Sarvagya Gupta

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flock1.github.io

PROFILE

Sarvagya Gupta is a Master's student at the University of Massachusetts Boston, focusing on the information theory applications in machine learning as Thesis. He is also an intern at the Boston Children's Hospital, working on EEG data. Before this, he was a deep learning engineer at Green Rain Studios and worked on artificial intelligence applications for graphics design. He has about 4 years of research experience at India's best universities, the Indian Institute of Science and Tata Institute of Fundamental Research in the field of deep learning.

EXPERIENCE

Intern, Boston Children's Hospital, Boston **June 2022 - Sept 2023**

- Participated in a pioneering research project aimed at utilizing deep learning methods to analyze interictal Intracranial EEG (iEEG) for improved surgical planning in drug-resistant epilepsy (DRE) patients.

- Conducted data curation of iEEG signals of patients with DRE, including the extraction of relevant features for analysis.

- Employed unsupervised machine learning techniques to analyze iEEG signals and differentiate between signals originating from resected/non-resected parts of the brain.
- Analyzed signals to distinguish between patients who have had successful and unsuccessful surgery.

- Successfully utilized a pretrained VGG16 network to measure the visual complexity of time-frequency (TF) iEEG images, which was hypothesized as an interictal biomarker of epileptogenic zones.

- Author of the thesis:
  "Visual Complexity of the Time-Frequency Image Pinpoints the Epileptogenic Zone: An unsupervised Deep-Learning Tool to Analyze Interictal Intracranial EEG"
  (in the process of being published)

- Work accepted at New England Science Symposium (NESS).

Deep Learning Engineer (Part-time), Green Rain Studios, Mumbai **Jan 2020 Aug 2021**

- As the first Deep Learning engineer at the company, I am responsible for convincing the company about the applications of the field and why it's needed

- My starting works include background estimation and subtraction. This is needed for a lot graphics designing work, specially for movies Currently, it's requires a lot of manual labour using different softwares.

- Currently working on 3D geometry applications like meshes, point clouds and other data for more immersive experience.

Researcher, Tata Institute of Fundamental Research, Mumbai Aug 2019 - Mar 2020

- TIFR works on a lot of fundamental research in the areas of physics, mathematics, chemistry and other sciences. I joined the university to work on quantum computing and astrophysics research.
- During my time there, I worked on a reinforcement learning code that would generate a quantum gate sequence to make any quantum state reach uniform superposition.
- I was about to start my work in astrophysics but the pandemic had put my work on halt.

Research Assistant, Indian Institute of Science, Bangalore March 2018 - July 2019

- I worked as a research assistant at Indian Institute of Science. A department has been setup for artificial intelligence research called Robert Bosch Centre for Cyber Physical Systems.
- I worked with Prof Chiranjib Bhattacharyya on self driving car technology for Indian road conditions.
- I was responsible for object detection and collision avoidance research where I worked on a lot of computer vision applications, including collecting, cleaning and annotating data.
- Since this technology was being developed for India, it also had to be low cost and not very resource intensive. So I also worked on network pruning and quantisation so that the deep learning models can work on smaller computing devices. I was able to run the model on NVIDIA TX2 and was planning to get it running on smaller devices like Raspberry Pi and Odroid.

Team Manager, Flock-Mapping the subways Jan 2015- July 2016

- The link to the google play store
- Developed a user-friendly Android application, "Flock", to facilitate navigation of the New York City subway system, currently available on Google Play.
- Selected for the prestigious FbStart Bootstrap Track, recognizing the app's potential and innovative approach.
- Conducted extensive personal research to ensure the product effectively addressed the needs of NYC commuters.
- Constructed and integrated a comprehensive database comprising nearly 2,000 datasets for 500 subway stations, significantly enhancing the app's functionality.

- Collaborated on the development of the navigation algorithm, instrumental in providing accurate and efficient routing options for users.

EDUCATION

New York University — BSc, Electrical Engineering, 2012-2015

University of Massachusetts, Boston — MS, Computer Science, Fall 2021-Present (3.6/4.0)

SKILLS

With over 4 years ion experience in the field of Machine Learning, I have acquired knowledge and skills in the field of programming and scientific knowledge.

Programming skills include Python, C++ and various deep learning libraries like Keras, Pytorch. Due to recent success of the language, I have also started with deep learning programming with Julia language and libraries like Flux.

A very interesting skill that I have acquired is how to read research papers. Now, I'm able to go through the papers more efficiently and I have implemented some of the papers with more ease.

STRENGHTS

- Being a failure. I believe in taking risks and getting out of my comfort zone. This is why, I have failed a lot in my life, whether academically, socially, start-up wise, you name it. If I see a worthwhile opportunity, I will capitalise on it and this is how I got into machine learning in the first place and have not looked back since.
- Independence. I learn things on my own with little supervision (which is why my research interests include self-supervised and reinforcement learning). I got into machine learning, taught myself music to the extent that I led the school orchestra group.
- I take health (physical and mental) very seriously. I not only ensure I am safe and sound but also people around me. I am lucky to be surrounded by people who also take it very seriously.