

Abhinav Kataria

Backend-Leaning Full-Stack Engineer | Systems & AI Integration

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SUMMARY

Final-year Computer Science student who designed and built, as **sole engineer**, an enterprise **platform-agnostic AI chatbot engine** at Jakson Group - a nine-stage pipeline enforcing **deterministic authorization** and fail-closed PII minimization before any LLM call, validated by **69 passing unit tests**. Contributed **31 of 108 commits** to **NexRoute**, a live real-time delivery-allocation platform, including a fix for a critical **concurrency race condition**. Strong **C++ DSA** base (500+ problems, **rank 1769**, LeetCode Biweekly 180).

EDUCATION

Birla Institute of Technology, Mesra

2023 - 2027

B.Tech in Computer Science Engineering | **Coursework:** DSA, OOP, DBMS, Operating Systems, Computer Networks

Vishwa Bharati Public School, Noida

2008 - 2022

CBSE Class XII: **86.2%** | Class X: **95%**

TECHNICAL SKILLS

Languages: Python, C++, Java, C, JavaScript, SQL

Backend & Data: FastAPI, Uvicorn, Node.js, Express, REST APIs & API Design, Socket.IO/WebSockets; MongoDB/Mongoose, SQL & relational data access (pyodbc)

AI & Retrieval: sentence-transformers (all-MiniLM-L6-v2), embedding-based intent classification, cosine-similarity ranking, RAG grounding, PII-safe LLM gateway design

Security & Systems: JWT, OAuth 2.0, Role-Based Access Control, PII redaction & data minimization, rate limiting, geospatial indexing (H3, Haversine), System Design, Concurrency & Race-Condition Handling

Frontend & Tooling: React, Next.js, Mapbox GL, Tailwind CSS, pytest, Git/GitHub, CI/CD, Vercel/Render

WORK EXPERIENCE

IT Intern, Jakson Limited

June 2026 - July 2026

Platform-Agnostic Enterprise AI Chatbot Engine - sole engineer

- Architected a single neutral chatbot engine serving **multiple internal platforms** (LMS, HRMS) from one codebase using **8 JSON config files** per platform, so onboarding a new platform needs **zero engine-code changes**.
- Designed a **nine-stage synchronous request pipeline** (FastAPI + Uvicorn) that runs deterministic authorization before any LLM call, so the model phrases answers but never decides access.
- Built a **two-point, fail-closed** PII minimization layer - inbound redaction plus outbound allowlist field-projection - so no raw record or identifier reaches the external LLM provider.
- Implemented hybrid intent resolution over **local sentence-transformers embeddings** with confidence/margin gating, routing ambiguous queries into a bounded disambiguation loop that ends in ticket creation instead of guessing.
- Cut avoidable LLM calls by routing FAQ/navigation queries through a deterministic knowledge path backed by **relational (SQL) lookups via pyodbc**.
- Validated the system with **69 automated pytest tests across 14 modules (100% passing)**, concentrated on the PII scrubber and authorization pipeline.

PROJECTS

NexRoute - Real-Time Delivery Partner Allocation Engine

Live Demo | GitHub

- Built a real-time allocation engine (React, Node/Express, Socket.IO, MongoDB) that matches orders to riders on a weighted model (**ETA**, rating, load), using **H3 hexagonal indexing** (res-7) to prune global scans into local lookups.
- Streamed a live rider simulation over **Socket.IO on a 1-second tick**, snapping movement onto real road networks via Mapbox Directions API, with a **configurable TTL sweep** auto-cancelling unassignable orders under load.
- Authored **31 of 108 commits** — resolved a critical **double-allocation race condition** between manual REST dispatch and the 1s simulation tick via in-memory synchronization, and built a **runtime orphan sweeper** to re-queue dropped orders.
- Hardened production readiness: enforced **JWT auth** across REST and WebSocket handshakes, added **10s Mapbox AbortController timeouts** to prevent tick stalls, and authored 16 unit tests for scoring and state machines.

POSITION OF RESPONSIBILITY & ACHIEVEMENTS

- **Technical Lead, IEEE Student Chapter** and **Technical Member, GDSC**, BIT Mesra
- **Technical:** Solved **500+ DSA problems in C++**; rank **1769** in LeetCode Biweekly Contest 180 (all problems solved).
- **Academic:** Qualified JEE Main & Advanced 2023 (top 4%, category); cleared NTSE Level 1 (2019).