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Abdullah Rubab

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ABOUT ME

Medical AI and Uncertainty Quantification Researcher
Final-year B.Sc. student in Computer Science and Engineering at Daffodil International University (CGPA 3.80 / 4.00). My research is on trustworthy medical AI: evidential deep learning, uncertainty quantification, few-shot learning, knowledge distillation and explainable AI for medical imaging.
I am a Research Assistant at the NanoBio Technology Center (NBTC) and a member of the Health Informatics Research Lab (HIRL) at DIU. I have one published IEEE conference paper, two papers presented at IEEE BECITHCON 2026, and two journal manuscripts submitted (Intelligence-Based Medicine; Briefings in Bioinformatics). My team won first place at AI Hackathon 2026, hosted by Daffodil International University.
I am applying for a Master's programme in Europe (September 2027 intake). My goal is to build reliable, uncertainty-aware AI for healthcare in resource-limited settings.

EDUCATION AND TRAINING

Bachelor of Science in Computer Science and Engineering

Daffodil International University (DIU) [2023/01/01 – Current]

City: Daffodil Smart City, Birulia, Savar, Dhaka-1216 | **Country:** Bangladesh | **Field(s) of study:** Computer Science and Engineering | **Final grade:** CGPA 3.80 / 4.00 (final year, current) | **Level in EQF:** EQF level 6

Link: https://daffodilvarsity.edu.bd

Final-year student.

Higher Secondary Certificate (HSC), Science group

B.A.F. Shaheen College Kurmitola [2018/11/30 – 2020/11/30]

City: Dhaka | **Country:** Bangladesh | **Final grade:** GPA 5.00 / 5.00

Academic Excellence Award.

Dakhil Certificate (Secondary School Certificate equivalent), Science group

Tanjimul Ummah Alim Madrasah [2016/11/30 – 2018/11/30]

City: Dhaka | **Country:** Bangladesh | **Final grade:** GPA 5.00 / 5.00

Awarding body: Bangladesh Madrasah Education Board, Dhaka. Dakhil Examination 2019 (results published 6 May 2019). Subjects included Mathematics, Higher Mathematics, Physics, Chemistry, Biology, English and Bangla.

WORK EXPERIENCE

NanoBio Technology Center (NBTC), Daffodil International University – Savar, Dhaka, Bangladesh

Website: https://daffodilvarsity.edu.bd

Research Assistant

[2024/11/30 – Current]

- Contribute to a multimodal 3D peritumoral representation learning framework that predicts chemoembolization (TACE) resistance in hepatocellular carcinoma, validated on international multi-cohort data. Manuscript submitted to Briefings in Bioinformatics.
- Work on the discovery of new triboelectric nanogenerators (TENG) made from bio-based materials: screening natural-fibre candidates, selecting the best performer and integrating it into self-powered medical sensors for sustainable development.
- Supervisor: Dr. Md. Ali Hossain, Associate Professor, Department of CSE, and Director, NBTC.

DIU Distributed AI Infrastructure Platform (GPU Cluster), Daffodil International University – Savar, Dhaka, Bangladesh

AI/ML and Backend Developer

[2025/11/30 – Current]

- Develop AI/ML and backend components of a campus platform that connects and pools DIU's existing GPU workstations into a shared compute cluster for AI researchers.
- Also responsible for system testing and for the sustainable-energy part of the project.
- Helped prepare the platform's technical proposal, presented to DIU senior leadership.

Health Informatics Research Lab (HIRL), Department of CSE, Daffodil International University – Savar, Dhaka, Bangladesh

Member

[2023/11/30 – Current]

- First author of MSEA-Net, an uncertainty-governed selective diagnosis framework for gastrointestinal endoscopy, supervised by Dr. Md. Zahid Hasan, Associate Professor and Director of HIRL.
- Worked with faculty and peers on biomedical informatics datasets and clinical machine learning benchmarks.
- Took part in research workshops, clinical dataset curation and literature seminars.

