Abhijeet Prasad Bodas

Software Development Engineer / Data Analyst, IIT Bombay graduate

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Academics

Indian Institute of Technology, Bombay [2019 - 2023]

- Major in Mechanical Engineering (ME) Grade: 8.67
- Minor in Computer Science and Engineering (CSE) Grade: 8.00

Other academic achievements

- Secured an All India Rank of **628** (**99.74%** percentile) in the **JEE Advanced** among **2.45 lakh** candidates [2019]
- Among top **1%** of students to receive the **KVPY** Fellowship from **1 lakh** participants, with All India Rank **717** [2018]
- Among **top 2 students** in Mumbai region in the Maharashtra **HSC** class 12th board exams in science stream [2019]

Work Experience

Goldman Sachs Services Private Limited, Bengaluru

Production Runtime Experience, Core Engineering Division

Engineering Analyst, Machine Learning Team [July 2023 - Present]

- Improved **monitoring** of realtime ML models by building probers and setting up latency tracking on **Prometheus**
- **Migrated** a timeseries forecasting library from Python 2 to **Python 3**, and published it to firm's internal **PyPI**
- As part of technical paper reading group, lead a discussion on Amazon's **MemoryDB** paper to an audience of 15+
- Built weekly and monthly jobs for automated tracking of product metrics, to help with business review and charge-back

Summer Intern [May - July 2022]

- Enhanced **runtime** predictions for processes in a **dependency graph** using **real time** data to improve **ETA** accuracy
- Achieved upto **12%** reduction in mean absolute **errors** after training multiple ML models like **XGBoost** and **SVM**
- Developed **Gremlin** queries to fetch data from the **Janus graph** database about common resources used by processes
- Implemented a **Graph Neural Network** based on **message passing** using the **PyTorch Geometric** (PyG) library in **Python** to enable the model to learn the structure of the graph, and trained the model by **masking** the child nodes
- Received a **Pre-Placement Offer** from the firm for exemplary performance and strong work ethic during the internship

The Zulip Open Source Project

Open source threaded team chat app, used by thousands of organizations to make remote work productive and delightful.

Mentor, Google Summer of Code [Mar - July 2023]

- Mentored a student over a productive **3 month** coding period, ending with him receiving **full-time** job offer at Zulip
- Participated in **project planning** and extensive **code review**, inculcating clean code patterns and good Git practices

Student Developer, Google Summer of Code [May - Aug 2021]

- Developed the highly requested **mute users** feature which was one of the **release highlights** in the Zulip 4.0 changelog
- Fixed several bugs due to **race conditions** by using **row-level locks** and **transactions** in the **PostgreSQL** database
- Developed a new **lossless** event **queue processor** for email notifications by making use of persistent database storage
- Consolidated all the notifiability logic in a new Python **dataclass**, thus improving codebase quality, while ensuring **backwards compatibility** of the **API** and the Tornado **event queue** system to avoid issues during **server upgrade**

Key Projects

Electric Vehicle Charging Network Optimisation [Jan - April 2022]

Course project: Industrial engineering and operations research | Prof. Avinash Bhardwaj

- Formulated a constrained optimization problem to **minimize** total customer **travel time** by choosing charging locations
- Solved the problem using **CPLEX** in **AMPL**, and used **Selenium** for web-scraping Google Maps to obtain a **distance matrix** of distances between **29** demand locations and **20** charging locations in the **Mumbai** region as a case study

Parallelized Matrix Factorization [April - May 2021]

Course project: High performance scientific computing | Prof. Shivasubramanian Gopalakrishnan

- Achieved a **60% speedup** in QR factorization of matrices by parallelizing the **Modified Gram Schmidt** algorithm
- Used the **OpenMP** multiprocessing library and **Nvidia's CUDA** platform for **GPU** based parallelization in **C++**

Image Compression [March - May 2021]

Course project: Introduction to Machine Learning | Prof. Biplab Banerjee

- Performed **Principal Component Analysis** (PCA) on the RGB component matrices of a given image using the **Singular Value Decomposition** method to reduce the image size, by making use of the **Scikit-learn** Python library
- Obtained a **PSNR** value of **24** by using **150** components, achieving an up to **62.5%** theoretical reduction in image size

Positions of Responsibility

Web Convener | Undergraduate Academic Council, IIT Bombay [April 2020 - May 2021]

Part of the 4 member web-team in UGAC, responsible for maintaining and upgrading the council's webpages and portals

- Developed a responsive webapp, **Credit**, using the **Django** and **Bootstrap** frameworks, for writing course reviews, and implemented various features such as **up-vote/down-vote** review, course liking, and admin **moderation** of reviews
- Revamped the **Learnerspace** and **iSURP** registration portals which saw over **280** student enrollments in **90+** projects

Extracurricular Activities

- Worked as **Teaching Assistant** for courses ME316 and CH105, conducting **tutorials** and helping students with doubts
- Addressed **100+** students in a session on contributing to **Open Source** Software arranged by the Web & Coding Club
- Secured **2nd position** in stage two of the Shell Energy Day brainstorming competition among **10+** participant teams