Kazi Md Al Wakil

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Research Interests

Medical Image Analysis & Computer Vision · Machine learning & Deep Learning

Education

South East Technological University — Waterford, Ireland
MSc in Computer Science - Enterprise Software Systems (Level 9) — *Sept 2025 – Sept 2026*

Thesis: *DeepUS-ReconSeg++: Joint Deformable Registration, Transformer-Based Cross-Angle Fusion, and Dual-Task Learning for Multi-Angle Ultrasound Reconstruction and Segmentation*

BRAC University — Dhaka, Bangladesh
Bachelor of Science in Computer Science — *May 2019 – Sept 2023*

CGPA: **3.98/4.00** | Top 3 in class | Graduated with Highest Distinction | VC's List - 7 Semesters
Thesis: *Recommendation system for mood stabilization using content recommendation* **[Link]**

Publications

[1] **Kazi Md. Al-Wakil** et al. **"A Hybrid Video Recommendation System Prioritizing Features Using AHP."** In: 27th International Conference on Computer and Information Technology, ***ICCIT (2024)***. **[Link]** **- Best Technical Presentation Award**

[2] First Author et al., **Kazi Md. Al-Wakil**. **"CompAttNet: A Lightweight Dual-Head CNN with Complementary Attention for Multi-Task Oral Disease Diagnosis."** Manuscript under review at ***Informatics in Medicine Unlocked***.

Research Experience

Multi-Angle Ultrasound Reconstruction and Segmentation [In Preparation] — *Sept 2025 – Present*
South East Technological University · Supervisor: Lizy Abraham

- Developing **DeepUS-ReconSeg++**, a unified deep learning framework integrating **deformable image registration**, **transformer-based cross-angle feature fusion**, and **dual-task learning** for simultaneous ultrasound reconstruction and anatomical segmentation.
- Designed a registration-aware pipeline using dense displacement fields to align multi-angle ultrasound inputs, followed by transformer-based attention for robust feature aggregation across complementary acquisition views.
- Implemented a dual-decoder U-Net for joint high-quality image reconstruction and segmentation, evaluated using **PSNR, SSIM, Dice Score, IoU, and Target Registration Error (TRE)**.

Document AI - Layout-Aware OCR Exploration — *2024*
Independent Study

- Surveyed **DocTR** and **LayoutLMv3** for structured document understanding; applied findings to an address parsing project.

Undergraduate Thesis - EEG Signal Processing for Emotion Recognition — *Oct 2022 – Sept 2023*
BRAC University · Supervisor: Dr. Md. Golam Rabiul Alam

- Processed the **SEED dataset** (EEG + eye-movement signals) using **Differential Entropy, Wavelet Transform, and Shannon Entropy** feature extraction pipelines to encode temporal brain activity patterns.
- Trained **CNN** and **LSTM** classifiers for emotion recognition; CNN achieved **93.01% accuracy** and was selected for the downstream mood-stabilisation pipeline.

Professional Experience

Lecturer October 2024 – Present
Northern University Bangladesh *Dhaka, Bangladesh*

- **Courses Taught:** Computer Networks, Mathematical Analysis, Software Development I & II
- Delivered lectures, conducted lab sessions, and supervised undergraduate final-year capstone projects throughout the full project lifecycle.
- Prepared course outlines, lecture materials, assignments, quizzes, and examination questions aligned with curriculum requirements.
- Participated in examination committees, including question setting, script evaluation, and viva assessment.
- Maintained active research involvement alongside teaching responsibilities, contributing to academic publications including ICCIT 2024.

Software Engineer October 2023 – October 2024
mPower Social Enterprises Ltd. *Dhaka, Bangladesh*

- Developed full-stack applications in **TypeScript, Node.js, and React.js**, translating prototypes into production-ready features for social enterprise platforms.
- Optimised components for maximum performance across devices and browsers within an agile team.

Undergraduate Teaching Assistant June 2022 – September 2023
BRAC University *Dhaka, Bangladesh*

- Supported CSE110 (Programming Language I) and CSE111 (Programming Language II); provided lab assistance and one-on-one tutoring for per semester.

Technical Skills

Libraries & Frameworks: PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas, Node.js, React.js
Programming: Python, JavaScript/TypeScript, Kotlin, HTML/CSS, LaTeX
Tools: Git, Jupyter, Google Colab, VS Code, Overleaf
Languages: Bengali (Native), English - IELTS 7.5 (Fluent)

Honours & Awards

Best Technical Presentation of the Session December 2024
27th International Conference on Computer and Information Technology (ICCIT) *Cox's Bazar, Bangladesh*

Vice Chancellor's List Award - 7 Semesters 2020 – 2023
BRAC University *Dhaka, Bangladesh*

- Awarded each semester for achieving GPA 3.90–4.00.

Merit Scholarship - 75% Tuition Waiver January 2021 – September 2023
BRAC University *Dhaka, Bangladesh*

Graduated with Highest Distinction September 2023
BRAC University *Dhaka, Bangladesh*

- Awarded to candidates with CGPA ≥ 3.80.

References

Dr. Md. Golam Rabiul Alam
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Dr. Bernard Butler
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