

MUHAMMED NAZAL K

Full-Stack Developer

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

SUMMARY

Full-stack developer and IIT Madras Data Science student (online), seeking a **software engineering internship (full-stack / backend)**. Built and deployed web and mobile products using **TypeScript, Node.js, React/Next.js, and Python**, with hands-on experience in **REST APIs, authentication, real-time systems, payment integrations, and Redis caching**.

TECHNICAL SKILLS

Languages: TypeScript, JavaScript, Python, SQL
Backend: Node.js, Express.js, NestJS, FastAPI, REST APIs, GraphQL, Microservices, Socket.io
Frontend: React, Next.js, React Native (Expo), Redux Toolkit, TanStack Query, Tailwind CSS
Databases: MongoDB, PostgreSQL (Prisma), Redis, Astra DB (vector)
Tools: Git, Docker, Firebase, Vercel, Render
AI Integration: LangChain, RAG, Google Gemini, Groq, n8n

PROJECTS

CampusCore — University Management Platform

[GitHub](#)

- Built a full-stack platform (**React, Node.js, Express, MongoDB**) with **JWT**-based role-based access control for admins, faculty, students, and parents.
- Structured the backend using **Clean Architecture** and delivered real-time notifications (grades, announcements, attendance) via **Socket.io**.
- Integrated **Stripe** and **Razorpay** for tuition installments with idempotent webhook handlers, invoice generation, and reconciliation.
- Designed **Mongoose** schemas for student records, enrollments, course catalogs, and audit logs.

DocuMind — RAG-Based Enquiry Assistant

[Live Demo](#) | [GitHub](#)

- Built a **RAG** pipeline with **Next.js** and **LangChain**: document ingestion with semantic chunking, embeddings, and metadata preservation.
- Retrieved context via **Astra DB** vector search and returned citation-backed answers.
- Streamed token-by-token responses from **Groq** to the UI using server-sent events.
- Added a **Redis** cache for repeated queries to cut redundant LLM calls and latency.

TunnelX — Reverse Tunneling Proxy & URL Shortener

[Live Demo](#) | [GitHub](#)

- Built a reverse tunnel that exposes localhost servers to the internet without port forwarding, using persistent **WebSocket** connections between a local client and a public edge server.
- Forwarded incoming HTTP requests through the tunnel and returned local responses; wrote client agents in **Node.js** and **Python**.
- Authenticated clients with a **SHA-256** token handshake and added real-time bandwidth monitoring.
- Built a URL shortener with alias-based routing mapping public URLs to local services.

Expenzo — Mobile Expense Manager

[Live Build](#) | [GitHub](#)

- Built a **React Native (Expo)** app with **TanStack Query** for caching, optimistic updates, and background revalidation.
- Modeled relational financial data in **PostgreSQL** with **Prisma** using foreign key constraints and transactions.
- Automated recurring subscriptions and EMIs with **Node-Cron**; sent budget and bill alerts via **Firebase FCM**.

EDUCATION

IIT Madras — BS in Data Science and Applications (Online, Foundation Level)

May 2026 – Present

Brototype — Full Stack Development & Software Engineering
Kerala, India

Aug 2024 – Feb 2026
[Certificate](#)