

# Pratyush Birole

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## EDUCATION

### Vellore Institute of Technology

Bachelor of Technology in Computer Science Engineering, CGPA: 8.1

Bhopal, India

Nov 2022 – Dec 2026

### The New Tulip International School

Higher Secondary, Computer Science, Grade: 88%

Ahmedabad, India

Jan 2021 – Mar 2022

## EXPERIENCE

### Software Development Intern

Sep 2024 – Dec 2024

*Preprod Corp*

Bangalore, India

- Constructed and implemented business logic, architected a **scalable web application**, optimizing platform by **35%**.
- Introduced real-time **Geo-spatial mapping** of users and drivers using Leaflet.js, reducing distance and time by **20%**.
- Devised **data ingestion APIs** for **AI/ML** models and engineered a recommendation system to suggest nearby cabs based on user **proximity** and availability increasing algorithmic competence by **40%**.

### Software Development Engineer

Jan 2024 – Jun 2024

*MSDCA*

Ahmedabad, India

- Developed a **Full-stack registration portal** that scaled to **1.5K+ users**, processed **1.2K** transactions, and generated **25 L** in revenue. Enhanced system scalability by **90%**, configuring servers on **AWS EC2** and scaling client-side on Hostinger.
- Architected **client data flow** and ensured **parameterized data-validation** for forms, optimizing performance and enhancing **data integrity by 70%**. Built low latency (<10 s) backend APIs, integrated **Razorpay** and handled errors.
- Benchmarked **Automated Ticket Generation**, reducing manual setup by over **90%**, with user specific **Payment ID**.

## PROJECTS

**Secondmemory.ai** | Python, LangChain, Crew AI, ChromaDB, FAISS DB, React.js, Firebase, CRON [Github](#) | [Demo](#)

- Designed a production-ready **Multi-Agent RAG solution** with **LangChain**, enabling efficient querying of custom **user knowledge bases**. Deeply integrated **context-aware AI assistance**. Improved chunking & query efficiency by **30%**.
- Modeled **AI agents** using **Crew.ai** to automate **code generation**, analysis and debugging of large user code base.
- Optimized **vector embeddings** by **40%** using **Cosine Similarity Search** and **Content-based Segmentation**.

**ByteStream** | MERN, Redux, WebSockets, WebRTC, Redis, Turborepo, AWS EC2, PM2

[Github](#) | [Demo](#)

- Built **Byte Stream**, a **unified workspace for product management**, with **10+** features increasing team productivity by **70%**. Incorporated user authentication using **Nodemailer(SMTP)** and **JWT Tokens** improving security by **85%**.
- Pioneered a **low-latency** chat system using **Redis caching**, on **Aiven Cloud**, within a **monorepo architecture**.
- Encapsulated in-app **Video Call** feature using **WebRTC** and **Socket.io** for High-quality **Audio/Video Transmission**.
- Deployed Node.js server on **AWS EC2** with **PM2** for improved **load balancing** and continuous operation of **REST APIs**, optimizing data retrieval and storage for a notable **20%** enhancement in system efficiency and stream operations.

**Intelsy IDE** | React.js, Python, Express.js, AWS Lambda, ECR, API Gateway, Docker, WebSockets

[Github](#) | [Demo](#)

- Developed a real-time **Collaborative IDE** for **pair programming and collaborative coding** supporting **50+** concurrent users using **Websockets**, with native **terminal**, **auto-sync Whiteboard** and **AI Assistance** for coding.
- **Dockerised** and engineered **Remote Code Execution engine** using **AWS Lambda and ECR** to execute .py, .java, and .cpp codes, saving upto **500+ MB** of local memory. Formulated **AWS API Gateway triggers** for compilation.

## ACHIEVEMENTS

Top **10.25%** on Leetcode and **Max Rating** of **1750**. Solved **800+** DSA problems on [Leetcode](#) and [CodeChef](#) and [Codeforces](#). Achieved global Ranks of **1396/31701** in Leetcode's Weekly 440, **2700/22325** in Weekly 427, **3811/33261** in Biweekly 149. Secured global rank of **185/16098** in **START166** & **851** in **START170**. [CodeChef](#) (Rating: **1585**). **2nd Position** in [John Hopkins](#), USA Hackathon , **1st position** in [Bug-Off'24](#) and **3rd Runner-Up** in **VIT Unplugged'24**. Orchestrated an **AutoML solution**, securing **3rd Runner-Up** in **AI Buildathon'24** among **2K+** participants. Finalist **Industrial Expo'24** among **5K+** participants. **Research: IEEE 1328** Wearable Device for Healthcare Diagnosis. Created website, handling over **10K+** users - **Advitya'25** cultural fest. Finalist in [SIH Internal Hackathon'23](#).

## TECHNICAL SKILLS

**Languages:** Java, Python, JavaScript, SQL, HTML, CSS

**Frameworks and Database:** React.js, Node.js, Express.js, Flutter, FAST API, MongoDB, PostgreSQL, Firebase, ChromaDB

**Developer Tools:** AWS, Docker, Redis, Github, Git, Cloudinary, Onrender, Langchain, Crew.ai, Hostinger, Postman