Ananya Bhatnagar

+91 8799 763 627 | github.com/bananya-ml | bhatnagarananya64@outlook.com
Preferred location: PAN India | ananyabhatnagar.vercel.app | linkedin/in/bhatnagarananya

Relevant Experience

Postgraduate Research Student **September 2022 – August 2023**
The University of Manchester *Manchester, Greater Manchester*

- Achieved excellent results as a postgraduate working on the development of novel deep learning techniques for spectral simulations in the field of massive star formation.
- Enhanced the identification and characterization of the methanol (CH_3OH) molecule in spectra through utilization and fine-tuning of deep learning model architectures like DCNN, DTNN, INN and transformers.
- Presented and attended seminars within Jodrell Bank Centre for Astrophysics and the JBCA ML Club.

Other Experience

Graduate Teaching Assistant **September 2022 – June 2023**
The University of Manchester *Manchester, Greater Manchester*

- Provided guidance to 60+ students in astronomical computing and research labs leading to substantial improvements in undergraduate students' data analysis techniques, Python coding, and understanding of moderate-risk set-ups and procedures.
- Fostered a positive learning environment that facilitated students' improvement in report writing, experimental procedures, and result analysis leading to 80%+ grades across 90% of the batch.

IoT Robotics Engineer Intern **July 2021 – September 2021**
RoboSlog, Ltd *New Delhi, Delhi*

- Played a key role in the successful development and deployment of 3 commercial IoT projects utilizing diverse micro-controller technologies.
- Effectively integrated new environments for our application, using communication protocols like UART, enabling seamless functionality and improved performance in the developed systems.

Education

University of Manchester **Sep. 2022 – August 2023**
Master's by Research in Astrophysics and Astronomy *Manchester, Greater Manchester*

Guru Gobind Singh Indraprastha University **Aug. 2018 – May 2022**
Bachelor of Technology in Electronics and Communications Engineering *New Delhi, Delhi*
GPA: 8.6/10

Projects

BitGPT | *Language Models, NLP* (GitHub) **March 2024**

- Created a 1-bit language model, decoder only LLM.
- The resulting model shows a 25% decrease in size, post ternary quantization.
- Model architecture includes deep learning SOTA practices like RoPE, BPE and more, and can be trained with anywhere from 50k to over 1B parameters.

Gemini-Apps | *Generative AI, NLP* (GitHub) **February 2024**

- A collection of NLP tasks automated by using Google's Gemini Pro API.
- Tasks like an 'ATS scanner' app show an improvement of upwards of 80% chance of receiving a reply from an application.
- Includes a RAG-based application, to communicate with long research documents quickly and effectively.

StellarMapper | *(Ongoing)* (GitHub) **January 2024**

- A custom deep learning library that provides easy and customizable access to SOTA architectures and models introduced in recent and cutting edge research Provides utility tools for visualisation and interpretation of complex astronomical data.

- Includes additional features like evaluation metrics and advanced hyperparameter tuning and model selection algorithms.

Anomaly Detection on time-series data | *Data processing, DL models, MLOps* (GitHub) **October 2023**

- Created a custom dataset by collecting data with requests to a public API, automated scraping and processing tasks with scripts and optimized data loading with parallelization.
- Leveraged SOTA models from recent conference papers, including a Deep SVDD, Deep IF and Deep SAD. Tabular models surprisingly outperformed time-series models, resulting in the best accuracy in detecting anomalies of over 73%*.
- Developed a Flask-based web app for handling API requests, management of user and demo data and dockerized the app for deployment on high compute GCP and AWS instances.

Technical Skills

Languages: Python, C++, SQL (Postgres, NoSQL, sqlite3)
Developer Tools/Frameworks: Google Cloud, Amazon Web Services, Git, Docker, Tensorflow Extended, PyTorch