

Abhijat Bharadwaj

Indian Institute of Technology Bombay

Website: keymii.github.io | GitHub: github.com/keymii

bharadwaj.abhijat@yahoo.com | +91 9315457956 | Mumbai, Maharashtra, India

Profile: Software Developer, Signal Processing and AI/ML Engineer

Education

Indian Institute of Technology Bombay

Graduating: 2026

Major Degree: B.Tech and M.Tech (Dual Degree) in Electrical Engineering,

Specialization: Communication and Signal Processing

Minor Degree: Computer Science and Engineering

Research and Professional Experience

Wavelet Scattering based Feature Engineering in MRI and Deep Learning

Sep 2024 – Nov 2024

Guide: Prof. Vikram M. Gadre, IIT Bombay

- Achieved **20% improvement** in 3D Brain MRI registration than geometric alignment by introducing spatial invariance using Wavelet Scattering Transform
- Engineered **novel features** useful for unsupervised detection of ischemic stroke lesions in brain MRI scans
- Improved brain tumor classification accuracy from MRI scanned images **from 65% to 90%** with 80% less epochs using Wavelet Scattering features

Automatic Music Transcription of Western and Carnatic Guitar

Aug 2024 – Nov 2024

Guide: Prof. Preeti Rao, IIT Bombay

- Fabricated a dataset of around **300 samples** for study of signal behaviour of **5+** guitar articulations
- Examined **accuracy** of music transcription of Carnatic Guitar by techniques developed on Western music
- **Successfully identified** crucial **differences** between **spectrograms** of both the genres and **reported improvements** to the methodologies, improving the detection accuracy

Android Developer | *Kriv*

May 2024 – Jul 2024

- Developed an **android** application with RESTFUL APIs for assisting the care-takers of the chronically ill
- Implemented automated **WhatsApp** medicine reminders with **JWT** and **OTP** based secure login system
- Built a **multi-lingual** accessibility functionality and utilized **BloCs** and **Hive** in Flutter for performance

Full Stack Developer | *Trubuddyy Solutions Pvt. Ltd.*

Jul 2023 – Aug 2023

- Developed a mentor **search system** with best match sorting for using weighted **fuzzy string matching**
- Automated **Zoom** meet scheduling, **Whatsapp** and **SMS** reminders using **Twilio**, and **Stripe** Payments

Frontend Developer Intern | *Application Software Centre, IIT Bombay*

May 2023 – Jul 2023

- Streamlined independent maintenance of **MyIITB** apps by engineering a **micro-frontend architecture**
- Developed **support for 5+** JavaScript frameworks, including Angular, React, and Vue using **Single-SPA**

Technical Projects

Next-Gen Dream Team Builder | *Dream11* | *InterIIT Tech Meet 13.0*

Nov 2024 – Dec 2024

- **Supervised** and **represented** IIT Bombay's team in InterIIT Tech Meet, securing **2nd position** overall
- Developed a fantasy cricket team-building assistant for Dream 11 designing pipelines for **4GB+ data**
- Devised a **novel** CNN-based **dual model** architecture, **reducing** fantasy point prediction errors to **13%**
- Integrated **LIME** and built an interactive chatbot using **RAG** with **Llama**, enhancing user experience

Mess-I: Mess Digitalization System | [Project Link](#)

May 2022 – Present

- Led the development of the **official** mess management system of IIT Bombay with **10,000+ DAU**
- Deployed the system in **14+ hostels**, in **20+ devices**, recording **4,000,000+** meals and **16K+** net users
- Optimized server load during peak traffic hours, utilized **nginx** as **load-balancer**, improving reliability

InstiApp | [Project Link](#)

May 2023 – Present

- Developing InstiApp - IIT Bombay's one-stop solution with **10,000+** downloads and **4,000+ DAU**
- Supervised the development of Buy and Sell Portal, attracting **200+ posts** in the first month of launch
- Working in an agile environment with product designers to deliver aesthetic functionality for ease of user

MongoGBackup | [Project Link](#)

Jul 2024

- Created a **PyPI library** for hashed, compressed and **encrypted** MongoDB backups on Google Drive
- Deployed a **cron job** to schedule backups on production database with **15,000+** No-SQL records per day

Virtual Proctoring System using YOLO Object Detection | [Project Link](#)

Mar 2023 – Apr 2023

- Customized the **YOLO** model and **dlib** face detection for detecting automated proctoring of online exams
- Developed **object** and **behavior detection** like multiple faces, phones, line-of-sight, and lip movement

Positions of Responsibility

Overall Coordinator

DevCom, IIT Bombay

Apr 2024 – Present

- Led a **team of 30+** designers and developers to maintain and enhance IIT Bombay's **digital** infrastructure
- Improved **reliability** and achieved **40% increase** in server up-time by efficient resource management
- Deployed an nginx based **documentation** system for **5+ projects** for effective knowledge transfer

Project Lead

DevCom, IIT Bombay

Apr 2023 – Mar 2024

- Spearheaded the **development** of Mess-I, InstiApp, and MyIITB portal, crucial for **12,000+ people**
- **Improved** code and production **maintainability** by **35%** by enforcing better development practices
- **Streamlined** the app **release** process, standardized **versioning**, and integrated **Sentry** for monitoring

Relevant Coursework

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| AI and Machine Learning | Introduction to Machine Learning, Geospatial Predictive Modelling, Image Processing, Advanced Image Processing, Applied Linear Algebra, Computer Vision, Probability and Random Processes, Markov Chains and Queuing Systems |
| Computer Science | Operating systems, Code Optimization for Object-Oriented Languages, Data Structures and Algorithms, Design and Analysis of Algorithms, Logic in Computer Science |
| Electrical Engineering | Signal Processing-I, Digital Signal Processing, Wavelets, Communication Systems-I, Microprocessors, Testing and Verification of VLSI Circuits, Control Systems |

Technical Skills

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|--------------------------------|---|
| Languages: | Dart, Python, C++, JavaScript, TypeScript, MATLAB, Bash, JAVA |
| AI/ML and Data Science: | LLaMa, YOLO, FAISS, Chain-Lit, Gradio, Langchain, Scikit-Learn, OpenCV, NumPy, Pandas, Torch, Keras, LIME, SHAP |
| Software Development: | Flutter, React, Django, Flask, Micropython, NextJS, Angular, Vue, Soot |
| Databases: | MongoDB, PostgreSQL, SQLite, MySQL |
| DevOps: | Docker, Linux, Amazon Web Services (AWS) Google Cloud Platform (GCP), NGINX, uWSGI, Gunicorn, Umami, Sentry, New Relic, Proxmox |

Extra Curriculars

- **Directed** and lead the team to win **gold** in MDGC championship, achieving top 3 for three years 2024
- **Awarded** with **Excellence in Teaching Assistantship** for successfully troubleshooting WSL and XServer setup for **200+ students**, ensuring a smooth progression of the course 2023
- Represented IIT Bombay in the **Inter-IIT Cultural Meet**, scoring **2nd position** overall 2023