

RAHMINA RUBAIAT

+1 786 328 6828 | rruba005@fiu.edu | [LinkedIn](#)

Ph.D. Candidate, Computer Science — Florida International University

Research Interests

Artificial Intelligence • Machine Learning • Speech Processing • Digital Biomarkers • Concussion Detection • Neurodegenerative Diseases • Mobile Health • Explainable AI • Multimodal Learning

Education

Ph.D. in Computer Science, Florida International University (Expected Apr 2026)

Dissertation: *Speech-Based Concussion Detection and Recovery Tracking Using Deep Learning*

Master of Science in Computer Science and Engineering, Jahangirnagar University, 2014 (Rank: 3rd)

Bachelor of Science in Computer Science and Engineering, Jahangirnagar University, 2013 (Rank: 2nd)

Academic Positions

Assistant Professor, Dept. of Computer Science & Engineering, MBSTU, Bangladesh (2019–Present)

- Taught undergraduate and graduate courses; supervised 30+ undergraduate and 9 master's students.
- Developed curriculum, exam systems, workshops, and assessment structures.

Lecturer, Dept. of Computer Science & Engineering, BRAC University, Bangladesh (2015–2019)

- Taught major CS courses including DBMS, Algorithms, AI, Data Structures, Networks, Logic Design.
- Supervised 20+ research and class projects.

Graduate Teaching Assistant, Florida International University (Jan 2022–Aug 2022)

- Mentored 14 undergraduate projects; supported ML and systems-related coursework.
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Research Experience

Graduate Research Assistant, KFSCIS, Florida International University (2022–Present)

- Researching speech-based biomarkers for concussion and neurodegenerative diseases.
 - Developed deep learning models in TensorFlow/PyTorch, improving classification accuracy by 15%.
 - Designed pipelines for speech preprocessing, feature extraction, augmentation, and model explainability (SHAP).
 - Collaborated with clinicians, neuroscientists, and biomedical engineers.
 - Developed mobile health tools and task-based speech assessments.
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Publications

(Selected; complete list available upon request)

- Rubaiat R, Poellabauer C. *Detection of Neurological Impairments from Speech Using Mel-Spectrograms and CNNs*. IEEE Open Journal of Signal Processing, 2025. (Submitted).
 - De Silva U., Madanian S., Templeton J.M., Schneider S.L., Poellabauer C., **Rubaiat R.**, *A Proof-of-Concept Development on Speech Analysis for Concussion Detection*. Studies in Health Technology and Informatics, 2025.
 - **Rubaiat R.**, Templeton J.M., Schneider S., Madanian S., De Silva U., Poellabauer C. *Exploring Speech Biosignatures for Traumatic Brain Injury and Neurodegeneration*. JMIR Neurotechnology, 2025.
 - De Silva U., Madanian S., Olsen S., Templeton J.M., Poellabauer C., Schneider S., Narayanan A., **Rubaiat R.**, *Clinical Decision Support Using Speech Signal Analysis*. J Med Internet Res, 2025.
 - Islam R., Rahman M.W., **Rubaiat R.**, Hasan M., Reza M.M., Rahman M.M. *LoRa and Server-Based Home Automation Using IoT*. JKSCIS, 2021.
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Presentations

- *Concussion Detection Through Speech...* ASEMFL Annual Meeting (2025).
 - *Concussion Detection Using Audio Signals...* GSAW Scholarly Forum, FIU (2025).
 - *Speech-Based Digital Biomarkers...* CRA-WP Grad Cohort for Women (2024).
 - *Speech Biosignatures for Brain Injury...* AUT New Zealand Workshop (2024).
 - Annual Tech Summit, KFSCIS, FIU (2023).
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Honors & Awards

- **Dissertation Fellowship (UGS), Spring–Summer 2026**
- **Google CAHSI Dissertation Award, 2025**
- **DEA Fellowship, Summer–Fall 2025**
- **Invited Graduate Student Panelist**, FIU Graduate Orientation Panel (Fall 2025).

Selected to represent graduate student research, experience, and guidance to incoming students.

- **NightLab Speaker**, Phillip and Patricia Frost Museum of Science (2025).

Delivered a public-facing 3MT-style research talk representing the FIU lab at a community science outreach event.

- 3rd Place, **Florida State 3-Minute Thesis (3MT)**, 2025
- 2nd Place, **FIU 3MT Competition**, 2025
- Publication Grants, UGS, 2025
- International Students Photo Contest Winner, FIU, 2022
- University Merit Scholarship (2010–2013)
- National Govt. Scholarships (SSC & HSC)

Teaching Interests

Machine Learning • Data Science • Artificial Intelligence • Data Structures • Health Informatics • Deep Learning • Mobile App Development

Technical Skills

Programming: Python, C

ML Frameworks: TensorFlow, PyTorch, Scikit-learn

Data Visualization: Matplotlib, Seaborn, Tableau

Databases/Cloud: SQL, Firebase, AWS, Azure

Development: Flutter, HTML5, CSS3, Android Development

Tools: MATLAB, Git, Jupyter, MS Office, REDCap

Online Certificate Courses

- **Data Visualization**, Coursera
 - **Text Mining and Analytics**, Coursera
 - **Text Retrieval and Search Engines**, Coursera
 - **Python for Everybody**, Coursera
 - **Data Visualization with Python for Beginners**, Udemy
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Projects

- **Text Retrieval & Recommender System** (UGC-Funded, 2020–2021)
 - Built collaborative filtering models for movie recommendation.
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Professional Service & Leadership

- Cultural Officer, Bangladesh Student Organization, FIU (2024)
- Member: SWE, Women in CS (2023–Present)
- Member: WiCS, Women in Computer Science (2023–Present)
- Organizer, multiple community and academic events (2022–Present)