SHIVAM CHAUDHARY

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EDUCATION

Master of Science, Cognitive Science, Indian Institute of Technology Gandhinagar (2021 - 2023)
Relevant Coursework: Computational Neuroscience, Human-Robot Interaction, Artificial Intelligence, Cognitive Psychology, Philosophy of Mind, Introduction to Neuroscience, Natural Language Processing, Research Methods
Grade: 8.91 / 10.00

Bachelor of Science, Information Technology, St. Xavier's College (Autonomous), Mumbai (2017 - 2020)
Relevant Coursework: Programming in C, C++, Python, and Java, Machine Learning, Deep Learning, Website Development, Mobile Application Development, Network Security
Grade: 3.61 / 4.00

ACHIEVEMENTS

Secured A+ (11 out of 10) grade in the course "Computational Neuroscience" at IIT Gandhinagar

Secured funding of Rs. 1.2L (Rs. 120,000) from the Indian Institute of Technology Gandhinagar to present a research paper at the **University of Padova, Italy**

RESEARCH AND PROJECT EXPERIENCE

EEG-based Brain-computer interface for real-time hand motion control (Aug 2022 - Present)
Working on creating a real-time EEG-based brain-computer interface for hand grasp and finger digit classification, followed by control of virtual hand with Prof. Krishna Miyapuram, Assistant Professor, Dept of CSE and Cognitive and Brain Sciences, IIT Gandhinagar

Human upper limb cable-driven exoskeleton (Jan 2022 - Nov 2022)
Working on building a cable-driven upper limb wearable exoskeleton and its control algorithms with Prof. Vineet Vashishta (Human-centered robotics lab), Assistant Professor, Mechanical Engineering and Cognitive and Brain Sciences, IIT Gandhinagar

Classifying mind-wandering states using EEG signals (Dec 2021 - Apr 2022)
Independent research to create a machine learning model to detect mind-wandering with Prof. Krishna Miyapuram, Assistant Professor, Dept of CSE and Cognitive and Brain Sciences, IIT Gandhinagar.

Split and Rephrase: A Natural Language Processing task (Sep 2021 - Nov 2021)
Worked in a team of 4 members to split and rephrase complex sentences into simpler ones using the latest Natural Language Processing (NLP) algorithms such as Transformers and RNNs. We used PyTorch and TensorFlow with Dr. Mayank Singh, Assistant Professor, Dept of CSE, IIT Gandhinagar

ICOI webapp, Prodio Designworks Mumbai (Apr 2020 - Sep 2020)
Worked in a team of 4 members to create the internal website for the International Congress of Oral Implantologists (ICOI). Created the front end in ReactJS/redux and the back end using NodeJS. The site assists staff members in their daily activities including member management, payment scheduling, credentialing, etc.

Emotion classification using EEG signals (Oct 2019 - Apr 2020)
Worked in a team of 2 members to classify human emotions from EEG signals. We implemented the project using Wavelet Transform, PCA, and SVM with Professor Lydia Fernandes, Assistant Professor, Dept of Information Technology, St. Xavier's College (Autonomous), Mumbai as part of the undergraduate dissertation

PUBLICATIONS

Shivam Chaudhary, Pankaj Pandey, Krishna Prasad Miyapuram, and Derek Lomas. 2022. Classifying EEG signals of mind-wandering across different styles of meditation. Brain Informatics (2022), 152–163. https://doi.org/10.1007/978-3-031-15037-1_13. Presentation at University of Padova, Italy, July 2022 — PDF

P. Pandey, P. Gupta, **S. Chaudhary**, K. P. Miyapuram and D. Lomas, "Real-time Sensing and NeuroFeedback for Practicing Meditation Using simultaneous EEG and Eye Tracking," 2022 IEEE Region 10 Symposium (TENSYMP), 2022, pp. 1-6, https://doi.org/10.1109/TENSYMP54529.2022.9864414. Poster presentation at IIT Bombay, Mumbai, July 2022 — PDF

Pankaj Pandey, Shruti Singh, **Shivam Chaudhary**, Krishna Prasad Miyapuram, and Derek Lomas. Towards the development of personalized and generalized interfaces for brain signals across different styles of meditation. 13th Indian Conference on Computer Vision, Graphics, and Image Processing (ICVGIP 2022) [ACCEPTED]

Shivam Chaudhary, Krishna Prasad Miyapuram, and Derek Lomas. Stimulus-response correlation between EEG and drum beats. 9th Annual Conference of Cognitive Science (ACCS9) [ACCEPTED]

Shivam Chaudhary, Krishna Prasad Miyapuram, and Derek Lomas. 2023. Predicting drum beats from high-density Brain Rhythms. In Proceedings of the 6th Joint International Conference on Data Science &; Management of Data (10th ACM IKDD CODS and 28th COMAD) (CODS-COMAD '23). Association for Computing Machinery, New York, NY, USA, 291–292. https://doi.org/10.1145/3570991.3571029

Vridhi Rohira, **Shivam Chaudhary**, Sudip Das, and Krishna Prasad Miyapuram. 2023. Automatic Epilepsy Detection from EEG signals. In Proceedings of the 6th Joint International Conference on Data Science &; Management of Data (10th ACM IKDD CODS and 28th COMAD) (CODS-COMAD '23). Association for Computing Machinery, New York, NY, USA, 272–273. https://doi.org/10.1145/3570991.3570995

