

ABHIRAJ GHOSH

Software Engineer — Node.js Backend & Applied AI

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SUMMARY

Backend Software Engineer with **3 years of experience** building and shipping production **Node.js/NestJS/TypeScript** systems end-to-end — **multi-schema PostgreSQL** platforms spanning **160+ tables** and **75+ daily users**, **BullMQ-backed idempotent webhook processing**, **JWT auth with refresh-token rotation** and **14-role RBAC**, **Redis caching**, and **Docker/CI-CD deployment on AWS EC2**. Extends backend systems with **applied AI in production**: a **LangGraph multi-agent orchestrator** with **hybrid pgvector retrieval** and **safety-enforced Text2SQL**, shipped **air-gapped** on **on-premise GPU infrastructure** for the Indian Army across **14 depots**.

SKILLS

Backend: Node.js · Express.js · NestJS · TypeScript · JavaScript · REST APIs · Redis · BullMQ · Socket.IO · JWT · RBAC · Background jobs & webhooks

Databases: PostgreSQL · MongoDB · MySQL · Prisma · Sequelize · Schema design · Indexing & query tuning · pgvector

Cloud & Infrastructure: AWS (EC2, S3, Lambda, CloudFront, CDK, infrastructure scoping & deployment) · Docker · GitHub Actions · Jenkins · CI/CD Pipelines · Nginx · API Gateway · Linux · On-premise/air-gapped deployment

AI / ML (applied): Python · RAG · AI Agents · LangGraph · LangChain · Text2SQL · Hybrid retrieval · OCR (PaddleOCR) · OpenAI · Mistral (self-hosted)

Testing & Tooling: Jest · Postman · Winston structured logging · Git/GitHub

Frontend: Next.js · React.js · Redux

EXPERIENCE

Software Engineer L2 — Talentelgia Technologies

02/2025 – Present | Mohali

CRM + ERP Platform — Silverfern Education Consultants

- Led a team of **4 engineers** to build and deliver a **14-role**, stage-wise **CRM + ERP platform (NestJS, TypeScript)** used daily by **75+ staff**, replacing the client's legacy software and mapping their on-site organizational structure into **RBAC** enforced with **NestJS guards** over **JWT auth with refresh-token rotation**.
- Designed a **multi-schema PostgreSQL** database spanning **160+ tables** to separate **CRM, ERP, payroll, and HR** domains while keeping **cross-module queries performant**.
- Rebuilt the client's slow legacy system by **redesigning the schema**, **adding indexes**, and introducing a **Redis caching layer**, cutting the time staff spent on routine CRM/ERP operations.
- Built country-specific **asynchronous admission workflows** to handle distinct visa and application processes within one platform.
- Containerized the platform with **Docker**, automated deployment through a **Jenkins CI/CD pipeline**, added **Jest** test coverage on core service logic, and added **Winston structured logging** for production visibility.

CRM Platform — Evercap Consultants (US-based M&A firm)

- Engineered real-time, **bidirectional HubSpot webhook sync** on a **BullMQ queue** with automatic **retries** and **idempotency keys** to dedupe events, keeping CRM records consistent with existing sales tooling **without manual reconciliation**.
- Designed and delivered the **CRM end-to-end (NestJS, TypeScript, MongoDB, Prisma)**, modelling companies, contacts, and deal records used across a **50+ employee base**.
- Implemented asynchronous, **timezone-aware background jobs** using the **NestJS ScheduleModule (@Cron)** so scheduled tasks stayed correctly sequenced across a **distributed US-India team**.
- Containerized the platform with **Docker** and built an automated **GitHub Actions CI/CD pipeline** deploying to **AWS EC2**, removing manual release steps.

- Acted as **primary technical point of contact** on client calls, translating requirements directly into **API and data-model decisions**.

Inventory AI Agent — Indian Army (Backend & Infrastructure)

- Built the backend for a **multi-agent query system** — a **LangGraph orchestrator** coordinating **hybrid (pgvector + keyword) retrieval** and **Text2SQL** execution over **PostgreSQL** — exposing **conversational access** to inventory data.
- Enforced **query safety** on the Text2SQL layer with a **read-only database role** and **schema-restricted, allow-listed query execution**, preventing **unauthorized writes or out-of-scope reads**.
- Built the **OCR ingestion pipeline (PaddleOCR)** and **REST API layer** connecting offline paper challans into a queryable backend, cutting report generation **from hours to under 3 minutes**.
- Ran the stack **fully offline** on a locally hosted **Mistral 8B** model, spec'ing and configuring the **on-premise GPU/server/SSD infrastructure** for **zero external connectivity**.

Drawal Management System — Indian Army (NFC Logistics Tracking)

- Owned the project **end-to-end** as **forward-deployed engineer** — from **on-site requirement gathering** with commanding officers through build, deployment, and handoff.
- Built the **Express/MySQL** backend (**Sequelize ORM**) and the **React/Electron** desktop client powering **real-time, on-premise LAN inventory tracking**.
- Customized and deployed the system across **14 depots**, implementing **depot-specific features** on top of a **shared core backend** to match each site's operational requirements.
- Designed the **NFC-based data transfer** and **QR-code scanning workflow**, cutting record-update time **from hours to minutes**, and scoped the **on-premise server and LAN infrastructure** at all **14 depots**.

Software Developer — Vaayro Technologies

11/2023 – 01/2025 | Mohali

Gemlay Jewels — Ecommerce Platform + POS System

- Built core backend services for the ecommerce platform and **POS (Express, MongoDB)** — **product, stock, and employee management APIs** — plus the customer-facing storefront and **checkout flow (Next.js)**.
- Implemented **Redis caching** on product-listing and catalog endpoints, cutting response times on those cached APIs by **~60%**.
- Implemented **Socket.IO** for **real-time cart and wishlist updates**, so state changed without page reloads.
- Integrated the **Blue Dart courier API** into the POS backend to automate **shipment creation and tracking**.

PROJECTS

MindAgent — AI-Powered Document Intelligence Agent (Independent Project)

- Designed, built, and deployed a **RAG agent (Python, LangChain, OpenAI)** on **AWS Lambda** provisioned with **CDK** and **Pinecone** vector storage.
- Implemented **hybrid search** combining **MMR** and **RRF ranking** with **token-based rate limiting**, improving **retrieval relevance** over a single-method baseline.
- Added **multi-LLM support** and extended retrieval **across multiple documents**, with **source linking** back to the exact relevant chunks behind each answer.

GitHub: github.com/Abhiraj-cuchd/docmind | **Live Demo:** mindagent.abhiraighosh.tech

EDUCATION

Master of Computer Applications — Chandigarh University

08/2024 – Present | CGPA: 8.8

Bachelor of Computer Applications — Chandigarh University

08/2021 – 07/2024 | CGPA: 7.3