

## Education

**New York University, Courant Institute of Mathematical Sciences**

**September 2023 – May 2025**

*Masters of Science in Computer Science*

*New York, United States*

**Indian Institute of Technology Palakkad**

**September 2018 – May 2022**

*Bachelor of Technology in Electrical Engineering 8.06/10 GPA*

*India*

## Technical Skills

**Languages:** C++, Python, Java, C, HTML/CSS, JavaScript, SQL

**Tools:** VS Code, Git, MongoDB, Heroku, Slurm, Blender

**Technologies/Frameworks:** Pytorch, Tensorflow, Numpy, Pandas, Keras, React.js, Node.js, Singularity

## Experience

**Serre Lab, Brown University**

**July 2021 – July 2023**

*Research Assistant, Advisor: Dr. Thomas Serre*

*Providence, RI, USA*

- Integrated deep learning techniques with the HMAX model, closely emulating primate rapid object categorization, which served as a bridge between computational methods and biological cognition insights.
- Utilized Python scripts within advanced 3D tools like Blender to systematically generate large-scale synthetic data, significantly enhancing the robustness and depth of neural network training experiences.
- Crafted and fine-tuned neural networks for predicting mouse visual cortex activity; this led to a notable 4th place achievement in the renowned NeurIPS 2022 Sensorium Challenge, highlighting model precision and competitive edge.

**Cognitive & Neural Computation Lab, UC-Irvine**

**October 2021 – February 2022**

*Research Assistant, Advisor: Dr. Megan Peters*

*Irvine, CA, USA*

- Contributed to Project CoGraph, tracing idea evolution across cognitive science, neuroscience, and computer science.
- Assisted in curating a multi-decade scientific literature database, enhancing research accessibility and depth.

**Center for Computational Imaging, IIT Palakkad**

**August 2020 – June 2021**

*Undergraduate Researcher, Advisor: Dr. Mahesh R Panicker*

*India*

- Developed a deep learning approach for EEG emotion recognition that excels in analyzing data from varied individuals, using advanced LSTM techniques with channel attention.
- Crafted a versatile EEG analysis tool with deep learning, which streamlined the process by removing the need for manual feature engineering and demonstrated superior performance in both emotion and seizure detection tasks.

## Publications

- Arjun et al., "Introducing Attention Mechanism for EEG Signals: Emotion Recognition", IEEE Engineering in Medicine Biology Society (EMBC), 2021. [Link]
- Arjun et al., "CoGraph: Mapping the Structure of the Cognitive Sciences, Neurosciences, AI", Conference on Cognitive Computational Neuroscience (CCN), 2022. [Link]
- Arjun et al., "Subject Independent Emotion Recognition using EEG Signals Employing Attention Driven Neural Networks", Elsevier Biomedical Signal Processing and Control (BSPC). [Link]

## Projects

**Geo-Notes: Geographical Memory Anchor** | *React.js, Node.js, MongoDB, Heroku*

**Website** | **GitHub**

- Designed a web platform allowing users to associate and retrieve notes based on specific geographical locations, enhancing the experience of travel and memory recall.
- Crafted using React.js for frontend, Node.js for backend, integrated with MongoDB Atlas for data storage, and fully deployed on Heroku.

**Advanced Music Synthesis using Transformer Architectures** | *Python, Colab*

**GitHub**

- Developed a Transformer-XL based generative model for advanced multi-instrument music composition using MIDI data available online.
- Enhanced this by integrating Hierarchical Vector Quantised Variational Autoencoder with Sparse Transformers, achieving high-fidelity raw audio synthesis on a diverse, self-curated dataset.

## Leadership & Achievements

- **Coordinator**, Carrier Development Cell, *IIT Palakkad* (2019-2021).
- Ranked in the top **0.006%** of **1.2 million** aspirants, *IIT JEE Advanced Entrance Examination*, 2018.