Riyad Bin Rafiq

PhD Candidate
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*** Visa Sponsorship not required**

Education

Ph.D. in Computer Science and Engineering (Expected May 2026) - University of North Texas; CGPA: 4.0/4.0
Focus: Machine Learning and Biomedical Applications

M.S. in Artificial Intelligence (May 2024) - University of North Texas; CGPA: 3.9/4.0

B.Sc. in Computer Science and Engineering (Dec 2018) - Chittagong University of Engineering and Technology

Technical Skills

Programming: Python, C++, Matlab

Deep Learning: Neural Networks, CNN, LSTM, Transformers, Few-shot continual learning, LLMs, etc.

Tools and ML Frameworks: TensorFlow, PyTorch, Scikit-learn, Pandas, NumPy, SciPy, GitHub, PyCharm, Jupyter, Colab

Experience

Graduate Research Assistant
Biomedical AI Lab, University of North Texas, **Jan 2021 - Present**

- ***Wearable Gesture Recognition System for Motor-Impaired Individuals:***
  - Applied large language model (LLM) reasoning to enhance wearable gesture recognition, improving adaptability and performance under limited training data.
  - Designed and implemented a few-shot continual learning framework for wearable hand gesture recognition, achieving up to 69.3% accuracy with only five samples.
  - Developed a mobile app prototype that translates hand gestures into audible speech.

Publications:

- **Rafiq RB,** Shi W, Albert MV (2025). "KARL: Knowledge-Attentive Representation Learning for Wearable Hand Gesture Recognition in Motor-Impaired Individuals". ***CVPR 2026***. (Submitted)
- **Rafiq RB,** Shi W, Albert MV (2024). "Wearable Sensor-Based Few-Shot Continual Learning on Hand Gestures For Motor-Impaired Individuals via Latent Embedding Exploitation". *33rd International Joint Conference on Artificial Intelligence (**IJCAI**)*.
- **Rafiq RB,** Karim SA, Albert MV (2023). "An LSTM-based Gesture to Speech Recognition System". *IEEE 11th International Conference on Healthcare Informatics (**ICHI**)*.

Tech Stack: Flutter, Python, TensorFlow, Scikit-learn, Pandas, NumPy, LSTM, Transformer.
GitHub: https://github.com/riyadRafiq/wearable-latent-embedding-exploitation

Teaching Assistant
University of North Texas, **Aug 2021 - Present**

- Courses: Computer Science I, Machine Learning, Deep Learning, AI for Wearables and Healthcare, Algorithms
  - Instructed a lab class of freshman students to solve programming problems in C++.
  - Guided students throughout the project, from brainstorming ideas to final implementation.
  - Prepared assignments and assisted the instructor in creating exam questions.

Tech Stack: C++, Python, minitorch, Scikit-learn

Software Engineer
JMJ CODE, Dhaka, Bangladesh, **Oct 2020 - Dec 2020**

- Gained an understanding of the business requirements for online vendors.
- Contributed to developing different application modules for the system.

Tech Stack: ASP .NET, HTML, CSS, JavaScript, MySQL.

Research Student (Independent Contributor), **Jan 2018 - Mar 2019**

- Developed a mobile application that automatically measures four foot dimensions (length, width, arch height, and instep girth) from images and 3D scans, achieving 95% measurement accuracy.
- Implemented a real-time automated translation system utilizing Convolutional Neural Networks to translate Bengali sign language into Bengali words.

Publications:

- **Rafiq RB**, Hoque KM, Kabir MA, Ahmed S, Laird C (2022). "OptiFit: Computer Vision-based Smartphone Application to Measure the Foot from Images and 3D Scans". ***Sensors***.
- **Rafiq RB**, Hakim SMA, Tabashum T (2021). "Real-time Vision-based Bangla Sign Language Detection Using Convolutional Neural Network". 10th International Conference on Advances in Computing and Communications (***ICACC***).

Tech Stack: Matlab, Python, OpenCV, Tensorflow, CNN
GitHub: https://github.com/riyadRafiq/bangla-sign-language-detection

Achievements and Services:

- Served as a Program Committee member in AAAI-AISI 2025 and 2026.
- Computer Research Association UR2PhD Graduate Student Mentor Training Course (Scholarship recipient 2024).
- Served as Graduate Advisor for UNT AI/CS Summer Research Program (2021, 2022, 2023).
- Research work featured in media: North Texas Television, UNT News.
- Selected to participate in the Neuromatch Academy 3-week Deep Learning Course (2021).
- Organized a technical session titled "Best Practices for Validating Machine Learning in Medicine" at the Tapia Conference 2020.
- Tapia Scholarship (2020).
- CUET Scholarship (2014).

References

Mark V. Albert, Ph.D. (Advisor)
Department Chair, Information Science
Associate Professor, Department of Computer Science and Engineering
University of North Texas
Email: mark.albert@unt.edu

Weishi Shi, Ph.D. (Co-advisor)
Assistant Professor, Department of Computer Science and Engineering
University of North Texas
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