# Riyad Bin Rafiq
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## Education

- **University of North Texas** *Jan 2021 - Sep 2025*
  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:** A fast and flexible gesture recognition system that uses wearable sensor data from motor-impaired people who cannot speak. The primary focus is enhancing the custom gesture learning strategy by implementing transfer learning, meta-learning, and continual learning techniques using a few training examples [1, 2, 3].

- **Rehabilitation and ML Validation:** The feasibility of using computerized adaptive testing (CAT) on tablet computers for rehabilitation inpatients was evaluated [4]. The ML validation work provided an overview of common limitations and their solutions in machine learning model validation for medical applications [5].

***Graduate Teaching Assistant, University of North Texas*** *August 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 graded assignments.

- **CSCE 1030 Computer Science I:** Spent three hours instructing a lab class where I helped freshman students solve programming problems utilizing C++. I also assisted students in completing their projects.

- **NSF-ReU Summer Research:** During a 10-week summer research program, I guided undergraduate and graduate students, facilitating their research activities and implementing ideas.

***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:*** A smartphone application, *OptiFit* provides the functionality to automatically measure the four essential dimensions (length, width, arch height, and instep girth) of a human foot from images and 3D scans [6].

- **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 [7].

## Technical Knowledge

- Programming: Python, C++, Matlab
- Machine Learning: PCA, SVM, Neural Networks, CNN, LSTM, Transformers, etc.
- ML Tools: TensorFlow, Keras, PyTorch
- Application Development (Android and Web)

## Publications

[1] **Rafiq RB,** Shi W, Albert MV (2025). "KARL: Knowledge-Attentive Representation Learning for Wearable Hand Gesture Recognition in Motor-Impaired Individuals". *34th **IJCAI*** (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]

## Relevant Certification and Course

- Deep Learning, Spring'22, UNT.
- Machine Learning, Fall'21, UNT.
- AI for Wearables and Healthcare, Fall'21, UNT.
- Deep Learning by Neuromatch Academy, Summer'21.
- Software Development for AI, Spring'21, UNT.
- Deep Learning, Machine Learning, IBM Data Science; Coursera 2019-20.