

TANMAY MIRGAL

Full-Stack Engineer | ML/DL & MLOps Engineer | AI, Data Science & Computer Vision

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

PROFESSIONAL SUMMARY

Full-stack engineer who treats AI/ML as a core skill, not a buzzword. Built secure, mission-critical systems for the Indian Navy at Tata Advanced Systems, and shipped production features on a live e-commerce platform at VigyBag. Experience spans MERN development, MLOps pipelines, RAG systems, and computer vision — manages the full product lifecycle solo, from React/Next.js interfaces to scalable Node.js/Python backends, ML model development, and cloud deployments on AWS with Docker and CI/CD. Backed by a published research paper, two hackathon wins, and active open-source contribution.

TECHNICAL SKILLS

Languages & Frameworks	JavaScript (ES6+), TypeScript, Python, R, React.js, Next.js, Node.js, Express.js, FastAPI
ML / AI / Data Science	TensorFlow, Scikit-learn, Pandas, NumPy, Matplotlib, Seaborn, XGBoost, OpenCV, RAG, Groq AI, Deep Learning, Predictive Modeling, Feature Engineering, EDA, Statistical Analysis, NLP, Time-Series Forecasting
MLOps & Pipelines	MLflow, Apache Airflow (Astronomer), DagsHub, GitHub Actions, Grafana
Cloud & DevOps	AWS (SageMaker, S3, RDS, EC2), Docker, Kubernetes, Nginx, CI/CD, Vercel, Linux
Databases	MongoDB, PostgreSQL, Redis, Convex, Supabase
Backend & Auth	REST APIs, WebSockets, WebRTC, Better Auth, JWT, OAuth 2.0, Prisma, Drizzle, Mongoose
Mobile & UI	React Native, Expo, Tailwind CSS, Shadcn/UI, Framer Motion, Bootstrap, Redux
Tools & Methodologies	Postman, Jest, Jupyter Notebook, Jira, Bitbucket, Confluence, Git, Vite, Agile/Scrum

WORK EXPERIENCE

Software Engineer Intern — Tata Advanced Systems Ltd. (TASL) 2024 – 2025

Mumbai, India

- Engineered CTS-71, a confidential high-fidelity naval simulation platform replicating real-world Combat Management Systems for the Indian Navy, built on the MERN stack with WebSockets.
- Authored Jest-based automated test suites for mission-critical modules; collaborated in Agile sprints using Jira, Bitbucket, and Confluence.
- Co-authored a peer-reviewed research paper on AI-driven capabilities in Naval Combat Management and Combat Training Systems.
- Received official offer letter and internship completion certificate from TASL upon successful delivery of all assigned modules.

Full Stack Engineer Intern — VigyBag 2025 – 2026

Remote, India

- Built and shipped features for a live e-commerce platform connecting rural artisans with urban consumers, using React.js and Express.js.
- Implemented MLOps workflows and RAG-based recommendation logic to improve product discovery and recommendations for eco-friendly products.
- Collaborated with the core team on scaling platform features for a marketplace connecting rural artisans to urban consumers.

Open Source Contributor — VigyBag (E-commerce Platform) 2024

Top Contributor — 2nd on Leaderboard

- Contributed React.js UI components and Node.js backend features to an open-source e-commerce platform (182+ stars, 419+ forks, 168+ contributors) connecting rural artisans to urban consumers.
- Delivered product search, category filtering, and pricing comparison across 10+ categories.
- Reviewed pull requests and resolved issues following CI/CD guidelines; ranked 2nd on the contributor leaderboard.

PROJECTS

Slate | *Next.js, TypeScript, React* | [Live Demo](#)

- Real-time collaborative whiteboard with an infinite canvas, multiplayer editing, and live cursor presence for brainstorming and system-design sessions.

Orb | *Next.js, Redis, PostgreSQL, MinIO, Docker, Better Auth, AWS (EC2)* | [Live Demo](#)

- Self-hosted deployment platform — connects a GitHub repo, builds it inside a sandboxed Docker container, stores artifacts in MinIO, and serves it via a built-in edge proxy with automatic SSL and live logs.

Samadhan | *1st Place, Internal Hackathon 2025 – Vidyalkar Polytechnic* | *Next.js, TypeScript, Expo, Convex, Tailwind CSS*

- AI civic-issue reporting ecosystem allowing citizens to submit, track, and escalate municipal complaints with real-time status updates.
- Cross-platform support using React Native (Expo) for mobile and Next.js for web, sharing a single Convex backend for real-time data sync.
- Delivered complete system — from database schema and API architecture to UI implementation — within a 24-hour hackathon window.

