

Tanzim Hossain Romel

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Experience

Software Development Engineer 1, IQVIA – Dhaka, Bangladesh June 2023 – Present

- *Backend Engineer* at the *KPI Library* team
- Tools and Technologies: C#, .NET, PostgreSQL, MongoDB, Microsoft SQL Server, Entity Framework, Redis, AWS, Docker, Kubernetes, Jaeger
- Key Contributions:
 - Optimized microservices architecture by implementing MongoDB caching as a Kubernetes service across all services and in-memory caching for specific services, reducing query response time by 30%. Redesigned the dashboard loading flow architecture, improving loading times by 40% and enhancing overall system performance.
 - Developed a JSON-based dynamic dashboard creation feature powered by LLMs, enabling users to generate and customize dashboards via natural language inputs.
 - Enhanced the existing translation system by introducing a dynamic translation feature, allowing more flexible and efficient platform localization.
 - Improved the CI/CD pipeline by implementing parallelized GitLab CI/CD workflows, and automated test retries, reducing build and deployment times by 40%.
 - Implemented gRPC for high-volume microservice communication, reducing latency by 40% and increasing throughput by 25%.

Full Stack Engineer, Mindshare Bangladesh (Part-time) — Dhaka, Bangladesh Apr 2021 – Nov 2021

- E-commerce Aggregator Platform: Developed a unified platform for brands to advertise products from major Bangladeshi e-commerce sites.
- Web Scraper Service: Built a *Scrapy* scraper, deployed with *Scrapyrt* on DigitalOcean via *Docker* & *Docker-Compose* to collect real-time data.
- Backend: Utilized *MongoDB* to store and manage data for analytics.
- Frontend: Created a *React* frontend with *Material-UI* to ensure a smooth user experience.
- Technologies: Express.js, Scrapy, Docker, MongoDB, React, Material-UI, DigitalOcean

Education

Bangladesh University of Engineering and Technology April 2018 – May 2023

B.Sc in Computer Science and Engineering

- GPA: 3.53/4.0 (3.61 in the final term)

Projects

Research project: Investigating Contracts for LLM Libraries Oct 2024 – Present

- Extended prior work on ML API contracts to LLM libraries by studying Stack Overflow posts and identifying patterns of contract violations and misuses.
- Developed a taxonomy for LLM-specific “correct usage” guidelines (e.g., prompt structure, token handling, API call sequencing) to help developers avoid errors and poor performance.
- Explored how these contracts impact broader distributed systems (e.g., containerized LLM APIs) and software engineering (e.g., verifiable deployments, design-by-contract).

URL Shortener Nov 2024 - Present

- Designed and developed a production-ready URL shortener system that incorporates best practices for back-end and front-end development using .NET, React.js, and Azure services.
- Implemented features such as CI/CD with GitHub Actions, infrastructure as code using Azure Bicep, secrets management with Azure Key Vault, and authentication with Microsoft Entra ID.
- Optimized performance with Azure Redis Cache and CosmosDB, ensured scalability with Azure Front Door and PostgreSQL, and enhanced telemetry with OpenTelemetry and Application Insights.

Image caption generation using enhanced Show, Attend, and Tell with BERT

Jan 2023 – Feb 2023

Context Vectors

- Extended the "Show, Attend, and Tell" image captioning model by adding BERT, improving both the quality and speed of image captions.
- Used BERT's language features to make captions more accurate and context-aware.
- Reduced training time by leveraging BERT's pre-trained knowledge, allowing faster model convergence without losing accuracy.
- Showed how to combine advanced language understanding with image captioning to push the limits of AI-based image analysis.

Eventfly: An End-to-end Event Management System

May 2022 - July 2022

- Designed and developed a comprehensive microservices-based system to streamline event organization and participation.
- Led the back-end architecture and implemented key services, including newsfeed, payment, authentication, and event management.
- Tools Used: TypeScript, Express.js, Next.js, Docker, Kubernetes, NATS, and MongoDB.

Undergraduate Thesis

Blockchain in Healthcare – Efficiently Storing and Sharing Patient Health Data

June 2022 – May 2023

- Proposed a blockchain-based framework that uses a mix of AES (symmetric) and RSA (asymmetric) encryption to securely store and share patient records.
- Leverages smart contracts on Ethereum to manage access control and safeguard the keys from any single point of failure.
- Ensures data integrity by storing cryptographic hashes on the blockchain, making medical records tamper-proof and auditable.
- Addresses usability and scalability concerns, demonstrating near real-time performance for patient data encryption/decryption.
- Provides a structured approach for securely sharing partial or full medical histories with specific recipients (e.g., doctors, researchers).

Additional Experience and Awards

- Secured **2nd place** out of 120 participants with an accuracy of 95.7% in the Bangla Handwritten Digits Recognition contest in Level-4 of BUET
- **Dean's List Award** Awarded for outstanding academic results in Level-2 of BUET.

Tools & Technologies

- **Programming Languages:** C#, .NET, Python, JavaScript
- **Blockchain:** Ethereum, Solidity, Web3.js
- **Web & Backend Frameworks:** ASP.NET, Express.js, React
- **Databases:** PostgreSQL, MongoDB, Microsoft SQL Server
- **DevOps & Cloud:** Docker, Kubernetes, Azure, AWS, GitHub Actions
- **Monitoring & Observability:** OpenTelemetry, Jaeger
- **Other:** Redis, gRPC, Entity Framework, Azure Bicep