Barshan Majumdar

Software Engineer | AI/ML & Full Stack
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GitHub | LinkedIn | Portfolio | LeetCode

Professional Summary

Software Engineer specializing in Full Stack Development, AI/ML, and scalable backend systems. Proficient in JavaScript, TypeScript, Python, React.js, Next.js, Node.js, Express.js, FastAPI, REST APIs, and API integration, with a strong foundation in Data Structures & Algorithms, Object-Oriented Programming (OOP), debugging, testing, code optimization, and performance optimization. Engineered a production-grade disaster response PWA (SevaSetu) handling 5,000+ concurrent users with horizontal scaling, daily system monitoring, real-time state synchronization, and sub-200ms response times. Technically curious about FinTech, Forex, automated trading systems, trading strategies, backtesting, MQL, and Pine Script.

Education

Brainware University 2024 – 2028
B.Tech, Computer Science & Engineering (AI & ML) | CGPA: 9.65/10 *Kolkata, WB*
- *Relevant Coursework: Data Structures & Algorithms (DSA), Object-Oriented Programming (OOP), Database Management Systems, Microservices Architecture*

Technical Skills

Languages: JavaScript, TypeScript, Python, Java, C, SQL
Full Stack & Web: MERN Stack, React.js, Next.js, Node.js, Express.js, FastAPI, HTML5, CSS3, REST APIs, WebSockets, API Integration
AI/ML & Data: LangChain, YOLOv8, Scikit-learn, Vector RAG Architectures, Pandas, NumPy, Prompt Engineering, LLM Integration
Databases: MongoDB, PostgreSQL, Prisma ORM, Neon DB, Redis, Vector Databases
Engineering & Tools: Data Structures & Algorithms, Object-Oriented Programming (OOP), Problem Solving, Debugging, Testing, Code Optimization, Performance Optimization, System Design, Microservices, Git, GitHub, Postman, Docker, CI/CD, AWS, Technical SEO, Observability & Monitoring

Experience & Open Source

GirlScript Summer of Code (GSSoC) May 2025 – Aug 2025
Open Source Contributor *Remote*
- Selected as a contributor for the 2025 cohort, engaging in open-source community workflows, version control onboarding, and project architecture discussions.

Social Winter of Code (SWoC) Oct 2026 – Present
Open Source Contributor *Remote*
- Selected as a contributor for the 2026 cohort, engaging in open-source community workflows, version control onboarding, and project architecture discussions.

Publications & Competitions

- **Springer Nature Publication (Mar 2025 – Apr 2026):** Demonstrated a growth mindset and proactively sought new knowledge over a rigorous 13-month research period, earning excellent peer reviews to publish Chapter 02: *AI-Enhanced Edge Systems for Immediate Decision Making.*
- **Signifiya 2026 (Adamas University) – 1st Place:** Co-developed and led team to first prize with project SBS Dominator.
- **HackStorm 2026 (BPPIMT) – 4th Place:** Built ShieldX. The only team selected from the AI/ML Problem Statement track, securing top placement despite missing one evaluation round.
- **Google Solution Challenge 2026:** Architected and submitted SevaSetu, an AI-driven humanitarian coordination platform.
- **SIH 2025 – Finalist:** Built Find My Route, a real-time tracking application integrated with government and private transit systems to reduce passenger wait times.

Key Products & Engineering Projects

Enterprise HRMS Portal | *TypeScript, NestJS, React, PostgreSQL, Docker* May 2026 – Aug 2026

- Architecting a highly scalable Human Resource Management System (HRMS) designed to handle enterprise data at the scale of Zoho People or Keka.
- Implementing a multi-tenant microservices architecture with robust Role-Based Access Control (RBAC) and optimized data indexing to ensure sub-millisecond query performance.
- Developing secure API gateway logic to handle stateless JWT authentication and token refresh cycles for seamless cross-service communication within the HRMS ecosystem.
- Collaborating within a cross-functional team environment, applying industry best practices through strict version control (Git) and continuous peer feedback.

SevaSetu (Production PWA) | *React, Node.js, Redis, BullMQ, Neon DB, WebSockets* | Live | CodeJan 2026 – Apr 2026

- Scaled an AI-driven disaster response platform into a production-grade Progressive Web App (PWA) capable of handling 5,000+ concurrent users with horizontal server scaling and strict rate-limiting.
- Quickly learned and integrated new engineering methods, deploying WebSockets and Redis BullMQ for real-time state synchronization, which reduced database load by an estimated 70%.
- Facilitated direct collaboration with Product Managers (PMs) and key stakeholders, including the CEO of Bandhan NGO (Sanjib Kumar Das), to translate real-world operational requirements into technical specifications.
- Implemented daily observability and system monitoring protocols to track platform health, driving consistency in efficiency, reliability, and performance for active users.
- Ensured product quality by conducting rigorous load testing (k6/Artillery) to validate system performance, maintaining sub-200ms response times under peak traffic.
- Operated in a collaborative Agile squad, utilizing peer code reviews to maintain code quality, and successfully integrated expert feedback from competition judges to refine system architecture.

ShieldX (ExamProctor) | *Computer Vision, Python, YOLOv8, MediaPipe* | Code Feb 2026 – Mar 2026

- Built a high-accuracy computer vision pipeline achieving 84–90% True Positive (TP) rates for behavioral anomaly detection during real-time automated proctoring.
- Rapidly adopted OpenCV and advanced vision processing libraries, incorporating new technical frameworks directly into the core anomaly detection engine.
- Demonstrated exceptional time management by independently optimizing and scaling the backend during 4th-semester academic finals, balancing rigorous exam schedules with critical project delivery.
- Implemented critical architectural improvements based on direct feedback from hackathon judges, refining the fault-tolerance mechanisms to secure a top-4 placement.

AttendX | *NestJS, Render, Computer Vision, Redis* | Live | Code Jan 2026 – Feb 2026

- Architected a high-concurrency facial recognition attendance backend, implementing automated cron-jobs to prevent Render server sleep states and completely eliminate cold-start latency.
- Proactively mastered OpenCV within tight development cycles to build out the core facial recognition modules and integrate them seamlessly with the NestJS API.
- Streamlined institutional tracking logic, reducing manual teacher attendance workload by an estimated 80–85% while ensuring zero dropped requests during peak load windows.

Abhaya (SafeRoute AI) | *Python, AI/ML, Graph Algorithms, REST APIs* | Live | Code Oct 2025 – Dec 2025

- Programmed a predictive, real-time navigation engine utilizing multi-parameter data aggregation (historical crime rates, street lighting, crowd density) to dynamically calculate the safest traversal routes.
- Designed and implemented advanced graph-based routing algorithms and RESTful APIs, optimizing pathfinding logic to reduce calculation latency for secure, real-time tracking.
- Collaborated tightly with team members to integrate complex geospatial APIs, iterating on the system design based on direct evaluator feedback to enhance route calculation accuracy.

Kisan Mitra | *TypeScript, Vercel, Custom ML, Serverless* | Live | Code Sep 2025 – Nov 2025

- Developed an AI-driven agricultural platform utilizing a TypeScript monorepo architecture with decoupled frontend and serverless backend services.
- Integrated custom predictive machine learning pipelines with a cloud database to process real-time crop predictions and yield progress tracking.
- Co-developed the platform in a cooperative team setting, actively seeking and applying technical feedback from mentors to improve serverless function reliability.