

MD ALAMIN HOSSAN

Software Engineer III | Data Products · Backend · Golang · Next.js · AI-Assisted Engineering

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Summary

Software Engineer with about 5 years of experience building backend systems, data products, and geospatial solutions. Strong at translating business requirements into scalable production systems using solid engineering fundamentals and AI-assisted development. Experienced across the full software lifecycle (frontend, backend, devops, AI agents) and quick to adapt to new technologies and programming languages. Delivered address intelligence generating over 2M BDT/month in operational savings.

Key Impact

- Rapid development and delivery using Claude and Cursor AI tools across the engineering workflow, while maintaining code quality.
- Led LMH(last mile hub) detection algorithm APT2.0 — ~2M BDT/mo savings.
- Vehicle route-optimization projected ~2.5M BDT/yr savings.

Professional Experience

Software Engineer III

Pathao Limited

Jul 2024 – Present · Dhaka, Bangladesh

APT 2.0 — Address Parser Transformation — Technical Lead / Full Stack Engineer

- Led the end-to-end design and development of Pathao's next-generation address intelligence platform from concept to production, managing a cross-functional team across backend development, infrastructure, and deployment.
- Designed APT 2.0's high-performance address parsing algorithm with a custom **inverted index** and spellchecker, optimized for cloud-friendly memory and CPU usage. Outperformed **Elasticsearch**; resolves address-to-hub in **14ms (mean) / 30ms (p90)**.
- Developed a layered area-construction system to detect possible new areas from **100M** unstructured addresses. Also built internal data tools for verification workflows and a complex address-linking interface (**Vue Flow, Nuxt.js**). Downloaded datasets from **BigQuery**, performed real-time benchmarking to identify anomalies, and fixed them using a configurable algorithm framework.

Impact: +99% accuracy (+4%), 99.2% coverage (+4%); ~2M BDT/month operational savings.

Tech: Golang, PostgreSQL, Docker, Kubernetes, BigQuery, Nuxt.js, Vue Flow, REST APIs

Address Cleaning Agent — Backend Engineer

- Built an **AI-powered agent** using **Google ADK** and **Google Gemini** to clean and normalize addresses that APT 2.0 failed to detect.

Impact: Resolved ~50% of undetected addresses, improving overall parsing coverage.

Tech: Google ADK, Google Gemini, Golang, REST APIs

Linehaul — Vehicle Route Optimization — Technical Lead

- Led design and development of a vehicle route-optimization engine using **Google OR-Tools** with custom algorithms to compute optimal routes under multiple real-world constraints.

Impact: Projected ~2.5M BDT/year savings in fuel and vehicle-rental costs; currently in pilot.

Tech: Python, FastAPI, Google OR-Tools, Next.js

Carta — Pathao Maps SaaS — Full-Stack Engineer

- Contributed as a full-stack engineer to the Pathao Maps SaaS, integrating a **payment gateway** and building a **usage-based billing**

Impact: Onboarded the first client, generating ~400K BDT/year in recurring revenue.

Tech: Golang, Vue.js, PostgreSQL

Popular Pickup — Geospatial Pickup-Point Service — Full-Stack Engineer

- Developed an API returning the top-3 nearest pickup points from user coordinates.
- Implemented **hexagon-index** precomputation for high-performance spatial queries.

Impact: Reduced rider allocation time

Tech: Golang, Redis, H3Index, Folium

Leadership & Engineering Practices: Mentored engineers, drove code reviews and technical planning, led system-design discussions on scalability and reliability, and built monitoring and deployment-automation for production services.

Software Engineer Jan 2022 – June 2024 · Dhaka
Dohatec New Media (RAJUK ECPS)

Electronic Construction Permitting System (ECPS) ecps.gov.bd

Government-scale platform automating building-construction approvals — **80+ roles, 15+ business workflows**.

- Developed backend services in **C#, .NET Core, .NET Framework, SQL Server**, JavaScript, jQuery.
- Improved response times by **~50%** via SQL optimization and tuning; cut database calls by **~95%** using caching.
- Built modules for application processing, approval workflows, notifications, and payment integration; generated dynamic PDF reports with iTextSharp and Syncfusion.

Tech: C#, .NET Core, .NET Framework, SQL Server, JavaScript, jQuery, Azure DevOps

Multi-Agency Permit Platform — R&D Initiative

- Led technical research and development for a **.NET 6 MVC** platform extending ECPS capabilities to other agencies (including BIDA).

Tech: .NET 6, SQL Server, Azure DevOps

Software Engineer Intern Sep 2021 – Dec 2021 · Dhaka
Penta Global Ltd.

- Built and maintained REST APIs with **Java Spring Boot** (Clean Architecture) and mobile features in **Flutter** using the GetX state-management pattern.
- Integrated Keycloak (authentication), Camunda BPM (workflow), and Mayan EDMS (document management) into the project stack.

Tech: Java, Spring Boot, PostgreSQL, IntelliJ IDEA

Technical Skills

Languages	Golang, JavaScript, TypeScript, SQL · Python, C#, C++, Java
Maps & Geospa- tial	Address Parsing & Search (Inverted Index), Geocode, Autocomplete, Folium, LMH De- tection , Route Optimization (Google OR-Tools) · H3 Hexagonal Indexing, Spatial Queries
Backend	Echo, GORM, REST APIs, Microservices , FastAPI, Clean Architecture · .NET Core, Entity Framework Core
AI	Google Gemini, Google ADK, Agent Building, AI-Assisted Development (Claude, Cursor)
Frontend	Next.js, Nuxt.js, Vue.js, Server-Side Auth
Databases	& PostgreSQL , Redis, BigQuery , MongoDB, SQL Server
Data	
DevOps	Docker, Kubernetes , GCP, CI/CD, Consul, Helm, Azure DevOps · Git, GitLab, GitHub
Tools	Cursor, Claude CLI, Cursor CLI, Claude Design, JIRA, Postman, DBeaver

Education

B.Sc. in CSE, University of Dhaka <i>CGPA: 3.11 / 4.00</i>	<i>Jan 2017 – Aug 2021</i>
HSC, Govt. Shahid Bulbul College, Pabna <i>GPA: 5.00 / 5.00</i>	<i>2016</i>
SSC, Char Balarampur High School, Pabna <i>GPA: 5.00 / 5.00</i>	<i>2014</i>

Research

Undergraduate Thesis

A Blockchain-Driven Scalable COVID-19 Data Management Scheme: Bangladesh Perspective

- Designed a blockchain-based storage scheme with hierarchical data architecture for high-volume data.
- Reduced data-retrieval time by 50% and improved system performance by 30%.