Rashik Iram Chowdhury

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EDUCATION

North South University — Dhaka, Bangladesh
Bachelor of Science in Computer Science and Engineering ***GPA: 3.98/4.00, Summa Cum Laude*** — *Dec 2024*

Oxford International School — Dhaka, Bangladesh
GCE A-Level (3A*); GCE O-Level (4A*, 4A) — *Jun 2018 - Jun 2020*

WORK EXPERIENCE

Adjunct Faculty (Lecturer) — *Mar 2025 – Present*
Department of Computer Science and Engineering, Southeast University — Dhaka, Bangladesh

- Delivered undergraduate courses and labs, prepared lesson plans, graded tests, and tracked student performance in core computer science subjects
- Contributed to Outcome-Based Education (OBE) initiatives aligned with BAETE accreditation (IEB, Washington Accord signatory)
- Assisted in curriculum development and departmental lab improvement efforts to meet accreditation standards

Research Assistant — *Feb 2024 – Aug 2024*
Department of Electrical and Computer Engineering, North South University — Dhaka, Bangladesh

- Co-authored a successful research proposal for the NSU CTRG 2023–2024 grant, securing **$5,000** in funding for AI-based navigation assistance for the visually impaired
- Published **two Q1 journal papers**, including one as **first author**, based on this research
- Designed two real-time navigation algorithms:
  - A segmentation-based obstacle distance estimation algorithm for walkable path detection
  - A heuristic BFS path planner utilizing object detection outputs for obstacle-aware routing
- Integrated lightweight DNN models with Android applications using ONNX and LiteRT for on-device inference
- Collaborated with a team of three to develop depth estimation models, surpassing state-of-the-art benchmarks

Teaching Assistant — *Aug 2024 – Jan 2025*
Department of Electrical and Computer Engineering, North South University — Dhaka, Bangladesh

- Evaluated assignments and invigilated exams for **160+** students in Discrete Mathematics and Database Systems courses
- Guided students on topics such as propositional logic and database systems, including hands-on lessons on MySQL and transforming relational designs into physical databases
- Prepared lecture materials and managed administrative tasks, including documentation and grade distribution using MS Excel and Google Sheets

SELECTED PAPERS

C=Conference, J=Journal, S=In Submission, T=Thesis

[J.1] Rashik Iram Chowdhury, Jareen Anjom, Md. Ishan Arefin Hossain. (2024). **A novel edge intelligence-based solution for safer footpath navigation of visually impaired using computer vision**. *Journal of King Saud University - Computer and Information Sciences* (Impact Factor: 6.1).

[J.2] Md. Ishan Arefin Hossain, Jareen Anjom, Rashik Iram Chowdhury. (2025). **Towards walkable footpath detection for the visually impaired on Bangladeshi roads with smartphones using deep edge intelligence**. *Array* (Impact Factor: 4.5).

[TS.1] Rashik Iram Chowdhury, Shakirul Islam Leeon, Tarbia Hasan, Suhra Noor, Sifat Momen. (2025). **Explainable and lightweight deep learning for oral disease diagnosis: An ensemble and knowledge distillation approach**. *Under review at Biomedical Signal Processing and Control*.

[S.2] Rashik Iram Chowdhury, Md. Mutasim Farhan, Md. Adham Wahid, Zarin Akter, Mohammad Sadman Wasif, Riasat Khan. (2025). **OpenSetWaste: Open-Set Recognition in Waste Management Leveraging Graph Convolutional Networks**. *Submitted to Ain Shams Engineering Journal*.

[S.3] Rashik Iram Chowdhury, Nujhat Kabir Nuha, Muhtasimul Hasan, Mohammad Junayed Hasan, M. R. C. Mahdy. (2025). **TabFusion: Lightweight early fusion of tabular and image data with graph-convolutional neural networks for skin cancer detection**. *Submitted to Knowledge-Based Systems*.

