

Riyad Bin Rafiq

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Education

- **University of North Texas** *Jan 2021 - April 2026*
Ph.D. Candidate in Computer Science and Engineering GPA: 4.0 / 4.0
Advisor: [Mark V. Albert](#), Ph.D
Co-advisor: [Weishi Shi](#), Ph.D
- **University of North Texas** *Jan 2021 - May 2024*
M.S. in Artificial Intelligence GPA: 3.9 / 4.0
- **Chittagong University of Engineering and Technology** *Mar 2014 - Dec 2018*
B.Sc. in Computer Science and Engineering

Experience

Graduate Research Assistant, [Biomedical AI Lab](#) *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.
- **Rehabilitation and ML Validation:**
 - A feasibility study of using computerized adaptive testing (CAT) for rehabilitation inpatients.
 - Provided an overview of common limitations and their solutions in machine learning model validation for medical applications.

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

- **CSCE 5218 Deep Learning:** Utilized minitorch to prepare assignments and assisted students in completing them.
- **CSE 5280 AI for Wearables and Healthcare:** Guided students throughout the project, from brainstorming ideas to final implementation. Additionally, I assisted instructors in creating exam questions and grading assignments.
- **CSCE 1030 Computer Science I:** Instructed a lab class where I helped freshman students solve programming problems utilizing C++. I also assisted students in completing their projects.
- **Others:** CSCE 5215 Machine Learning, CSCE 4110 Algorithms, NSF-ReU Summer Research.

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

- **Application development:** Contributed to developing different web application modules for online vendors.
Technologies: ASP .NET, HTML, CSS, JavaScript, MySQL.

Research Student *Jan 2018 - Mar 2019*

- **OptiFit:** 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.

- **Vision-based Bengali Sign Language Detection:** Implemented a real-time automated translation system utilizing Convolutional Neural Networks to translate Bengali sign language into Bengali words.

Technical Knowledge

- Programming: Python, C++, Matlab
- ML Frameworks: TensorFlow, Keras, PyTorch
- Deep Learning: Neural Networks, CNN, LSTM, Transformers, Few-shot continual learning, LLMs, etc.

Publications

- [1] **Rafiq RB**, Shi W, Albert MV (2025). "KARL: Knowledge-Attentive Representation Learning for Wearable Hand Gesture Recognition in Motor-Impaired Individuals". *40th AAAI* (Submitted).
- [2] **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)*.
- [3] **Rafiq RB**, Karim SA, Albert MV (2023). "An LSTM-based Gesture to Speech Recognition System". *IEEE 11th International Conference on Healthcare Informatics (ICHI)*.
- [4] **Rafiq RB**, Yount S, Jerousek S, Roth EJ, Cella D, Albert MV, Heinemann AW (2023). "Feasibility of PROMIS using Computerized Adaptive Testing during Inpatient Rehabilitation". *Journal of Patient-Reported Outcomes*.
- [5] **Rafiq RB**, Modave F, Guha S, Albert MV (2020). "Validation Methods to Promote Real-world Applicability of Machine Learning in Medicine". *3rd International Conference on Digital Medicine and Image Processing (DMIP)*.
- [6] **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*.
- [7] **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)*.

Open-Sourced Projects

- FSCL on Wearable Hand Gesture [[Github](#)]
- Bangla Sign Language Detection [[Github](#)]

Achievements and Services

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