AYUSH ANAND

Software Engineer & AI/ML Systems Builder | Full-Stack & Distributed Systems | Applied Research

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PROFILE

Final-year Electronics & Communication Engineering undergraduate at NIT Jamshedpur with hands-on experience building full-stack, distributed, and AI/ML systems recognized in national government technology challenges (Ministry of Defence iDEX, MeitY/C-DAC) and multiple hackathon wins. Strong foundation in data structures, algorithms, and system design — 200+ LeetCode problems solved — paired with applied research in deep reinforcement learning, multi-agent AI, and cryptographically verified systems. Comfortable independently owning ambiguous, high-stakes problems end-to-end, from research and experimental design through production deployment.

EDUCATION

National Institute of Technology (NIT) Jamshedpur — **Jamshedpur, India**

B.Tech, Electronics & Communication Engineering (ECE) — **Expected May 2027**

Coursework: Data Structures & Algorithms, Machine Learning, Object-Oriented Design, Operating Systems, Computer Networks, DBMS, Digital Signal Processing, Cloud Computing

Scholarships: NTSE Scholar 2020 (top 0.2% nationally) | FFE Scholar – Foundation for Excellence

TECHNICAL SKILLS

Languages: Python, JavaScript/TypeScript, C/C++, SQL, Go, Solidity

AI/ML & Research: Deep RL (PPO, DQN), Multi-Agent Systems, Multimodal LLMs, RAG, Prompt Engineering, PyTorch, Stable Baselines3, OpenAI Gymnasium, LangChain, A/B Testing & Experimental Design

Backend & Systems: FastAPI, Node.js, REST APIs, WebSockets/SSE, Distributed & Event-Sourced Architectures

Frontend: React.js, Next.js, TypeScript, Three.js, HTML5/CSS3

Infrastructure: Docker, Kubernetes, AWS, GCP, Redis, PostgreSQL, Firestore, Elasticsearch, GitHub Actions/CI-CD, Linux, Git

Blockchain: Hyperledger Fabric, Solidity, Go Chaincode, WebCrypto API

PROJECTS & APPLIED RESEARCH

NETRA-AI – *Real-Time Multi-Effector Decision Engine* — **iDEX Open Challenge, Ministry of Defence, Govt. of India**

- Formulated real-time counter-drone engagement as a multi-effector Deep RL problem (PPO, Stable Baselines3) unifying RF jamming, kinetic intercept, and cyber-takeover across 10–300 simultaneous threats, with a probability-based scoring model refreshed every 500 ms.
- Stress-tested the model across 500+ synthetic scenarios via systematic quantitative benchmarking; proposal shortlisted for INR 1.5 Cr in government funding.

Stack: PyTorch · Stable Baselines3 · OpenAI Gymnasium · AirSim · FastAPI · Redis · Docker · NVIDIA Jetson Orin

RakshaChain – *Permissioned Blockchain for Digital Forensics* — **MeitY / C-DAC Blockchain India Challenge 2026**

- Built a government-grade, deterministic chain-of-custody pipeline on a 3-org Hyperledger Fabric network (Police/CFSL/Judiciary) with cryptographically enforced role-based access and a novel Decision Engine producing formal Section 65B IEA admissibility verdicts.
- Client-side SHA-256 verification via WebCrypto API; compliant with IT Act 2000, Sec 65B IEA, and DPDP 2023. Live prototype deployed; iTBI NIT JSR incubation applied.

Stack: Hyperledger Fabric v2.5 · Go Chaincode · React.js · FastAPI · CouchDB · WebCrypto API | rakshachain-cdac.vercel.app

ReflexionOS – *Self-Improving Agentic OS* — **Frostbyte Hackathon Winner · SteelCity 2026 Winner (Most Technical Complexity)**

- Diagnosed and fixed a degenerative feedback loop in an iterative self-review algorithm with a score-gated acceptance mechanism — each revision clears a quality threshold before replacing the prior best state.
- Built a real-time reasoning-trace visualizer (ReactFlow) streamed to the browser over Server-Sent Events for live observability into agent decision-making.

Stack: Next.js 15 · TypeScript · Gemini 2.0 · ReactFlow · SSE | github.com/AYUSH62147/ReflexionOS

ComplyAct – *Agentic Enterprise Governance & Audit System* — **Gemini Live Agent Challenge (Devpost, UI Navigator Track)**

- Built a governance-first multi-agent pipeline: Gemini 1.5 Pro extracts structured data from unstructured invoices/legal documents, then a UI-navigation agent autonomously drives a legacy ERP workflow.
- Designed a rule-based "Graceful Halt" engine escalating to human review below a confidence threshold, backed by an immutable audit ledger with SHA-256 receipts for every automated action.

Stack: Next.js · FastAPI · Gemini 1.5 Pro · Google Cloud Firestore · WebSockets | github.com/AYUSH62147/ComplyAct

AXIOM – *Cognitive Operating System for Adaptive Learning* — **Independent Project**

- Built a real-time "Hesitation Engine" analyzing interaction telemetry (response latency, backtracking) to detect learner confusion, paired with recursive prerequisite-graph traversal to localize root-cause knowledge gaps.
- Implemented SM-2 spaced-repetition scheduling and an event-sourced, immutable interaction ledger for longitudinal analytics.

Stack: React 19 · TypeScript · Three.js · Zustand · Vite | github.com/AYUSH62147/AXIOM

Additional Projects: AgentIC AI – provider-agnostic multi-LLM orchestration platform with RAG and persistent memory · GHIP – multi-agent clinical AI safety system with confidence-graded outputs · OpsGuardian AI – anti-hallucination pipeline cutting MTTR from 45 to 2 minutes · HypeFlow AI – Stable Video Diffusion pipeline with A/B evaluation · FlowSentry – graph-theoretic CI/CD bottleneck detection (22% runtime reduction) · Legal Lens – Gemini-powered legal document summarizer.

PROFESSIONAL EXPERIENCE

DevOps Intern – *Elevate Labs, Bengaluru* — **Apr 2025 – May 2025**

- Automated CI/CD pipelines (Docker + GitHub Actions) and introduced canary deployment strategies, cutting manual deployment effort by 20%.
- Built Kubernetes-isolated sandbox environments for experimentation and monitoring dashboards that reduced incident response time (MTTR) by 30% through proactive alerting.

ACHIEVEMENTS & RECOGNITION

- **NTSE Scholar (2020)** – ranked in the top 0.2% nationally in India's National Talent Search Examination.
- **iDEX Open Challenge 2026**, Ministry of Defence – NETRA-AI proposal shortlisted for INR 1.5 Cr funding.
- **MeitY / C-DAC Blockchain India Challenge 2026** – RakshaChain; iTBI NIT JSR incubation applied.
- **Frostbyte Hackathon Winner · SteelCity Hackathon 2026 Winner** – Most Technical Complexity Award.
- **FFE Scholar** – Foundation for Excellence merit scholarship · **200+ LeetCode** problems solved · **Founder, Adify** – independent AI venture.

Certifications: credly.com/users/ayush-anand.93c38bb6

Languages: English (Fluent), Hindi (Native)