

# Md Omar Faruqe Riyad

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## EDUCATION

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**Shahjalal University of Science and Technology (SUST)**

Sylhet, Bangladesh

*B.Sc. in Computer Science and Engineering; CGPA: 3.53/4.00 (Last two years: 3.83)*

2018 – 2023

## EXPERIENCE

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### Altri.ai [🔗](#)

AI Engineer

Remote, US

- Architected a hybrid AI scoring engine combining **LLM-based feature extraction** from unstructured property descriptions with traditional ML models for price prediction and investment recommendations.
- Refactored data enrichment pipeline using **Python asyncio**, achieving a **10x throughput increase** and reducing cloud compute costs by parallelizing I/O-bound LLM operations.
- Built a fault-tolerant ingestion engine using HomeHarvest and **PostgreSQL**, implementing a “Delta Sync” strategy with immutable event logging to track property lifecycles without data loss.
- Established a containerized training pipeline with Human-in-the-Loop validation gates, ensuring new “Challenger” models outperform production “Champions” before deployment.
- Developed a FastAPI backend and React frontend backed by Supabase. Implemented robust security via Row Level Security (RLS) and distributed job locking for safe, multi-tenant concurrency.
- Dockerized the complete microservices stack (API, Scheduler, Trainer) for reproducible deployments across local environments and Render cloud infrastructure.

### Dynamic Solution Innovators [🔗](#)

April 2023 – Present

Software Engineer

Dhaka, Bangladesh

- Engineered security-critical government applications for NBR, MoCAT, and BCIC, transforming complex offline bureaucracies into automated digital workflows using **Java EE (JSF, EJB, JPA)**.
- Built a cross-platform CLI dev tool with **JDWP bytecode hot-swap** (via JDI API), incremental compilation, and JasperReports classloader cache bypass, reducing edit-test cycles by **96% (2m → 5s)**. Integrated with **Claude Code AI** through a custom skill for autonomous server management.
- Designed an event-driven architecture using **JMS** to decouple services, ensuring high availability and fault tolerance for the E-Appeal system.
- Engineered a centralized monitoring stack (**Prometheus, Loki, Grafana**) and dockerized the full application stack for consistent local development.
- Contributed to the design of a **state-driven approval workflow** for the Smart Hotel Management System (SHMS), reusable across multiple application types.
- Led end-to-end delivery of the **Procurement and Inventory module** for BCIC-ERP, from business analysis (As-Is/To-Be modeling) and database schema design to production deployment.
- Conducted vulnerability assessments and security audits as a key member of the internal cybersecurity team.

## PROJECTS

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### KnowledgeRelay [🔗](#) | Python, FastAPI, LangChain, ChromaDB, React

2025

- Built a RAG system to preserve project-specific knowledge bases and assist team members via contextual Q&A.
- Engineered a multi-stage knowledge ingestion pipeline that automatically generates QA pairs from documents.
- Integrated **ChromaDB** with vector embeddings and metadata-based filtering for efficient retrieval.
- Implemented contextual query rephrasing using chat history for higher accuracy.

### PrimeFaces Open Source Contribution [🔗](#) | Java, JSF, PrimeFaces

2024

- Contributed to the **PrimeFaces** library (PR #12865) by injecting custom **FilterMeta** into **JPALazyDataModel**.
- Enabled developers to perform advanced, customizable filtering within **DataTables**.

### Shopaholic [🔗](#) | JavaScript, Node.js, Express.js, MongoDB, React, Redux

2022

- Built a full-stack e-commerce platform connecting customers, banks, and suppliers.

### Brevity [🔗](#) | Python, Flask, MySQL, JavaScript

2021

- Developed a knowledge-sharing platform connecting beginners with experts in various fields.

## RESEARCH & PUBLICATIONS

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### AdversaryAI at BLP-2025 Task 2 [↗](#)

BLP 2025, IJCNLP-AAACL

- **Low-Resource Adaptation:** Investigated low-resource language code generation by fine-tuning open-source models (Llama 3, TigerLLM, Qwen) using parameter-efficient **LoRA** adapters.
- **Reasoning Enhancement:** Enhanced model reasoning via **Chain-of-Thought (CoT)** and a self-refinement loop that iteratively critiques and corrects generated code based on execution feedback.
- **Error Analysis:** Conducted rigorous error analysis to identify failure modes, achieving **85% accuracy** and **4th Place** out of 32 teams.

### Deja Vu at SemEval 2024 Task 9 [↗](#)

SemEval 2024, NAACL

- Designed data augmentation pipelines to improve model robustness for common sense reasoning tasks.
- Conducted a comparative study of Advanced Language Models, analyzing performance gaps in lateral thinking puzzles.

### Team Syrax at BLP-2023 Task 1 [↗](#)

BLP 2023, EMNLP

- **Semi-Supervised Learning:** Applied self-training techniques and back-translation to mitigate data scarcity and class imbalance in Bangla text.
- **Ensemble Strategy:** Implemented bagging and majority voting ensembles for Violence Inciting Text Detection, achieving **Top 20** rank.

### Visual Question Answering (VQA) Data Synthesis | *Undergraduate Thesis*

2022

- Addressed "Answer Space Diversity" limitation in VQA v2 by augmenting training data with automatically generated, contextually relevant QA pairs.
- Conducted a comprehensive study of VQA methods to analyze limitations in visual reasoning.

## HONORS, AWARDS & CERTIFICATIONS

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**4th Place** out of 32 teams – Code Generation in Bangla Shared Task, IJCNLP-AAACL 2025 [\[Leaderboard\]](#)

**6th Place** out of 30 teams – DSI AI Agent Hackathon, 2025 [\[Leaderboard\]](#)

**Top 20** (Rank 12 post-eval) – Violence Inciting Text Detection (VITD), BLP 2023 [\[Leaderboard\]](#)

**Ranked 11th** – BUET CSE Fest 2022 AI Contest

**Certified in Cybersecurity (CC)** – ISC2 [\[Badge\]](#)

**Solved 500+** algorithmic problems on Codeforces, LeetCode, and LightOJ.

## LEADERSHIP & TEACHING

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### Course Instructor

2024 – Present

*Dynamic Learning*

*Remote*

- Authored and instructed **Enterprise Web Development with JEE, JSF, and PrimeFaces** course, teaching core architectural patterns including component-driven design, CDI/EJB integration, and JSF lifecycle management. [▶](#)

### Volunteer

2019

- Served as volunteer at IEEE International Conference on Bangla Speech and Language Processing (ICBSLP).

## TECHNICAL SKILLS

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**Languages:** Java, Python, C/C++, SQL, JavaScript, Shell

**Backend & Systems:** FastAPI, Flask, Java EE (JSF, JPA, CDI, EJB), GlassFish, JMS

**Frontend:** React, PrimeFaces

**AI & Data Engineering:** PyTorch, LangChain, Hugging Face, RAG, ChromaDB, OpenAI API, XGBoost

**Database & Cloud:** PostgreSQL, MySQL, Neo4j, Supabase, Docker, GitHub Actions, MinIO

**Tools & Observability:** Prometheus, Grafana, Loki, Git, Linux, Flyway, JasperReports,  $\LaTeX$