Al-Amin Hossain Nahid

Software Engineer | Full-Stack & AI Systems

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LinkedIn | GitHub | Portfolio

Professional Summary

Software engineer at the start of my career, working on full-stack and AI-powered applications. I've contributed to frontend and backend features, agentic workflows and RAG-based retrieval using TypeScript, Next.js, Python, FastAPI and PostgreSQL. I'm keen to keep growing in building reliable AI applications that bring together chat interfaces, structured workflows and tool use.

Technical Skills

Languages: Python, TypeScript, JavaScript, Java, Kotlin, C/C++, C#
Frontend: React, Next.js, Tailwind CSS, shadcn/ui, Zustand, React Native
Backend: FastAPI, NestJS, ASP.NET Core Web API, Pydantic AI, SQLAlchemy, Prisma, TypeORM
Databases & Storage: PostgreSQL, MySQL, MongoDB, Cloudflare R2
AI Engineering: LLM Integration, Agentic Workflows, Custom Agent Orchestration, Tool Calling, RAG, Knowledge Retrieval, Context Management, Structured Extraction, SSE Streaming
Infrastructure & Tools: Google Cloud Run, E2B Sandbox, Docker, Git, Postman, Linux, Firebase, Vercel, Railway, Render

Professional Experience

KOLPO LTD *October 2026 – Present*
Software Engineer

- **Frontend Development:** Work on the application's user interface, building and refining full-stack features to keep the product consistent and easy to use.
- **Agentic Chat System:** Develop conversational AI features using Pydantic AI agents with tool calling, and Pydantic models for structured data validation.
- **Knowledge Retrieval:** Work on the knowledge-base retrieval workflow that supplies relevant organisational information to the AI agent for context-aware responses.
- **Sandboxed Code Execution:** Use E2B to run Python scripts in isolated sandboxes and return the results to the agent workflow.

AuraDev LTD *June 2026 – September 2026*
Software Engineering Intern
Contributed to the Next.js frontend and FastAPI backend of an AI-powered grant management platform.

- **Agentic Proposal Generation:** Worked on a tool-driven chat workflow that guides users from grant analysis to proposal drafting, with human approval at key stages.
- **Custom Knowledge Retrieval:** Implemented a retrieval approach that uses document summaries in PostgreSQL to find relevant files in Cloudflare R2.
- **Backend Development:** Built authenticated async APIs with FastAPI, SQLAlchemy and PostgreSQL, using Clerk JWT authentication and organisation-based access control.
- **Document Editing:** Integrated Plate.js commenting into the proposal editor and contributed to PDF/DOCX processing and version history.

Projects

Relgari – Train Ticket Booking Platform Live | GitHub

- Building a bilingual (English/Bangla) train ticket booking concept inspired by Bangladesh Railway, using Next.js, NestJS, Prisma and PostgreSQL.
- Implemented session-based authentication with argon2id password hashing, encrypted NID storage and rate limiting and modelled real railway data covering 225 stations and 122 intercity trains.

Nirapod Fine – AI Traffic Fine Verification System GitHub

- Developed a web application that checks Bangladeshi traffic fine receipts against Road Transport Act 2018 rules, using Next.js, FastAPI and PostgreSQL.
- Combined AI-based receipt reading with a deterministic rule engine that makes every legal decision, and recorded result hashes on a blockchain smart contract for audit.

AI Chat – Full-Stack AI Application Live | GitHub

- Developed a multi-conversation AI chat application with persistent history using Next.js, Prisma and PostgreSQL.
- Integrated Google Gemini through server-side API routes with streamed responses, conversation management and reusable React components.

Bilimbi Studio – Production Marketing Website Live | GitHub

- Built and deployed a content-driven website using Next.js, React, TypeScript and Tailwind CSS.
- Developed reusable UI components and design tokens and implemented a validated contact-form API with Zod and external email service integration.

Publications & Research

- **Al Amin Hossain Nahid**, Chowdhury Shakil Hasan, Rakibul Islam Akash, Abdullah Al Rafe Ayon, Kazi Sadia, Md Imamul Islam and Ahmed Al Mansur. "An AI-Based Legal Advisory System for Traffic Violation Verification Using Official Traffic Regulations." In *Proceedings of the 11th IEEE Asia-Pacific Conference on Computer Science and Data Engineering (IEEE CSDE 2026)*, 2026. Accepted for publication.
- **Al Amin Hossain Nahid**, Ferdus Hossain, Tariful Islam Fahim, and Salman Zzoha. "Intelligent Waste Classification for Sustainable Urban Development: A MobileNetV3-Based Deep Learning Approach Using the BDWaste Dataset." In *Proceedings of the International Conference on Power, Electronics, Communications, Computing, and Intelligent Infrastructure (PECCII 2026)*, 2026. Published in IEEE Xplore.

Education

American International University-Bangladesh (AIUB) *September 2022 – October 2026*
B.Sc. in Computer Science and Engineering **CGPA: 3.65/4.00**