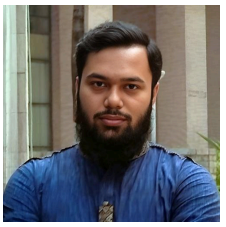
ABDUL ALIM RAKIB



AI/ML Engineer | Data Analytics | NLP & LLMs | Computer Vision | QA/SWE

Dhaka, Bangladesh | +880 1748-585134 | **Portfolio** | abdulalimrakib04@gmail.com
linkedin.com/in/abdul-alim-rakib1 | github.com/abdulalimrakib

SUMMARY

Computer Science graduate from North South University and Full-Stack Developer specializing in AI/ML, Computer Vision, NLP, Agentic AI, and Web Development. Skilled in Python, PyTorch, Transformers, LangChain/LangGraph, RAG, LLM technologies, Next.js, React, TypeScript, and PostgreSQL. Developed AI/ML systems through academic and research projects, including image manipulation, localization, and evidence-grounded RAG applications, while independently building full-stack web applications with modern web technologies. Seeking opportunities to apply software engineering and AI/ML skills to build practical, reliable, and scalable solutions. Familiar with software testing fundamentals, including manual testing, test case design, bug reporting, and introductory test automation using Selenium.

SKILLS

Programming: Java, JavaScript, TypeScript,Python, SQL, C, C++

AI / Machine Learning: PyTorch, TensorFlow/Keras, Scikit-learn, Transfer Learning, Knowledge Distillation, Ensemble Learning, Hyperparameter Tuning, INT8 Quantization, Explainable AI

Computer Vision: CNNs, Vision Transformers, GANs, Image Classification, Image Manipulation Detection & Localization, Grad-CAM, LIME, OpenCV, Albumentations, timm

NLP & Generative AI: LLMs, RAG, LoRA/QLoRA Fine-tuning, SFT, Hugging Face Transformers, PEFT, TRL, Unsloth, LangChain, LangGraph, Prompt Engineering, OpenAI API, Anthropic Claude API, Gemini API.

Web Development: React.js, Next.js, Redux, Node.js, Express.js, REST APIs, JWT Authentication, Tailwind CSS

Databases & Data: PostgreSQL, MySQL, MongoDB, Chroma, Pandas, NumPy, SciPy, Power BI, Power Query, DAX, Excel, Google Sheets.

Software Testing: Manual Testing, Test Case Design, Test Scenarios, Bug Reporting, Functional Testing, Regression Testing, Basic Automation Testing with Selenium.

Tools & Platforms: Git, GitHub, Linux, Jupyter Notebook, Postman, ONNX, ONNX Runtime, jira.

PROJECTS

BSREA — Association Website & Membership Platform | *Next.js, React, TypeScript, Express.js, SQLite, Tailwind CSS, Nginx, PM2*
Live Demo

- Rebuilt the Bangladesh Solar & Renewable Energy Association's WordPress site in **Next.js 15**, migrating every page, 50 news posts, the member directory, board, and gallery.
- Built an online membership system with a staff admin panel: **duplicate detection**, four-eyes approval, and QR-coded certificates with public verification.
- Secured applicant data with **AES-256-GCM field encryption**, HMAC blind indexes, role-based access, TOTP two-factor login, rate limiting, and audit logs.
- Deployed on Ubuntu with Nginx, PM2, and Let's Encrypt; added encrypted backups, a monitoring dashboard with alerts, and **80+ automated tests**.

My Shop — Full-Stack E-commerce Platform | *Next.js, TypeScript, React, Sanity, Clerk, Stripe, Zustand, Tailwind CSS*
Github link | *Live Demo*

- Built a full-stack e-commerce platform for browsing, search/filtering, wishlist, cart, authenticated checkout, and order management.
- Integrated **Sanity CMS**, **Clerk authentication**, and **Stripe Checkout/Webhooks**, with server-side price/stock validation and idempotent order processing.
- Implemented atomic stock updates, protected customer routes, responsive UI, SEO metadata/sitemap, and security headers.
- Validated with **ESLint, TypeScript type checking, and production builds**, with CI checks on pushes and pull requests.

