

Arijit Roy

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📁 [Portfolio](#)

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Education

East Delta University

BSc, Computer Science and Engineering

Recipient of the Chairman's Distinguished Scholarship for excellence in merit.

Feb '22 – Sept '26

CGPA: 3.72/4.00

Projects

ML Study Buddy [🔗](#) — Next.js, FastAPI, Python — [Live](#)

- Engineered a **Retrieval-Augmented Generation (RAG)** system combining Next.js frontend and FastAPI backend to deliver **intelligent document retrieval** and AI-powered machine learning tutoring.
- Integrated fine-tuned embeddings using sentence-transformers, achieving **15-25% improvement** in retrieval metrics (**Recall@5, MRR, NDCG**) through contrastive learning and synthetic query generation.
- Implemented voice interaction features with **Whisper STT** and **SpeechT5 TTS**, enabling **hands-free learning** experiences.
- Deployed production-ready application with frontend on Vercel and scalable backend supporting PDF, image **OCR** (**TrOCR**), and web content processing using **FAISS vector store** and Groq LLM API.

FloodGuard Aid Network [🔗](#) — React, Node.js, MongoDB — [Live](#)

- Built a disaster relief web application connecting flood victims with volunteers for a **national hackathon**.
- Integrated geolocation, mapping, and image upload features to facilitate **efficient aid distribution**.
- Ensured seamless data handling using **React, Node.js**, and **MongoDB** with responsive UI design.

AcademiaConnect [🔗](#) — MERN Stack

- Developed a university social platform enabling students to share posts, comment, build connections, and view dynamic class schedules.
- Implemented user authentication, profile management, and friend request functionality.
- Built using the MERN stack (**MongoDB, Express.js, React, Node.js**) with responsive UI design.

Air Quality Monitoring System [🔗](#) — Arduino, MERN Stack

- Developed an IoT project using Arduino to monitor air quality parameters in **real-time**.
- Displayed data on OLED and fetched additional environmental information from **OpenWeatherMap API**.
- Implemented a MERN-based dashboard to visualize, analyze, and store sensor data.

AcademiaConnectApp [🔗](#) — React Native, Supabase

- Developed a React Native + Supabase mobile app for university students and faculty to connect and manage academics.
- Delivered key features including posts, comments, profiles, friend requests, **real-time notifications**, and schedule viewer.
- Designed a modern, glassmorphism-inspired UI, ensuring responsiveness and smooth user experience.

Achievements

- ICPC (International Collegiate Programming Contest) **Regional Contestant** (Dhaka Site, 2024) – solved **3 problems** in 5 hours.
- Participated in a **National Hackathon** by Programming Hero.
- UIU CSE Fest **Programming Contest** – solved **3 problems** in 5 hours.

Extra Curricular Activities

Executive Board Member, EDU Computer Club

2023 – Present

- Led and coordinated club activities to boost participation, empowering over 250 general members with technological skills and fostering collaboration among executives.
- Organized and executed successful events by collaborating with various organizations and individuals, including coding workshops by **Phitron** and **Programming Hero**, programming contests, and guest speaker sessions with industry experts and academics.
- Organized an intra-university hackathon called **EDU HackFest 2025**, contributing to the development of **problem statements** and coordinating the entire event to ensure smooth operations and strong student engagement.
- Secured approximately **100,000 BDT** in funding for club activities through sponsorships, university allowances, and member contributions.

Technical Skills

JavaScript, React, Node.js, MongoDB, Express.js, Next.js, Python, HTML/CSS, Tailwind CSS, REST APIs, Git, Arduino, Machine Learning, Deep Learning