

# Md Jawad Ul Islam Abir

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## EDUCATION

<b>University of Dhaka</b> B.S. in Computer Science	Dhaka, Bangladesh Jan 2019 - Dec 2024
<ul style="list-style-type: none"><li>• Concentrations: Software Development</li><li>• Related Coursework: Data Structures &amp; Algorithms, Database Management, Computer Organization &amp; Programming, Networking, System Design, Combinatorics, Data Science, Machine Learning, Artificial Intelligence, Object-Oriented Programming, Statistics &amp; Applications, Cryptography and Cyber Security</li></ul>	

## EXPERIENCE

<b>Panjeree Publications Ltd</b> Software Engineer - EdTech	Dhaka, Bangladesh July 2025 – Present
<ul style="list-style-type: none"><li>• Architected and deployed a production-grade e-learning platform (Praxis) serving 10,000+ students with PostgreSQL, Redis, Spring Boot, and Next.js, managing 50,000+ MCQs across 10 classes (class 1 to 10).</li><li>• Designed and implemented a three-tier gamified reward system (weekly/monthly/lifetime points) with streak bonuses and happy hour mechanics, increasing student engagement by 20% and daily active users by 30%.</li><li>• Built real-time notification infrastructure using WebSocket (STOMP protocol) and Redis pub/sub, delivering sub-second push notifications to 5,000+ concurrent users with 20% reduction in database load through caching.</li><li>• Integrated AI-powered chatbot with RAG (Retrieval-Augmented Generation) using Pinecone vector embeddings for Bangla curriculum Q&amp;A, implementing OCR for image-to-text extraction and automated LaTeX document generation for mathematical content</li></ul>	

<b>G2i Inc.</b> Software Developer For Training AI Data	Remote Oct 2024 – February 2025
<ul style="list-style-type: none"><li>• Conduct in-depth comparative analysis of AI model outputs, evaluating key factors such as truthfulness, harmfulness, context-awareness, and executable feasibility to ensure high-quality responses.</li><li>• Refactor and optimize code across multiple languages, including Python, Swift, JavaScript, and C/C++, to improve functionality, performance, and code correctness.</li><li>• Review and assess technical tasks, providing constructive feedback on peer submissions and ensuring adherence to best coding practices.</li><li>• Design complex prompts aimed at identifying model vulnerabilities, followed by corrective feedback and code improvements to enhance model reliability.</li></ul>	

<b>Amicsoft</b> Full Stack Developer	Dhaka, Bangladesh May 2023 – April 2024
<ul style="list-style-type: none"><li>• Collaborated with senior developers in the design and development of cross-platform mobile and web applications using Flutter, React, Java, and Firebase.</li><li>• Developed high-fidelity prototypes and wireframes for both mobile and web applications using Figma, ensuring alignment with user experience best practices.</li></ul>	

- Implemented robust state management solutions in Flutter using Bloc, Riverpod, Getx, and Provider, and in React using Redux for efficient data flow and scalability.
- Integrated Firebase services for real-time databases, authentication, and cloud functions, optimizing backend functionality and improving overall application performance.

### **University of Dhaka**

Research Assistant

Dhaka, Bangladesh

Sep 2023 - Dec 2024

- Contributed to the development of an adaptive and fault-tolerant computation offloading framework for vehicular networks, optimizing real-time task allocation to roadside units (RSUs) and edge servers.
- Conducted extensive literature review and comparative analysis of offloading strategies, focusing on machine learning techniques like Deep Q-Networks (DQN) for dynamic decision-making in vehicular environments.
- Assisted in designing system architecture for vehicular networks, integrating edge computing and SDN controllers to ensure efficient resource utilization and minimize latency.

## **PROJECTS**

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### **Portfolio**

Team Member

Dhaka, Bangladesh

Jun 2024 – Dec 2024

- A portfolio website of myself where I have shown my works and my contact details.
- Architected a modern, responsive portfolio website utilizing Next.js 13 with App Router, React 18, and Tailwind CSS, implementing server-side rendering (SSR) and static site generation (SSG).
- Engineered dynamic, interactive user interfaces with Framer Motion, incorporating advanced animations, transitions.
- Implemented a robust backend infrastructure using Node.js for RESTful API services, integrating MongoDB for efficient data storage and retrieval.
- Tech stack: Next.js, React.js, CSS, Node.js, MongoDB

### **Praxis**

Panjeree Publications Ltd.