WORK EXPERIENCE AND INTERNSHIPS

Stimulus-Response Correlation between Drum Beats and EEG (May 2022 - Jul 2022)
Worked with Prof. Derek Lomas, Assistant Professor, TU Delft, and Prof. Krishna P. Miyapuram, Assistant Professor, IIT Gandhinagar, to analyse the correlation between the electroencephalography (EEG) signals and Drumbeats

Full Stack Developer at Prodio Designworks, Mumbai (Apr 2020 - Sep 2020)
Worked as a MERN (Mongo, Express, React, Node) stack web developer with teams in an agile manner and assisted by cloud services such as Jira, Trello, Bitbucket, and Invision

Android Backend Developer at Kadamba Kanan Pvt Ltd (Apr 2019 - May 2019)
Worked on connecting milk vendors with customers and delivery executives across the city of Mumbai to automate the process of daily delivery and payment using a mobile app created on Android Studio and with Firebase backend

Machine Learning Internship at AITechno Labs (Apr 2018 - Jul 2018)
License Plate Detection using supervised machine learning approaches. Worked on Face Recognition based Bio-metric System to improve the overall security of electronic devices

POSITIONS OF RESPONSIBILITY

Website and Application Manager - Technical Council, IIT Gandhinagar (May 2022 - Present)
Leading a team of developers and designers to modernize and improve the existing technology infrastructure that the student body uses for their day-to-day activities and work.

BlithchronFest App, IIT Gandhinagar (Aug 2021 - Mar 2022)
Led a team of 4 developers to create a mobile app using React Native, Redux, and Firebase to aid in the activities of campus ambassadors. The app is hosted and is live on the google play store.

Organiser-in-Charge, Computers Department - Malhar Fest (Apr 2019 - Aug 2019)
Led a team of 12 members to create a website, an android app, and an iOS app. Managed the production and computer hardware.

IndianMusicGroup Website, St. Xavier's College (Autonomous), Mumbai (Jul 2019 - Aug 2020)
Led a team of 4 members to create a website for the Indian Music Group used by its members worldwide.

TEACHING EXPERIENCE

Course Teaching Assistant, "Computational Neuroscience," IIT Gandhinagar (Jan 2022 - Present)
Involved in aiding the course instructor to help students with projects spanning music, meditation, brain-computer interfaces, etc.

Course Teaching Assistant, "Computation and Cognition," IIT Gandhinagar (Aug 2022 - Nov 2022)
Aided the course instructor in helping students with programming thinking-related queries and enabled them to map classroom problems to real-world problems.

Volunteered at Door Step School(NGO), Mumbai (Dec 2017 - Jun 2018)
Assisted children from backward families with Social Science, Life Skills, and English curriculum.

INVITED TALKS

Brief overview on Event-Related Potentials (Nov 2022)
Interacted and provided a brief overview of the event-related potentials seen in EEG signals at IIT Gandhinagar.

Introduction to Brain-Computer Interfaces (Nov 2022)
Invited by the EETI Foundation to give a talk on brain-computer interfaces online, which was attended by around 100 participants.

SKILLS

Technical Skills	Javascript, Python, Java, C, C++, Octave, R, C#, React, Node.js, HTML, CSS, Lab Streaming Layer (LSL), NeuroPype, PsychoPy, LaTex, LISP
Soft Skills	Problem-solving, leadership, teamwork, adaptability, practical communication skills, research paper writing, presentation
Cloud Platforms	Firebase, Amazon Web Services, MongoDB
Equipment	VICON Motion Capture, EGI 64 channel EEG system, TMSi EMG system, Tobii Eye-tracker TX300

CERTIFICATIONS

Building Transformer-based NLP Applications by NVIDIA DLI (Oct 2021)
Attended a 1-day workshop on basic natural language processing (NLP) techniques followed by an introduction to transformer models. Learned about the NLP pipeline from problem formulation to deployment and maintenance

TensorFlow Developer Professional Certification by deeplearning.ai, Coursera (May 2021 - Jun 2021)
Learned about deep learning algorithms and their implementation in the TensorFlow framework

Deep Learning Specialization by deeplearning.ai, Coursera (May 2020 - Apr 2021)
Hands-on experience with the latest and the most robust deep learning algorithms in python, such as Deep Neural Networks, Recurrent Neural Networks, etc., with weekly assignments

Machine Learning in Octave by deeplearning.ai, Coursera (Jan 2020 - Mar 2020)
Learned about basic machine learning algorithms to classify or regress data by Prof Andrew Ng, Stanford University

EXTRACURRICULAR ACTIVITIES

Reviewed research papers for International Conference for Neural Information Processing (ICONIP 2022)

Participated in the **Brain, Computation, and Learning** workshop held at the **Indian Institute of Science** in January 2023. I interacted with eminent faculties in the areas of invasive BCI, such as Prof. Rajesh PN Rao.

Participated in the **Indian Navy Half Marathon** organized by Western Naval Command (2018 and 2019)

Participated in a two-day **IoT workshop** with hands-on experience with Arduino and various associated modules

Participated in a 5-day course on **Measurement and analysis of human locomotion** by Dr. Kamiar Aminian

My hobbies include **running**, **swimming**, and **mixed martial arts**(green sash)