SKILLS

Deep learning and medical AI

PyTorch / TensorFlow / Keras / MONAI / Hugging Face Transformers / Vision Transformers (ViT) / Evidential deep learning and uncertainty quantification / Knowledge distillation / Few-shot and prototype learning / Medical image classification and segmentation / Federated learning / Retrieval-augmented generation (RAG)

Explainable AI

Grad-CAM / Grad-CAM++ / SHAP / LIME / UMAP / t-SNE

Programming

Python / C++ / Java / SQL (MySQL, PostgreSQL) / LaTeX

Machine learning and data tools

scikit-learn / XGBoost / LightGBM / OpenCV / Albumentations / Weights & Biases / Kaggle / Google Colab

Backend and deployment

FastAPI / Django / Docker / Git / GitHub / CI/CD / Gradio / Hugging Face Spaces

Office and design

Microsoft Excel / Microsoft PowerPoint / Canva

LANGUAGE SKILLS

Mother tongue(s): Bengali

Other language(s):

English

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

Hindi

LISTENING B1 **READING** B1 **WRITING** B1

SPOKEN PRODUCTION B1 **SPOKEN INTERACTION** B1

Spanish

LISTENING A2 **READING** A2 **WRITING** A2

SPOKEN PRODUCTION A2 **SPOKEN INTERACTION** A2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

[2025]

Sample-Efficient Fine-Grained Classification of Cactus Species Using Hybrid Vision Transformers and Knowledge Distillation Status: Published. First author.

Authors: A. Rubab, M. T. Hasan | **Journal Name**: 2025 28th International Conference on Computer and Information Technology (ICCIT) | **Publisher**: IEEE

pp. 4837-4842

[2026]

Explainable Multi-Scale Knowledge Distillation with Uncertainty-Aware Inference for Efficient Brain Tumor MRI Classification Status: Accepted and presented (September 2026). Proceedings forthcoming. First author.

Authors: A. Rubab et al. | **Journal Name**: International Conference on Biomedical Engineering, Computer and Information Technology for Health

[2026]

An Efficient Attention-Guided Deep Learning Framework with Explainability for Blood Cell Classification Status: Accepted and presented (September 2026). Proceedings forthcoming. First author.

Authors: A. Rubab et al. | **Journal Name**: International Conference on Biomedical Engineering, Computer and Information Technology for Health

[2026]

UR-ProtoNet: Evidential Retrieval-Augmented Prototypical Networks for Uncertainty-Aware Few-Shot Chest X-Ray Classification Across Domain Shifts Status: Submitted (under review). First author. Code: https://github.com/ABRUBAB/UR-ProtoNet

Authors: A. Rubab et al. | **Journal Name**: Intelligence-Based Medicine | **Publisher**: Elsevier

[2026]

A Multimodal 3D Peritumoral Representation Learning Framework for Predicting Chemoembolization Resistance in Hepatocellular Carcinoma: An International Multi-Cohort Validation Status: Submitted (under review). NBTC project.

Authors: NanoBio Technology Center (NBTC) research team, DIU (A. Rubab, co-author) | **Journal Name**: Briefings in Bioinformatics | **Publisher**: Oxford University Press

[2026]

MSEA-Net: Uncertainty-Governed Selective Diagnosis through Multi-Scale Evidential Attention for Gastrointestinal Endoscopy Status: Manuscript completed; submission to an Elsevier journal planned. First author. Supervisor: Dr. Md. Zahid Hasan (HIRL). Code: https://github.com/ABRUBAB/MSEA-Net

Authors: A. Rubab et al. | **Publisher**: Elsevier (planned submission)

[2026]

RAM-ViT: Retrieval-Augmented Evidential Vision Transformer for Cross-Modal Glioma Grading Status: Manuscript in preparation. First author. With Dr. Md. Ali Hossain.

Authors: A. Rubab et al.

[2026]

PUMA-MIL / PUMA-MIL-Lite: Multimodal Multiple Instance Learning for Glioma Detection with Clinical Interpretability Status: Manuscript in preparation. First author. With Dr. Md. Ali Hossain.

Authors: A. Rubab et al.