Smart Meet | *React, FastAPI, TensorFlow, OpenCV, Groq AI, WebRTC* | [Live Demo](#)

- Hackathon-built meeting platform pairing a custom peer-to-peer WebRTC engine (no third-party SDKs) with AI-driven transcription to turn live conversations into actionable summaries.
- Integrated Groq AI for fast NLP-based meeting summarisation, automatic action-item extraction, and decision logging.
- Built TensorFlow and OpenCV vision layers for participant engagement analytics and real-time video quality monitoring.

Finch AI | *Next.js, Flask, XGBoost, PostgreSQL, MLflow, DagsHub, Groq AI* | [Live Demo](#)

- ML-driven banking recommendation engine serving personalised financial products to 500+ active users.
- Trained and tuned XGBoost classification models, outperforming baseline regression and random forest models by a significant margin.
- Established full MLOps pipelines (MLflow, DagsHub, AWS RDS) for continuous retraining, A/B testing, and drift monitoring; monitored performance via Grafana dashboards.
- Integrated Groq AI for natural language financial advisory responses to complement model recommendations.

Cognix | *React Native, Express.js, MongoDB, RAG, AWS SageMaker, Apache Airflow*

- Clinical cognitive-testing app using RAG to generate contextually relevant, clinically grounded assessment questions dynamically based on user history and evaluation goals.
- Deployed backend and ML inference services on AWS SageMaker with autoscaling, load balancing, and automated retraining orchestrated via Apache Airflow (Astronomer).
- Built a real-time analytics dashboard providing per-user cognitive performance trends, score distributions, and risk flags.

EDUCATION

B.E. in Information Technology — Vasantdada Patil Pratishthan's College of Engineering

2026 – 2028 (*Expected*)

Diploma in Computer Engineering — Vidyalkar Polytechnic

2023 – 2026 | *Mumbai, Maharashtra, India*

Schooling — Shardashram Vidyamandir International School

2011 – 2023

PUBLICATIONS & RESEARCH

- Research Paper — JAAFR Journal (2025): Peer-reviewed research publication in Artificial Intelligence and Computer Engineering, co-authored on AI-driven capabilities in Naval Combat Management and Combat Training Systems. Published independently during the Diploma programme.

ACHIEVEMENTS

- Winner — Industrial Hackathon 2026 (TATA): Built an enterprise-grade AI solution under competition conditions.
- Winner — Internal Hackathon 2025 (Vidyalkar Polytechnic): Built Samadhan, an AI civic reporting platform.
- INNOVGENIUS Ideathon Participant — Tata Consultancy Services (2025): National-level ideathon by TCS.
- SPIT Hackathon 2025 Participant — Sardar Patel Institute of Technology: Inter-college competitive hackathon.
- Top Contributor — GSSOC 2024 (GirlScript Summer of Code): Recognised as a top open-source contributor; received certificate of appreciation from GirlScript Foundation.

- Open-Source Contributor — VigyBag: 182+ stars, 419+ forks, 168+ contributors; active merged contributor, ranked 2nd on contributor leaderboard.

CERTIFICATIONS

- Complete MLOps Bootcamp With 10+ End To End ML Projects — Udemy | Aug 2026
- TensorFlow for Deep Learning — Udemy | Aug 2025
- Complete AI & Machine Learning, Data Science Bootcamp — Udemy | Aug 2025
- Generative AI for Software Development — IBM SkillsBuild (Student Ambassador Program) | Dec 2024
- Explore Text-to-Speech Using IBM Watsonx — IBM SkillsBuild (Student Ambassador Program) | Dec 2024
- DevOps Discover — Microsoft Student Ambassadors - Imagine Cup | 2024
- Introduction to Large Language Models — Google Cloud Skills Boost | Sep 2024 | Credential ID: 11440118
- Introduction to Responsible AI — Google Cloud Skills Boost | Sep 2024 | Credential ID: 11440181
- Contributor in GSSOC Open Source — GirlScript Summer of Code | Aug 2024
- Learn Advanced C++ Programming — Udemy | Sep 2024
- C++ Programming in Hindi — Great Learning | Nov 2024
- Data Structures in C — Great Learning | Nov 2024
- Visual Graphics in C — Great Learning | Sep 2024
- Postman API Fundamentals Student Expert — Postman | 2024
- The Complete Python Bootcamp From Zero To Hero — Udemy | Nov 2023

AVAILABILITY & FREELANCE SERVICES

Open to Work: Yes | **Freelance:** Available | **Location:** Mumbai, India (Remote-friendly)

- Full-Stack Web Apps (2-4 weeks) · ML Model + API (1-3 weeks) · Computer Vision Systems (2-3 weeks)
- Cloud & CI/CD Setup (3-7 days) · Backend API Development (1-2 weeks) · Code Review (1-2 days)