Rahul Chatterjee

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EDUCATION

MSC NEUROSCIENCE THESIS

Department: Integrated Program in Neuroscience (IPN), McGill University
Sep 2020 - Present
GPA: 4.0 / 4.0

BACHELOR OF ENGINEERING

Department: Electronics and Telecommunication, Jadavpur University, India
Sep 2016 - Aug 2020
GPA: 8.56 / 10

COURSEWORK

MASTERS

Principles of Neuroscience
Functional Neuroimaging Fusion
Sex- and Gender-based Analysis Plus (SGBA+)

UNDERGRADUATE

Digital Signal Processing
Control Engineering
Data Structures and Algorithms
Computer programming and Numerical Analysis
Artificial Intelligence and Pattern Recognition

MOOC

Image Classification using DIGITS (NVIDIA)
Introduction to SQL (DataCamp)
Introduction to Git for Data Science (DataCamp)
Big data 101 (IBM)

SKILLS

PROGRAMMING

Over 5000 lines:
• Python (libraries including Scikit-learn, Numpy, Pandas) • C ++

TOOLS AND OS

• SQL • Amazon Web Services (AWS)
• OpenCV • R • PyTorch • TensorFlow
Microsoft Windows and Linux.

SOCIETIES

Student representative, IPN, McGill University

MAJOR PROJECTS

BIOSIGNALS AND SYSTEMS ANALYSIS LAB, MCGILL UNIVERSITY

Sep 2020 – Present | Montreal, Canada
As part of my Master's project, I designed a Time-Delay Embedded (TDE) Hidden Markov model to detect transient bursts from source localized MEG signal. In this study, I have used SPM and FreeSurfer software for cortical reconstruction and volumetric segmentation of collected MRI data and Brainstorm software was used to co-register MEG and MRI data in order to perform source localization. Also, I am currently developing a Machine learning (ML) pipeline to classify MEG/EEG signal into 'burst' states in real-time and the results will be further used to design a closed-loop neurofeedback system.

INDEPENDENT SUMMER PROJECT May 2021 – Aug 2021

In this project, I built an object detector from the Single Shot Detector (SSD) algorithm. I trained and deployed the model using Amazon Sagemaker to localize faces of dogs and cats from the IIIT-Oxford Pets Dataset.

BRAIN LAB, MCGILL UNIVERSITY May 2019 – Aug 2019

As part of the MITACS Globalink research internship, I designed an application module within the BCI2000 Software platform to detect event-related desynchronization (ERD) in real-time from EEG signal and developed the software and hardware interface for tasks to study motor learning characteristics. Also, I built a Convolutional Neural network-based framework in PyTorch to identify brain stimulation-induced EEG features.

VISUAL INFORMATION PROCESSING LAB, IIT KHARAGPUR

May 2018 – June 2018 | KHARAGPUR, INDIA
In this project, I worked on emotion analysis of human subjects using single channel EEG signal and applied Linear Discriminant Analysis (LDA) for dimension reduction and compared the performance of supervised machine learning algorithms like random forest, KNN, SVM for the classification task.

PUBLICATIONS (POSTER PRESENTATIONS)

• Unfolding the Effects of Aging on Beta Burst Characteristics during Unimanual Movement. Chatterjee R., Lungoci G., Yan X., He L., Mitsis G., Boudrias M.H. CRIR Scientific Congress, June 7th, 2021.

•Age-related Changes in Burst Rate of Beta Oscillations during Bimanual Movements. Chatterjee R., Lungoci G., Yan X., Mitsis G., Boudrias M.H. Virtual NeuroSymposium, June 17 - 18, 2021 (*).

•Changes in the mu and theta rhythms during the acquisition phase of a unilateral motor learning task, Yan X., Chatterjee R., Lungoci G., Mitsis G., Boudrias M.H. NeuroSymposium, June 17 - 18, 2021(*)

(*) Published abstract - McGill Journal of Medicine, DOI: https://doi.org/10.26443/mjm.v20i1.923)

SCHOLASTIC ACHIEVEMENTS

2021 Elaine Belanger Graduate Studentship (value $10k)
2021 CRIR Scientific Congress - Oral presentation Award (value $100)
2020 MITACS Globalink Graduate Fellowship (value $15k)
2019 Singapore International Pre-graduate Award (SIPGA) by A*STAR Academy