Dhaka, Bangladesh

Aug 2025 - Present

- Architected and developed production-grade e-learning platform serving **10,000+** students across Bangladesh with comprehensive exam management system supporting MCQ practice, live exams, mock exams, question bank features, quiz battle, and review system across **50,000+** questions in **10** classes.
- Implemented robust security infrastructure with Role-Based Access Control (RBAC) supporting four user roles (STUDENT, TEACHER, ADMIN, SUPER ADMIN) and JWT-based authentication using dual-token strategy (access tokens for API authorization + refresh tokens for session management), ensuring secure API endpoints and preventing unauthorized access
- Engineered intelligent **question selection algorithms** with stem-based integrity constraints, implementing **"all-or-nothing"** grouping strategy that ensures passage-based questions (stems with 2-5 related MCQs) never split across pages.
- Designed and implemented three-tier **gamified reward system** (weekly/monthly/lifetime points) including 7-day practice streak bonuses (+50 points), 5-consecutive-correct bonuses (+10 points, repeatable), and happy hour multipliers (7-9 PM, +5 points), increasing student

engagement by **20%** and daily active users by **30%**

- Built real-time notification infrastructure using WebSocket (**STOMP** protocol) with Redis pub/sub for instant delivery of exam results, leaderboard updates, and announcements to **5,000+** concurrent users, achieving sub-second latency and **80%** reduction in database load through intelligent caching strategies
- Implemented **adaptive MCQ selection** with dynamic backfill algorithms maintaining pedagogical ratios (5 Bohupodi : 2 Stems : 18 Bohunirbachoni) while handling insufficient question scenarios through intelligent fallback strategies
- **Tech Stack:** Spring Boot, PostgreSQL, Redis, Docker, WebSocket, JWT Auth, Prometheus, Grafana, Deployed on DigitalOcean

### Study Mate AI

Panjeree Publications Ltd.

Dhaka, Bangladesh

March 2025 - Aug 2025

- Developed an **AI chatbot** for Bangla curriculum-based question answering using RAG-enabled educational platform with **Vue.js 3** with Composition API, **Spring Boot**, real-time chat functionality with WebSocket integration, and **MySQL** database management through XAMPP local development environment
- Built AI-powered academic assistance system integrating external AI APIs with **Retrieval-Augmented Generation (RAG)** architecture, implementing **OCR** for image-to-text extraction, vector similarity search using **Pinecone** embeddings, and multi-subject query processing (Physics, Chemistry, Mathematics, Biology) with contextual document retrieval
- Architected intelligent document processing pipeline with OCR implementation for image recognition, automated LaTeX document generation, PDF/DOCX conversion using **Pandoc and XeLaTeX**, Base64 encoding for file transmission, and **MinIO** object storage integration with real-time image processing and vector embedding generation for knowledge base indexing
- Tech Stack: Spring Boot, Vue.js 3, MySQL, Pinecone, Pandoc, XeLaTeX, RAG

### Taskmaster

Team Member

Dhaka, Bangladesh

Jun 2023 – Dec 2023

- Developed a fully functional web application that will streamline task management.
- Tech stack: React js, Tailwind CSS, HTML, Spring Boot

## ACHIEVEMENTS

### Code Samurai Inter-University Hackathon 2024

Dhaka, Bangladesh

- Advanced past the preliminary round, demonstrating strong problem-solving and teamwork skills.
- Ranked among the **top 20** teams nationwide, competing against leading talent in a high-stakes coding challenge.

### Problem Solving

- Solved **100+** problems in Leetcode
- Solved **100+** problems in codeforces with a rating of **1100+**

### Half Marathon Finisher

Dhaka Metro Half Marathon 2025

- Completed a 21.1 km race and received a medal and a certificate of completion.
- Showcased endurance, discipline, and commitment to personal goals.

## CERTIFICATIONS

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- Programming for Everybody (Getting Started with Python) Coursera, May 2021 - Jun 2021
- Python Data Structures Coursera, April 2021 - Jun 2021
- Intro to Machine Learning Kaggle, May 2024 - Jun 2024
- Postman API Fundamentals Student Expert Postman, July 2024 - Aug 2024

## SKILLS

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- **Languages:** Java, Python, JavaScript, C, C++, Dart, SQL
- **Backend:** Spring Boot, Node.js, FastAPI, RESTful APIs, JWT Authentication, WebSocket (STOMP), Redis, MinIO
- **Database:** PostgreSQL, MySQL, Redis Cache, Pinecone Vector DB
- **DevOps and Tools:** Docker, Git, Postman, Prometheus, Grafana, DigitalOcean
- **AI/ML:** PyTorch, TensorFlow, Keras, RAG Architecture, Vector Embeddings, OCR, LangChain
- **Libraries:** Pandas, NumPy, Matplotlib, Seaborn, OpenCV, Selenium