characterization of motor imagery using EEG source localization methods

Researcher — May 2020 – Present
MIP-Lab, EPFL — *Lausanne, Switzerland [Remote]*

PI: Prof. Dimitri Van De Ville, Dr. Enrico Amico, and Dr. Alessandra Griffa

- Investigating identifiability in human functional connectome using magnetoencephalography

Researcher — Oct 2019 – Oct 2020
Empathic Computing Laboratory, University of Auckland — *Auckland, New Zealand, [Remote]*

PI: Mr. Amit Barde

- Investigating inter-brain synchronization in the real and virtual world using EEG hyperscanning

Researcher — Oct 2019 – Present
Empathic Extended Reality and Pervasive Computing Lab, University of Queensland — *Brisbane, Australia [Remote]*

PI: Dr. Arindam Dey

- Exploring the neurophysiological effects of interacting with facial expressions and controllers in virtual reality

Undergraduate Researcher — Sep 2017 – April 2019
SBILab, IIIT-Delhi — *New Delhi, India*

Advisor: Prof. Anubha Gupta

- Developed a robust, fully-automated pre-processing pipeline for EEG data
- Evaluation of functional brain networks using network science methods

Publications

Journals

1. **E. Sareen**, L. Singh, A. Gupta, R. Verma, G. Krishnaveni Achary, and B. Varkey. Functional Brain Connectivity Analysis in Intellectual Developmental Disorder during Music Perception. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, In Press, 2020. doi:10.1109/TNSRE.2020.3024937
2. I. Gumilar, **E. Sareen**, R. Bell, A. Stone, A. Hayati, J. Mao, A. Barde, A. Gupta, A. Dey, G. Lee, and M. Billinghurst. A comparative study on inter-brain synchrony in real and virtual environments using hyperscanning. *Computers and Graphics*, In Press, 2020. doi:10.1016/j.cag.2020.10.003
3. **E. Sareen**, L. Singh, B. Varkey, G. Krishnaveni Achary, and A. Gupta. EEG dataset of individuals with intellectual and developmental disorder and healthy controls under rest and music stimuli. *Data in Brief*, 30:105488, 2020. doi:10.1016/j.dib.2020.105488

Conferences

1. M. Saxena, **E. Sareen**, and A. Gupta. Understanding functional brain activation using source localization of eeg signals in motor imagery tasks. In *2020 International Conference on COMmunication Systems NETworkS (COMSNETS)*, pages 58–63, 2020. doi:10.1109/COMSNETS48256.2020.9027409

2. S. Verma, **E. Sareen**, and M. S. Hashmi. A miniaturized dual-band right triangle defected ground structure band stop filter for energy harvesting applications. In *2018 IEEE MTTS International Microwave and RF Conference (IMaRC)*, pages 1–3, 2018. doi:10.1109/IMaRC.2018.8877313

Preprints and Data Repositories

1. **E. Sareen**, L. Singh, A. Gupta, B. Varkey, and K. Achary. EEG dataset of individuals with intellectual and developmental disorder and healthy controls while observing rest and musical stimulus [dataset]. *Mendeley Data*, v2, 2020. URL: http://dx.doi.org/10.17632/fshy54ypyh.2
2. **E. Sareen**, A. Gupta, R. Verma, G.K. Achary, and B. Varkey. Studying functional brain networks from dry electrode EEG set during music and resting states in neurodevelopment disorder. *bioRxiv*, 759738, 2019. doi:10.1101/759738

Skills

Programming: MATLAB, Python, Git/Github, LaTeX

Specialized softwares: EEGLAB, SPM, LORETA, Brainstorm, BrainNet Viewer, MRIcron, Gephi, ERPlab

Neuroimaging modalities: EEG, MEG, fMRI

Research methods: Signal Processing, Functional connectivity, Behavioral/Psychophysical research, Cognitive interpretation/analysis, Functional anatomy, Statistical models, Large scale data collections/surveys

Awards

IIITD Dean's Award for Innovation, Research and Development [Research] | 2020
IIITD Dean's award for innovation, research and development recognizes an individual or team that has developed and/or implemented an innovation in engineering, research, socially relevant or industry project

IIITD Gold Medal in Research | 2019
Institute Gold Medal in research recognizes the most outstanding and socially impactful undergraduate research project

National Talent Search Examination (NTSE) Scholar | 2014
NTSE is a national-level scholarship program at the secondary school level that identifies and supports the higher education of students with high intellect and academic talent

Teaching

Instructor, Summer School on EEG Analysis and Allied Technologies | 2019
SBILab–IIITD organized a 5-day intensive summer school on EEG analysis and associated methods that hosted 50+ participants and had 10 invited talks from the experts in the area

Service

Public Secretary, IEEE Signal Processing Society Delhi Chapter | Dec 2019–Present
As Public Secretary of IEEE SPS Delhi Chapter, I have assisted in organizing multiple distinguished lectures, summer schools, technical talks and membership-drive events

Research Mentor, SBILab–IIITD | 2019–Present
Being a senior researcher at SBILab, I have mentored and trained 4 undergraduate researchers, 2 international visitors and 2 research interns in EEG signal processing, cognitive neuroscience, and ERP analysis

Organizer, Summer School on EEG Analysis and Allied Technologies | SBILab-IIITD July 2019
As the lead organizer from SBILab–IIITD, I assisted in organizing a 5-day summer school to promote research in EEG analysis among researchers with background in signal processing, computer science, and neuroscience

Mentor, IIITD Student Mentorship Program | Aug 2018–March 2020
IIITD Student Mentorship program enrolls senior students to assist freshmen/sophomore year students in adjusting to the college environment on academic and personal grounds