

RASHEDUL ALBAB

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○  Rashedul albab

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○  Researchgate

○  Portfolio

RESEARCH INTEREST

AI in Healthcare ○ AI for Renewable Energy & Smart Power systems ○ Computer Vision & Deep Learning ○ NLP & LLM
○ AI in Electromagnetic & RF Systems

EDUCATION

- **B.Sc. in Electrical and Electronic Engineering (EEE)** January 2020 – June 2025
Shahjalal University of science and Technology, Sylhet, Bangladesh
○ CGPA: 3.45/4.00
Relevant Courseworks: Continuous Signal and Linear System ○ Digital Signal Processing ○ Artificial Intelligence and Machine Learning ○ Fundamentals of Biomedical Engineering ○ Renewable Energy Systems ○ Random Signal and Processes
○ Power Electronics ○ Power System Protection ○ Power Plant Engineering ○ VLSI ○ Control System ○ Communication System ○ Probability and Statistics ○ Linear Algebra ○ Deep Learning ○ Microprocessor & Embedded System

RESEARCH EXPERIENCE

- **Undergraduate Thesis (LesionNet: Lightweight CNN-Based Skin Lesion Classification)** 2025
Supervised by **Salman Fazle Rabby, Assistant Professor, Dept. of EEE, Sylhet Engineering College.**
○ **Proposed LesionNet, a lightweight CNN** for multiclass dermoscopic classification on **28×28×3 inputs**, avoiding heavy pre-trained models or full fine-tuning.
○ Handled class imbalance in HAM10000 (10,015 images) via **augmentation** and **oversampling** for **seven-class lesion classification** with minimal overhead. Available at: sec.portal.gov.bd
- **Research Assistant at Dept. of EEE, Sylhet Engineering College.** December 2024 – July 2025
○ Conducted research on explainable ML for multi-class power quality disturbance classification using classical models and 1D-CNN, with interpretability via SHAP; **accepted at ICCIT(IEEE), 2025.**
- **Research Trainee (ML, DL & NLP) at Mahdy Research Academy** January 2024 – December 2024
Supervised by **Dr. Mahdy Rahman Chowdhury, Professor, Dept. of ECE, North South University.**
○ Phase 1 (Advanced ML & DL Foundations) - Mastered statistical models to advanced architectures like Transformer and XAI, with hands-on implementation using Python, Tensorflow, and scikit-learn. **LoR: Click to view.**
○ Phase 2 (Research Application & Scientific Communication) - Developed a novel AI research project, producing a publication-ready manuscript and technical poster. **LoR: Click to view.**

PUBLICATIONS

- M.F.Ahmed, **Rashedul Albab**, Md.Al Amin Chy, M.A.H Sakib Opu, Tahsin Hadi, Tanvir Ahamed., “*Explainable Machine Learning for Multi-Class Power Quality Disturbance Classification Using SHAP and Feature Importance Analysis*”, **ICCIT(IEEE)**, 2025 (accepted) DOI:10.13140/RG.2.2.17883.43048
- M.F. Ahmed, **Rashedul Albab**, M.A. Ahmad, et al., “*Quantifying the relationship between socioeconomic status and parent-child attachment on adolescents through Machine Learning*” **ICCIT(IEEE)**, 2025(accepted) DOI:10.13140/RG.2.2.14090.12487
- M.F. Ahmed, R.A. Opi, **Rashedul Albab**, S.N. Mehdi, et al., “*Enhancing Wind Farm Operational Efficiency Through power output classification using MLP and Ensemble Models*” **ICCIT(IEEE)**, 2025(accepted) DOI:10.13140/RG.2.2.36279.38567
- Md.Al Amin Chy, S.A Chowdhury, **Rashedul Albab**, T.H. Tasneem, et al., “*Time Dependent Control of Voltage and Current via a Tunable Metasurface*,” **ICCIT(IEEE)**, 2025 (accepted) DOI: 10.13140/RG.2.2.18410.58568
- **Rashedul Albab**, Syed Nadim Mehdi, K.A. Jaygirdar, T.I.P. Miskat. “*Automated Multi-Class Classification of Mpox and Vesicular Skin Lesions Using Vision Transformers.*” (ongoing)

TECHNICAL SKILLS

- **Programming:** Python, MATLAB, C/C++, LaTeX
- **Tools & Frameworks:** PyTorch, TensorFlow & Keras DL framework, Scikit-Learn, Huggingface Transformers
- **Softwares & DevOps:** Simulink, Proteus, AutoCAD, FastAPI, Docker, Git, LangGraph,
- **AI/ML:** Core Machine Learning (Supervised and Unsupervised Learning), Deep Learning (Neural Networks, Transformer), Fundamentals of NLP, LLM, Multimodal LLM, Rag, Generative Models (GAN), Reinforcement Learning

