

# Abhijeet Bodas

Software Development Engineer / Data Analyst

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## ACADEMIC ACHIEVEMENTS

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- Completed a **minor** degree from the department of **Computer Science and Engineering** at IIT Bombay [2022]
- 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

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**Summer Analyst | Goldman Sachs, Bengaluru** [May - July 2022]

*Production Runtime Experience, Core Engineering Division | Received **Pre-Placement Offer** for exemplary performance*

- Enhanced **runtime** predictions for processes in a **dependency graph** using **real time** data to improve **ETA** predictions
- 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

**Student Developer | Google Summer of Code [Work Report]** [May - August 2021]

*The Zulip project: powerful, open-source group chat application with first-class threading*

- 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

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**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

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**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

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- 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
- Mentored 6** students, and **addressed 30+** students, assisting them in their internship preparation as part of D-CAMP
- Secured **2nd position** in stage two of the Shell Energy Day brainstorming competition among **10+** participant teams
- Achieved a **perfect score** in the **SciComp General Championship** conducted by the Maths and Physics club, IITB