PROJECTS

[2026/06/30]

NeuralSched: GPU-cluster intelligence middleware (Champion, AI Hackathon 2026)

Middleware that sits above Kubernetes / SLURM and uses four trained ML models: GraphSAGE GNN + PPO for job placement, a carbon-aware LSTM for green scheduling, a Temporal Convolutional Network with SHAP for node-failure prediction, and an LSTM for GPU utilisation forecasting. Includes automatic checkpoint-and-migrate when a failure is predicted.

Stack: PyTorch, FastAPI, PostgreSQL, React. Role: Team Leader and ML Architect (Team ShadowForge).

Link: https://github.com/ABRUBAB/neuralsched

[2024/11/30]

Brain Tumor MRI Classification (live web demo)

Ensemble of ConvNeXt, Vision Transformer (ViT-B/16) and EfficientNetV2 for four-class brain MRI classification (glioma, meningioma, pituitary, no tumour), with Grad-CAM++ explanations and test-time augmentation. Deployed as a Gradio app on Hugging Face Spaces in English, Bengali and Spanish.

Links: https://github.com/ABRUBAB/brain-tumor-mri-classification | https://huggingface.co/spaces/ABRUBAB/brain-tumor-classifier

[2025/11/30]

ResearchForge AI: end-to-end multi-agent research system

Multi-agent system with 13 specialised AI agents in three phases: literature review and hypothesis generation, architecture debate and theoretical validation, and code generation with automated Kaggle experiment runs. Python, FastAPI, Streamlit.

Link: https://github.com/ABRUBAB/ResearchForge-AI

HONOURS AND AWARDS

[2026/06/30]
Champion (1st place), AI Hackathon 2026 – Daffodil International University

Inter-university AI hackathon hosted by Daffodil International University in collaboration with the World AI Alliance (WAA). Team ShadowForge; my role: Team Leader and ML Architect. Winning project: NeuralSched.

[2025/11/30]
Ranked 48 of 196 teams, bKash × NSUCEC National Datathon 2026

Customer churn prediction; AUC 0.98525 on the public leaderboard. Organised by bKash Ltd. and the NSU Computer and Engineering Club.

[2025/11/30]
Selected poster presenter, DIU-DoR Annual Poster Presentation 2026

Presented RAM-ViT. Directorate of Research, Daffodil International University.

[2023/11/30]
Finalist (Top 50), Unlock the Algorithm (UTA) Contest

Spring 2024. DIU ACM Wing.

[2022/11/30]
Finalist (17th position), Take-Off Programming Contest

Spring 2023. DIU Computer Programming Club.

[2018/11/30]
Champion, Saifur's Web Design Competition

Saifur's Education Group.

CONFERENCES AND SEMINARS

[2026/08/31]
Paper presenter, 2026 IEEE BECITHCON (BECITHCON 2026)

Presented two accepted papers (brain tumour MRI classification with knowledge distillation; blood cell classification). IUBAT, Dhaka, Bangladesh, 4–5 September 2026. Presentation and paper certificates received.

VOLUNTEERING AND LEADERSHIP

[2025/11/30]
Technical Volunteer and Proctor, Bangladesh National AI Olympiad (BDAIO) 2026

Supported participant coordination and event management.

[2025/11/30]
Volunteer (Guest Support), Digital Device & Innovation Expo (DDI Expo) 2026

BICC, Sher-e-Bangla Nagar, Dhaka.

[2023/11/30 – 2024/11/30]
Executive Member, DIU Computer Programming Club (ACM Wing)

Examiner and organiser for the Unlock the Algorithm and Take-Off Programming Contests.

[2019/11/30 – 2020/11/30]

Committee Member, IT Club, B.A.F. Shaheen College Kurmitola

[2018/11/30]
Committee Member, Atomic Science Club

Community volunteering

Mukafa Charity (Uttara), Uttara Youth Society and Student Welfare Foundation Bangladesh: judging and management roles.

PERSONAL SKILLS

Communication and leadership

Team leadership (Team Leader of the winning team at AI Hackathon 2026), contest organising (DIU Computer Programming Club) and research communication (conference and poster presentations).

Competitive programming and data science

Data structures and algorithms. Active Kaggle practitioner in medical AI, tabular ML and NLP competitions.

REFERENCES

Dr. Md. Ali Hossain

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