Nidan Alam

Machine learning, computer vision and full-stack development

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Summary

Computer Science and Engineering graduate (AIUB, 2026) who enjoys building machine learning models and turning them into software people can use. Presented three research papers at international conferences in October 2026, two as first author, on medical scans, satellite images and credit risk. Joined Dublin 4IR as a frontend developer and became team lead within four months. Aims to build machine learning products that are carefully tested and dependable in real use.

Education

B.Sc. in Computer Science and Engineering, major in Information Systems 2022 - 2026
American International University-Bangladesh (AIUB) Dhaka, Bangladesh

- CGPA 3.43 / 4.00, 148 credits, taught and examined in English.
- Thesis (A+): *Lightweight Actor-Centric Action Recognition on the AVA Dataset Using Temporal and Geometric Features.*
- Relevant coursework: Machine Learning; Artificial Intelligence and Expert Systems; Introduction to Data Science; Data Warehousing and Data Mining; Computational Statistics and Probability; Introduction to Database; Management Information Systems; Software Engineering; Web Technologies; Compiler Design.

Publications

[1] **N. Alam**, et al. "Partially Encrypted Federated Vision Transformers for Remote Sensing Scene Classification." *4th International Conference on Computing Advancements (ICCA 2026)*, Dhaka, 15-16 Oct 2026. ACM proceedings to appear. First author, presented. Certificate

[2] **N. Alam**, et al. "Trading Payload for Comparable Accuracy: A Duplicate-Controlled, Communication-Aware Federated Study of Brain Tumor MRI Backbones." *IEEE 3rd International Conference on Computing, Applications and Systems (COMPAS 2026)*, University of Dhaka, 9-10 Oct 2026. First author, presented. Certificate

[3] A. J. Sisty, **N. Alam**, et al. "CreditGuard: A Leakage-Free, Calibrated and Explainable Framework for Real-Time Credit Risk Assessment." *3rd International Conference on Data Mining and Information Security (ICDMIS 2026)*, 7-8 Oct 2026. Springer proceedings to appear. Second author, presented. Certificate, Code

Research experience

Privacy-preserving federated Vision Transformers 2026
First author, paper [1] Code

- Built encrypted federated training for ViT-Base (FedAvg): implemented CKKS homomorphic encryption (TenSEAL) on selected layers of the model updates and ran all experiments.
- Reached about 95% test accuracy on NWPU-RESISC45 (45 classes, 31,500 images) with or without encryption, so privacy cost almost no accuracy; evaluated under IID, class-skewed and Dirichlet non-IID client splits, and on UC Merced.

Communication-aware federated learning for brain tumour MRI 2026
First author, paper [2] Code

- Benchmarked CNN backbones for four-class brain tumour MRI classification across 4 non-IID federated clients, using duplicate-audited, leakage-controlled data splits.
- Cut communication by 82.8% by moving from ResNet50 to EfficientNet-B0 with no significant accuracy loss (97.25% vs 97.18%), confirmed over 3 seeds with McNemar tests and bootstrap confidence intervals.

Undergraduate thesis: lightweight multi-person action recognition 2025 - 2026
Team of three, AIUB

- Designed the model architecture and wrote the training and ablation code: an X3D-XS backbone with temporal RoIAlign over 8 frames and a box-geometry gate, trained on the AVA 2.1 video dataset.
- Raised accuracy while keeping the model real-time (over 90 frames per second at about 3.15 GFLOPs on one consumer GPU) by adding one component at a time and measuring each change.

ScaleRAG: retrieval augmentation for time-series foundation models 2026

Independent study Code

- Designed a retrieval branch for a frozen Chronos-2 forecaster: exact nearest-neighbour search in a normalised shape space with closed-form scale restoration, plus tests that block look-ahead leakage.
- Lowered forecast error by 5.49% RMSSE against the backbone on the M5 retail panel (30,490 series) and improved retrieval quality by 85.5%; published every result, including where retrieval did not help.

Work experience

Dublin 4IR, IT solutions company Dhaka, hybrid

Team Lead Oct 2026 - Present

- Lead a development team: assign tasks, review the team's code and run sprints, while continuing to build features myself.

Frontend Developer Jun 2026 - Sep 2026

- Built responsive web applications in React, Next.js and TypeScript, with reusable UI components designed for clean state management and performance.
- Co-developed the marketing site, client portal and admin console for an Irish finance and tax practice (Next.js, Auth.js, MongoDB): added enquiry auto-replies, fixed Google sign-in verification, and helped choose its stack and database. Code
- Worked across the stack on APIs and backend features, and took part in sprint planning and code reviews on GitHub.

MJ Auto Japan Ltd. Dhaka

IT Intern Feb 2026 - May 2026

- Resolved day-to-day technical issues for staff through troubleshooting, software and hardware support, and documentation.

Projects

- **Bhai Thik Kor** (2026): built an AI prompt optimiser in Next.js that streams structured JSON with the Vercel AI SDK and fails over between Groq, Gemini and OpenRouter models when a provider hits its rate limit, plus a Chrome extension that rewrites text in place. Live, Code, Extension
- **AIUB World Cup 2026 data pipeline** (2026): built a Python scraper for a 48-team, 79-match university football tournament, with JSON snapshots, knockout-path projection, a Flask dashboard and pytest tests. Code
- **Bangla emotion classification** (2025): classified Bangla social-media comments into multiple emotions with hybrid TF-IDF features and a calibrated soft-vote ensemble of five classifiers. Code

Leadership and service

- **Assistant General Secretary, R&D**, AIUB Computer Club (2025 - 2026): co-led the club's research and development work.
- **Organiser and eFootball game controller**, AIUB Cyber Gaming Fest (2025).
- **Local Volunteer**, NASA International Space Apps Challenge, Dhaka (2025).

Skills

Machine learning	Python, PyTorch, timm, scikit-learn, XGBoost, LightGBM, Optuna, SHAP, TenSEAL, pandas, NumPy
Methods	Deep learning (CNNs, Vision Transformers), computer vision, time-series forecasting, NLP, federated learning, homomorphic encryption, probability calibration, statistical testing
Software	TypeScript, JavaScript, React, Next.js, Node.js, Flask, SQL (MySQL), MongoDB, C++
Tools	Git, GitHub, Linux, Vercel, pytest, Docker (basic), LaTeX
Languages	Bengali (native), English (fluent; degree taught and examined in English)

References

Dr. Abdus Salam, Associate Professor, Department of Computer Science, AIUB. Thesis supervisor. abdus.salam@aiub.edu

S M Abdullah Shafi, Lecturer, Department of Computer Science, AIUB. Research supervisor, ICCA 2026. shafi@aiub.edu

Niaz Morshed, Team Lead, Dublin 4IR. Direct supervisor since June 2026. niazmorshedrafi@gmail.com