Sujit Roy, Ph.D.

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EDUCATION

PhD **Ulster University, Computer Science** Nov 2017-June 2021
Tasks: MEG/EEG signal processing and classification, Deep learning framework for real time classification of motor imagery tasks, Generating artificial EEG Signal, Real-time step-wise control of hand exoskeleton, CNN, BiLSTM, GAN, Tensorflow, Bayesian optimization

Visiting Research Fellow, Indian Institute of Technology, Kanpur, India
Nov 2017- Dec 2020
Tasks: Robotics, algorithm and control design for step-wise pneumatic-based control

BTech Manav Rachna International University, Computer Science July 2013- May 2017
First Class; Curriculum: Software development & Computer Science,
Award: Best Project in the National Capital Region

GRANTS

PhD fellowship (2017)
UK-India Education and Research Initiative £14553 x 3 years
Dentist Posture Belt (2016) £2,700
Research Promotional Group M.R.E.I.
Enterprise Grant for Sparsh & MSME (2016) £6,250
Govt of India

PUBLICATIONS

Journal Publications

- Roy, S., Rathee, D., Chowdhury, A., McCreadie, K. and Prasad, G., 2020. Assessing impact of channel selection on decoding of motor and cognitive imagery from MEG data. **Journal of Neural Engineering. I.F – 5.379**
- Roy, S., Chowdhury, A., McCreadie, K. and Prasad, G., 2020. Deep Learning Based Inter-subject Continuous Decoding of Motor Imagery for Practical Brain-Computer Interfaces. **Frontiers in Neuroscience, 14. I.F – 4.667**
- Rathee, D., Raza, H., Roy, S, and Prasad, G., 2021. A magnetoencephalography dataset for motor and cognitive imagery-based brain-computer interface. Scientific Data. **Nature**. **I.F - 9.051**

Journal Papers in Review

- Data Driven Decision Making Tools for Private Equity Investment, **J. ACM. I.F – 3.672**
- Roy, S., Youssofzadeh, V., and Prasad, G, "Mapping Motor and Cognitive Tasks imageries from MEG beta power desynchrony effects," Submitted to: **Neuroimage. I.F – 6.556**
- Roy, S., Yadav, P., Dutta, A., and Prasad, G., "Design of a Magnetoencephalography Compatible Hand-Exoskeleton for BCI Based Neurorehabilitation of stroke patients" Submitted to: **IEEE Transactions on Cybernetics. I.F – 11.470**

Conference Papers

(Peer-Reviewed)

- Roy, S., Gorle, G., Gaur, V., Raza, H., Jameel, S., "UniEM: Novel Unified Contextualised Explainable Engagement Model for Decoding Online Video Lectures" **Proceedings of the Twelfth ACM International Conference on Web Search and Data Mining. 2021**. (Submitted)

- Roy, S., Dora, S., McCreadie, K. and Prasad, G., 2020, July. MIEEG-GAN: Generating Artificial Motor Imagery Electroencephalography Signals. In 2020 **International Joint Conference on Neural Networks (IJCNN)** (pp. 1-8). IEEE.
- Roy, S., McCreadie, K. and Prasad, G., 2019, October. Can a Single Model Deep Learning Approach Enhance Classification Accuracy of an EEG-based Brain-Computer Interface?. In 2019 **IEEE International Conference on Systems, Man and Cybernetics (SMC)** (pp. 1317-1321). IEEE.
- Roy, S., Rathee, D., McCreadie, K. and Prasad, G., 2019, March. Channel selection improves meg-based brain-computer interface. In 2019 9th **International IEEE/EMBS Conference on Neural Engineering (NER)** (pp. 295-298). IEEE.

EXPERIENCE

The University of Manchester, Manchester, United Kingdom April 2021 to-
Machine Learning Researcher

- Explainable AI for drugs and forensics

BrainAlive Research Pvt. Ltd., Kanpur, India Jan 2020 to -
Chief Technology Advisor

- Designed proprietary software for facial recognition and pupil tracking
- contextualized engagement for Fintech Client
- Led a team to successful completion of design of new EEG headset along with real-time signal analysis and computer vision
- Worked on Tensorflow, Pytorch

Techchefz Consulting LLP., New Delhi, India May 2020 to Nov 2020
Principal consultant | AI Product Strategy

- AI based proposals for external funding and clients acquisition
- Prediction for steel requirement for Steel Vendors
- Worked on Tensorflow

Icycastle Infotainment Pvt. Ltd., New Delhi, India Nov 2018-2020
Principal consultant | Technology Development and Resourcing

- Lead a team to deliver service based projects worth 70000 USD within 9 months
- Successful completion of learning management system with ML based algorithm
- Worked on Tensorflow

SS Innovations China Co. Ltd. , Hangzhou, China Jan 2017- Jun 2017
Software Engineer Intern

- Built robotic control and video transmission in QT creator, C++
- Worked on reducing latency of video transmission

Indian Institute of Technology, Madras , India Dec 2014 – 2016
Researcher in Holography

- Worked in the field of optics to create 3D holograms and their interaction through gestures.
- Designed an IR grid for communication, along with image processing.
- Replicated design/concept of google glass.

SKILLS

Technical: Python3, Matlab, C++ , Linux, Git, Tensorflow, Theano, Keras, Signal processing, Image processing, Generative Networks, Machine Learning models, NLP, Reinforcement Learning
Soft Skills: Results-Oriented, Resourceful, Leader, Creative/Innovative, Team Player, Excellent Communication (both written and verbal) skills

WORKSHOPS TAUGHT

- **Machine learning with Python and Tensorflow (IIT Kanpur, 2020) -** Basic mathematics and ML models - SVM, RAndom Forest, LDA, etc. other techniques- CNN, Natural Language Preprocessing - **190 Participants**
- **Faculty Development Programme**, Electronics and Communication Engineering (MREI,2016) - **20 faculty members**
  Signal Processing, Machine Learning for EEG (2016)
- **Faculty Development Programme**, Computer Science Engineering (MREI, 2016)
  Holography- An introduction to design and implementation - **28 faculty members**
- **Atmel Professors Summit** (2015) - **20 Professors**
  Gesture recognition for robotics
- **Android App development** (2015) – **190 Participants**
- **Windows software development using C#** (2014) – **56 Participants**
- **Windows App development (2014)** – **188 Participants**

PENDING PATENTS

201711018934-Call Swapper in Mobiles.
201711023730- An Innovative Digital Product for Reading, Writing, Learning and Sharing Information Digitally
1705/DEL/2014-Gesture controlled multipurpose wearable communication device

AWARDS

- UK Global Talent
- 2019 AINI Datathon 2nd Position (Team leader)
- 2017 UKIERI fellowship 14553 GBP per year (PhD)
- Microsoft Imagine Cup 2017 National Finalist India (Team leader)
- FIA Best project, Dentist Posture Belt – CSE 2017 (Team leader)
- Gold Medal for Best Paper out of 500 papers presented at 30th IACDE (2016), Amritsar
- Best Project in Health Sciences North Zone, 2016 - Association of Indian Universities
- Manav Rachna International University Best Project award in 2014, 2017 (CSE)
- Best Video Paper Presentation at 31st IACDE 2016 Kolkata
- Manav Rachna International University Best Project Award in 2015 (Electronics)
- Texas Instruments - India Innovation Challenge 2016 - Quarter Finals
- FIA 3rd Best project – Electronics 2015
- Youngest Winner Best Project at FIA 2014 - Faridabad Industrial Association