AREstate — AI-Powered Real Estate Platform | *Next.js, TypeScript, PostgreSQL, Drizzle ORM, JWT, Firecrawl, LLMs*
Github link | *Live Demo*

- Built a full-stack real-estate platform for **property discovery, filtering, listing management, and viewing appointments**.

- Developed a secure **JWT-based authentication system**, REST APIs, admin dashboard, PostgreSQL database, image uploads, and automated background jobs.
- Built an **AI Property Hub** using Firecrawl and LLMs to scrape, rank, and summarize real-estate listings and location trends.
- Deployed with **Vercel + PostgreSQL**, with rate limiting, caching, API logging, validation, and production build/type checks.

LegalLaw — RAG-Based Legal Assistant for Bangladesh | *Python, FastAPI, LangChain-style RAG, Chroma, Gemini API, Express.js, Next.js, TypeScript*

Live Demo

- Built a legal chatbot for the Bangladesh Penal Code, 1860, using semantic retrieval over **560 legal sections across 25 chapters** to generate source-grounded answers with cited sections.
- Developed a three-tier system with a Next.js frontend, Express.js API, and FastAPI retrieval service, including conversational context, query rewriting, and LLM fallback handling.
- Evaluated retrieval on **348 questions**, achieving **88.5% Recall@6** (308 questions retrieved the expected section); deployed the application using Vercel and Render.

Rice Variety Classification — Benchmark & Edge Deployment | *PyTorch, timm, Scikit-learn, ONNX Runtime*

Github link

- Built a unified **63-class, 98,730-image benchmark**, identifying and correcting data leakage that inflated accuracy by up to **4.8 points**.
- Benchmarked **22 CNN/ViT models**; achieved **99.49% accuracy / 98.23% Macro-F1** with Xception and **99.66% / 98.76%** using a 4-model ensemble.
- Distilled the ensemble into **ShuffleNetV2** and evaluated ensemble distillation on a new domain, finding results inconsistent with the published methodology.
- Deployed an **INT8 ONNX model (1.69 MB)** achieving ~**348 images/sec** and **96.6% Macro-F1**, with robustness and Grad-CAM/LIME interpretability analysis.

EXPERIENCE

Full-Stack AI Developer — MH Global Group *Nov 2026 – Present*

- Maintain and extend Python and Playwright scrapers and the PostgreSQL pipeline that collect, validate, and publish university course data, adapting to website changes while respecting each site's terms and robots rules.
- Expand data coverage from UK universities to other countries, with pre-release checks that catch partial scrapes, incorrect fees, and duplicate courses.
- Develop a RAG-based AI assistant that answers student and adviser eligibility questions in plain language and cites the published rule it used, keeping the rules engine as the decision-maker.
- Enhance the TypeScript eligibility engine and UniConnect (React, FastAPI, Node.js on AWS), and run deployments, database migrations, backups, and monitoring.

Undergraduate Teaching Assistant — North South University *Summer 2024 – Summer 2025*

- Supported six faculty members across three semesters in the Department of Political Science & Sociology.
- Graded assignments for large cohorts with consistent rubric application, and explained technical processes to non-specialist stakeholders.

Peer Mentor & Moderator — NSU ACM Web Dev Group *Spring 2024 – Spring 2025*

- Led a 12-member team and delivered peer-learning workshops on React.js, front-end frameworks, and Git-based workflows.

EDUCATION

B.Sc. in Computer Science & Engineering — North South University *Jan 2022 – May 2026*

- Core AI/ML: Natural Language Processing, Computer Vision, Neural Networks & Deep Learning, AI Fundamentals.
- CS foundations: Data Structures & Algorithms, DBMS, Software Engineering, Web Application Development.

Higher Secondary Certificate — Notre Dame College *2018 – 2020*

- GPA: 5.00 / 5.00

HONORS & ACTIVITIES

- Best Member Award, NSU ACM Student Chapter — for outstanding technical contribution and peer mentorship.
- Merit-Based Tuition Scholarship (25%), North South University.

REFERENCES

- **Ms. Khairun Nahar**
  Administrative Assistant
  North South University, Bashundhara, Dhaka
  Email: khairun.nahar@northsouth.edu

- **Dr. Muhammad Abdul Matin**
  Chairman & Professor
  Department of Electrical & Computer Engineering
  North South University
  Email: muhammad.matin@northsouth.edu