

Research Background and Statement

Myself Gopal Chandra Jana, pursuing PhD (in the stage of pre-submission) in the Department of Information Technology at Indian Institute of Information Technology Allahabad (IIIT-Allahabad) under Dr. Anupam Agrawal (Professor @Dept. IT, IIIT-A), and planning to submit my thesis in the month of February'2023.

My PhD research is based on the domain of EEG signals Analysis (specifically channel selection, signal decomposition, features representation and extraction), Artificial Intelligence (specifically traditional ML, DL, RL) and Epileptic Seizure detection (subject specific and cross-subjects). On the basis of PhD research work we have generated four SCI/SCIE indexed journal papers, five WoS and Scopus conference publications and one Software Copyright, details of the same has been mentioned in the list of publications file.

Also, during my M.Tech.-CS&E (@Sof C&E, KIIT-DU), I have done my post graduate thesis work in the domain of Machin Learning and EEG & MEG signals analysis for discriminating motor movements. On the basis of M.Tech. research work we have generated one SCIE indexed journal, one SCOPUS indexed journal, and one WoS Conference publications.

My self-motivation, curiosity, enthusiasm and proactive attitude to learn and adopt new tools and techniques helped me a lot to explore the advancement of AI concept in medical imaging. Also, I believe In Integrity, Responsibility, Continuity, Consistency, and Dignity for any responsibility.

During my M. Tech. and PhD, I have attended many Seminars, Workshops, Conferences, Symposiums and short-term courses and rescaled my interpersonal skill to learn a new concept and adopt in the next level of research and academic. Few tools and techniques expertise of mine are summarized below which I can adopted in my feature research work.

Few expertise of mine:

- During my PhD and M. Tech., I have demonstrated research expertise growing in the domain of EEG signals analysis and machine learning.
- Rich experience in modeling and computer simulation, using MATLAB, Python.
- Experienced with mostly familiar EEG signals processing tools like EEGLAB with MATLAB, EDFbrowser, pyEDF. Also, has some idea related to other existing EEG data visualization and processing tools like Bioelectromagnetism-Matlab toolbox, eeg-analysis-toolbox with MATLAB etc.
- Techniques explored and used related to Signal processing/Analysis are: Filtering techniques (Butterworth etc.), FFT, DWT, EMD, ICA etc.
- Techniques explored and used related to Machine Learning are: ANN, SVM, ELM, ANFIS, CNN, CapsNet, including Transfer Learning and Reinforcement Learning.
- Experienced with other popular tools like FSL is a comprehensive library of analysis tools for FMRI, MRI and DTI medical imaging.

- Experienced with Portable Batch System (PBS) to handle the distribution of batch jobs and interactive sessions across the available nodes in the high-performance GPU/CPU cluster.
- Explored Google Cloud Platform for setup a VM with GPU for running high computing jobs.
- Experienced with: Linux/Windows, High Performance Computing, LaTeX-Overleaf, Origin, MS-office, Moodle for LMS etc.
- Experienced with manuscript preparation, review, modification, communicate, rebuttal preparation for reviewers and proof reading etc. related to manuscript preparation for publication.
- Exploring explainable AI, DL and RL concepts.

With this knowledge and experience, I'm interested to extend research in the field of Artificial Intelligent in health care which includes the core knowledge of Artificial Intelligent, Reinforcement Learning, Machine Learning, Deep Learning, Computer Vision, Signal Processing. The application area of these techniques would be on the domain of Medical Image and Signal analysis. But not restricted.

Also, I can extend and accommodate my knowledge and experience on the project/interest of principal investigator/project supervision/ project head to pursue his research vision during my tenure.

Moving forward, I am excited to continue my research in the field of artificial intelligence and Computer Vision in healthcare or wherever applicable, and am open to the possibility of working with principal investigators or project heads to pursue their research vision in future. I am confident that my knowledge and experience make me well-suited to take on new challenges and make meaningful contributions to the field.

Thank You for your time to read.

Mr. Gopal Chandra Jana