

Arijit Roy

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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