

Tushar Umbarkar

Portfolio [LinkedIn](#) [GitHub](#)

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SUMMARY

- Third-year CSE undergraduate at IIT Mandi with hands-on experience building scalable backend systems and managing cloud deployments across **AWS** and **GCP**. Strong foundation in **Data Structures & Algorithms**, **OOP**, and **distributed systems**. Experienced in designing REST APIs, containerizing services with Docker, and owning projects end-to-end from architecture through deployment.

EDUCATION

- **Indian Institute of Technology, Mandi** Himachal Pradesh, India
B.Tech in Computer Science and Engineering *Aug 2023 – May 2027*

EXPERIENCE

- **WattCycle(wattcycle.ai)** Remote
Software Engineering Intern (Backend & DevOps) *Dec 2025 – Mar 2026*
 - **Backend Architecture:** Designed the core database schema and REST APIs from scratch, establishing foundational data models for frontend integration.
 - **Cloud Infrastructure:** Containerized the application stack using **Docker** and deployed to production on **GCP** and **AWS EC2** with environment parity across providers.
 - **CI/CD:** Built automated CI/CD pipelines for testing and deployment, eliminating manual inconsistencies and accelerating release cycles.
- **Teaching Assistant – IC152: Intro to Computing** IIT Mandi
Undergraduate TA *Aug 2025 – Dec 2025*
 - **Mentorship:** Assisted 200+ students with Python programming concepts, assignments, and debugging during lab sessions.
 - **Evaluation:** Conducted weekly viva sessions to assess conceptual understanding and coding proficiency.

TECHNICAL SKILLS

- **Languages:** C++, Python, PostgreSQL, JavaScript, TypeScript, Bash/Shell
- **CS Fundamentals:** Data Structures & Algorithms, Object-Oriented Design, Operating Systems, DBMS, Computer Networks
- **Backend & Cloud:** Docker, AWS (EC2), Google Cloud (GCP), Supabase, REST APIs, CI/CD, Git, Linux
- **Tools & Frameworks:** PyTorch, NumPy, Pandas, Scikit-learn, Reverse Engineering (Ghidra), Distributed Systems

PROJECTS

- **QMind: AI Agent Micro-SaaS for KDB+/q** qmind.dev
Python, Node.js, Supabase, Docker, GCP, DigitalOcean *Jan 2026 – Present*
 - **Distributed Architecture:** Architected a multi-service SaaS with separate API, model-serving, and auth layers deployed across **GCP** and **DigitalOcean**.
 - **API & Auth:** Designed secure multi-tenant REST APIs using **Supabase** for client management and API key authentication.
 - **DevOps:** Orchestrated containerized deployments on **GCP GPU instances** for model inference and DigitalOcean for low-latency backend services.
- **CrowdFlow: Real-Time Crowd Monitoring** GitHub
Python, YOLOv8, OpenCV *May 2025*
 - **Real-Time Pipeline:** Engineered a YOLOv8 detection pipeline with multi-object tracking and density heatmapping, optimized for real-time throughput on live webcam streams.
 - **Analytics:** Built a visualization suite delivering detection overlays, persistent tracking IDs, and real-time density maps for high-density environments.
- **Semantic Segmentation of Solar Panels** GitHub
Python, PyTorch, DeepLabV3+, Image Processing *Jun 2025*
 - **Pipeline:** Engineered an automated DeepLabV3+ pipeline for fault detection in solar PV modules using electroluminescence images.
 - **Optimization:** Designed a custom weighted cross-entropy loss to handle severe class imbalance across 28 distinct fault categories.