[S.4] Tasnuba Islam, Rashik Iram Chowdhury, Mohona Haque, Sifat Momen. (2025). **LightSeg: An Interpretable and Lightweight Framework for Multiclass Fetal Ultrasound Segmentation**. *Submitted to IEEE Access*.

[C] Irfan Ali Sadab, Md Arafat Islam, Rashik Iram Chowdhury, and Md. Ishan Arefin Hossain (2024). **Monocular Depth Estimation using Deep Edge Intelligence**. *STI 2024: 6th IEEE International Conference on Sustainable Technologies for Industry 5.0.*

PROJECTS

Optimizing Neural Network Training with Genetic Algorithms for CIFAR-10
PyTorch, timm, NumPy, Matplotlib [GitHub]
- Designed a novel Genetic Algorithm (GA) to evolve weight update strategies for CNNs and Transformers, outperforming baseline optimizers by **2–5%**
- Conducted extensive hyperparameter tuning and benchmarking against SGD, Adam, and RMSprop

Comparative Analysis of Fine-Tuned BERT Variants to Identify Hate Speech
Hugging Face Transformers, PyTorch, LoRA, NumPy [GitHub]
- Fine-tuned three encoder-based LLMs (BERT, RoBERTa, and AlBERTa) for hate speech classification
- Implemented Low-Rank Adaptation (LoRA) to reduce weight parameters, achieving lightweight models with **< 110ms** response time and over **90%** accuracy

AuthentiTaka: A Lightweight Counterfeit Detection Application
Google Colab, TensorFlow, Android Studio, Grad-CAM [GitHub]
- Designed a lightweight DNN for currency classification and counterfeit detection with **99.92%** accuracy and **99.94%** F1 Score, surpassing baseline and state-of-the-art frameworks by **> 2%**
- Applied quantization techniques, reducing the model size by **90%** for deployment on smartphones
- Enhanced interpretability of model predictions using Grad-CAM to generate intuitive heat maps

SKILLS

Programming Languages: Python, C, C++, Java, PHP, HTML, CSS (Bootstrap)
Data Science & Machine Learning: TensorFlow, PyTorch, Keras, HuggingFace, Scikit-learn
Developer Tools: Git, Docker, MySQL, OpenCV, Pandas, NumPy, Matplotlib, Seaborn
Documentation & Presentation Tools: LaTeX, Google Workspace, Microsoft Office Suite, Power BI
Languages: Bengali (Native/Fluent), English (Fluent, IELTS 7.5)

HONORS AND AWARDS

Innovation Challenge Season 15: Champion *Dec 2024*
North South University [Web]
- Secured first place for the capstone project titled **Explainable and Lightweight Deep Learning for Oral Disease Diagnosis: An Ensemble and Knowledge Distillation Approach**
- Recognized for developing a generalized solution for accurate oral disease diagnosis using smartphones
- Achieved recognition as one of the top three finalists among graduating ECE students

Merit Scholarship *Feb 2021 - Dec 2024*
North South University [Web]
- Awarded a 50% admission scholarship based on A-level results
- Enhanced the scholarship to 100% in subsequent semesters by maintaining consistent academic performance

Daily Star Award 2019 *Apr 2019*
The Daily Star [Web]
- Recognized for achieving 4A* and 4A grades in O-level examinations, surpassing the award criteria of 6A grades
- Selected as one of 1,813 students nationwide to receive this prestigious recognition

REFERENCES

1. **Dr. Sifat Momen**
   Professor, Department of Electrical and Computer Engineering, North South University
   Email: sifat.momen@northsouth.edu

2. **Dr. Riasat Khan**
   Associate Professor, Department of Electrical and Computer Engineering, North South University
   Email: riasat.khan@northsouth.edu

3. **Md. Ishan Arefin Hossain**
   Lecturer, Department of Electrical and Computer Engineering, North South University
   Email: ishan.hossain@northsouth.edu