PRANAV BANSAL

New York, United States, 11790
425-279-3200 | pranav.bansal@stonybrook.edu | LinkedIn | GitHub

EDUCATION

STONY BROOK UNIVERSITY, New York *Aug 2023 - May 2025*
Masters in Computer Science ***GPA: 3.7/4***
Coursework: Operating System, Advanced Algorithms, Data Science Fundamentals, Simulation and Modeling
Graduate Teaching Assistant for History in Computation Under Prof. Anthony Scarlatos
Advanced Project on **Interpretability of Foundation Models** under Prof. Wei Xu

MAHARAJA AGRASEN INSTITUTE OF TECHNOLOGY, India *Jul 2019 - Jun 2023*
Bachelor of Technology in Computer Science ***GPA: 3.69/4***
Coursework: Data Structure and Algorithms Design, Software Engineering, Compiler Design, Computer Network, Distributed and Cloud Systems, Object-Oriented Programming, Database Management System

TECHNICAL SKILLS

- **Programming Languages**: C, C++, Java, Python, SQL, HTML/CSS, JavaScript
- **Database:** MySQL, PostgreSQL, Google BigQuery, MongoDB
- **Libraries:** TensorFlow, Keras, Pandas, Sckit-learn, Numpy, PyTorch, Matplotlib, OpenCV, Scipy, NLTK
- **Technologies**: AUTOCAD, Arduino, Deep Learning , Excel, Git, LINUX, LLM, MATLAB, NLP, Microsoft Visual Studio, Tableau

EXPERIENCE

Brysk *Nov 2021 - May 2022*
Software Developer Intern
Brysk,worth $3M, develops an AI-based grocery retail platform for autonomous checkout stores.

- Engineered **ETL Data Pipelines** employing Google BigQuery to generate interactive dashboards for retail store inventory and sales reports, consequently reducing manual dashboarding effort by **4 hours**.
- Optimized already existing ETL jobs for resource management and execution time, resulting in **30%** reduction in latency for orders report creation and loading time.
- Designed and deployed **Computer Vision AI model** for object and action tracking in real time, optimizing **accuracy by 25%** by incorporating features from IoT device inputs including weighing scale, infrared and pressure sensors.

Indian Institute of Technology, Kanpur (IIT-K) *May 2021 - Aug 2021*
Research Intern

- Developed ML Models: SIR, ARIMA and LSTM based, to **forecast COVID-19 Cases** sourcing data from the India-level time series dataset: https://www.covid19india.org/ consisting of **60M** records.
- Conducted a comparative data analysis of the various ML models, determining that SIR (Susceptible-Infected-Removed) achieved the highest accuracy of **97.6%**.
- Executed a website, consisting of COVID-19 cases forecast graph for **28** Indian states under the guidance of **Prof. Mahendra Kumar Verma** using JavaScript and React.

PROJECTS AND PUBLICATIONS

Peer-to-Peer File Backup System *Jan 2024 - Mar 2024*

- Implemented a distributed P2P file storage and backup system (with peers in the same IP network) with maximum backup speed of **410 KB/sec** and retrieval speed of **300 KB/sec**.
- System has features to increase reliability and availability of sensitive data derived from the priority of files being backed up. **Exposure**: Python, C++, Multi-threading, Networking.

Crop Disease Detection Using Neural Network and Machine Learning Algorithms RESEARCH PAPER: IJIRE

- Implemented and compared multiple Neural Networks (including CNN, AlexNet, ResNet, VGG16, VGG19 and InceptionV3) to detect 14 Crop diseases on a PlantVillage Dataset of **30k** images. **AlexNet** excelled with a **99.2%** accuracy.
- Proposed approach employed a combination of NN models to detect **14 diseases** with **98%** accuracy for **24 disease classes.**

Simulation Modeling for Stock Price *Aug 2023 - Dec 2023*

- Implemented GBM- based Monte Carlo simulation for predicting stock prices, pseudo market index consisting of **5 stocks**, capturing both the average directional movement and the volatility inherent in stock price movements.
- Statistical Analysis presented a **95%** confidence interval for the model. **Exposure:** Maximum Likelihood Estimation, Monte Carlo Simulation,Statistics, Statistical Analysis.

Blockchain Based e-voting System *Aug 2023 - Dec 2023*

- Created an e-voting system based on a decentralized network using Proof-of-Work for consensus algorithm, handling over **10,000 transactions.**
- Successfully achieved an average latency of **36.2** seconds for registration and **13.7** seconds for voting.