- **Computer Vision:** Image Segmentation, Object Detection, Digital Image Processing (Feature Extraction, Enhancement), Optical Character Recognition (OCR), Vision Language Model (VLM)
- **Hardware Skills:** Arduino, FPGA

PROFESSIONAL TRAINING & TEACHING EXPERIENCE

- **Training Institute for Chemical Industries (TICI)** *January 2024*
Industrial Training – Central Training Institute of BCIC, Polash, Narsingdi, Bangladesh
 3-week intensive industrial technology course at TICI, covering advanced Electrical Engineering & Instrumentation, including motor control, substation distribution, DCS and PLC/SCADA systems. [Verified Certificate](#)
- **Visit – Kanaighat Electrical Substation** *February 2025*
 As part of academic training to gain hands-on exposure to power system operations, including control panels, fault detection, safety protocols, and equipment connections.
- **Physics, Mathematics and ICT Instructor** *2020 - Present*
Odommo Academy, Bright Teaching Home
 I have been teaching Physics and Higher Mathematics at the HSC level for 5 years. Designed exam questions to develop problem-solving skills and prepare students for competitive exams.

NOTABLE PROJECTS

- **SV-MedVSION Pro: Multi-Agent AI Radiology System** *2026*
 Developed SV-MedVision Pro, a multi-agent autonomous medical AI platform for X-ray, MRI, and CT analysis with real-time clinical grounding and Groq powered LLM inference. [GitHub](#)
- **AgroGPT: Intelligent Multilingual Agri-Advisory System** *2026*
 Built AgroGPT, a Bengali-inclusive multilingual voice-first AI advisory system using FastAPI, React, and Sarvam AI, with Dockerized deployment and CI/CD. [GitHub](#)
- **BengalVision ALPR – AI-powered Bangla number plate detection and recognition System.** *2025*
 Engineered a real-time AI-based Bangladeshi ALPR system using YOLOv11 with FastAPI dashboarding, achieving ~92% accuracy and optimized inference via pyTorch, ONNX, and OpenVINO in complex urban Environments. [GitHub](#)
- **MARA-Framework: Multi-Agent Research Assistant** *2025*
 Orchestrated MARA: a multi-agent Research Assistant using CrewAI and FastAPI, automating literature review, data analysis, and IMRAD-report generation with Docker and CI/CD. [GitHub](#)
- **Medibot AI: RAG-Powered Clinical Assistant** *2025*
 Built Medibot AI, a RAG-powered clinical assistant using Groq Llama 3.3, FastAPI, and Pinecone, delivering reliable, document-grounded medical answers with minimized hallucinations. [GitHub](#)
- **IoT-Based Environmental Data logger(ESP32)** *2024*
 Designed and implemented a real-time environmental monitoring system using ESP32 and multiple sensors, enabling cloud-based data logging and remote access through Google Sheets. [View report](#)
- **Feasibility Study for a Small-Scale Solar Photovoltaic (PV) Project in North Baghbari, Sylhet, Bangladesh** *2024*
 Performed a techno-economic feasibility analysis of solar PV and wind energy systems using NREL SAM, integrating weather, location and energy-yield data to assess local renewable energy viability. [View report](#)

ACHIEVEMENTS & CO-CURRICULAR ACTIVITIES

- **Organizing Secretary:** EEE Association (*March 2024-June 2025*)
 Served as Organizing Secretary, leading logistics and coordinating 15+ volunteers to successfully execute 5+ technical events for 200+ participants.
- **Champion,** Engineer Football League (*December 2023*) & *Estrada: The glory* Indoor Football Tournament (*March 2024*)
 Played as Right Winger; contributed to the team's success in securing the championship title.
- **Social works:** Active Member of **SEC Blood Bank** – Regularly donated blood and manage emergency blood supplies as part of this volunteering organization.
- **Clubs:** Regular member of **SEC Debating Society** – Actively listened & participated in debates held by them; **SECPA** – As member of photographic association frequently uploaded my captured images for public demonstration.

HOBBIES

Photography & Videography

○ Reading Books

○ Competitive Football

REFERENCES

Md. Salah Uddin

Head & Assistant Professor, Dept. of EEE
Sylhet Engineering College, Sylhet, Bangladesh
Email: sumeceee@mec.ac.bd

Mahedi Kamal Ahmed

Lecturer, Dept. of EEE
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