

Amirmohammad Mohammadi

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RESEARCH INTERESTS

Fundamental and applied artificial intelligence; Computer vision; Data Science; Digital health and wearables

RESEARCH EXPERIENCE

Texas A&M University, College Station, Texas

September 2022 – Present

Research Assistant

- **Reduced** trainable parameters by **40%** compared to conventional adapters for parameter-efficient fine-tuning of Transformers for audio input data using a histogram algorithm, while maintaining accuracy.
- **Raised** classification accuracy **7 pp** using a time-frequency feature engineering for audio input data.
- **Cut** required ground truth by a factor of **15** in Bio-Z signals with physics-informed neural networks.
- **Published** 3 papers as first author and 2 papers as second author. (AI/ML; Python; PyTorch; NumPy)

Sharif University of Technology, Tehran, Iran

July 2019 – February 2021

Student Researcher

- **Designed** a low-power ECG + EDA wearable (BLE SoC) that has a higher battery life (**3.5×**) compared to alternatives and delivers **94%** mental stress detection accuracy across 18 participants.
- **Published** a paper as first author. (electrical circuit design and analysis; embedded systems; MATLAB; C)

EDUCATION

Texas A&M University, College Station, Texas

December 2026 (anticipated)

Doctor of Philosophy in Computer Engineering

Sharif University of Technology, Tehran, Iran

February 2021

Master of Science in Electrical Engineering

(received full-funded tuition through National University Entrance Exam for M.Sc. studies)

University of Tabriz, Tabriz, Iran

September 2018

Bachelor of Science in Electrical Engineering,

(received full-funded tuition through National University Entrance Exam for B.Sc. studies)

PUBLICATIONS

- **Mohammadi, A.**, Carreiro, D., Van Dine, A., & Peeples, J. (2025). Histogram-based Parameter-efficient Tuning for Passive Sonar Classification. *PREPRINT*. [link]
- Ritu, J., **Mohammadi, A.**, Carreiro, D., Van Dine, A., & Peeples, J. (2025). Structural and Statistical Audio Texture Knowledge Distillation (SSATKD) for Passive Sonar Classification. *PREPRINT*. [link]
- **Mohammadi, A.**, Masabarakiza, I., Barnes, E., Carreiro, D., Van Dine, A., & Peeples, J. (2025). Investigation of Time-Frequency Feature Combinations with Histogram Layer Time Delay Neural Networks. *IEEE OCEANS*. [link]
- **Mohammadi, A.**, Kelhe, T., Carreiro, D., Van Dine, A., & Peeples, J. (2025). Cross-Domain Knowledge Transfer for Underwater Acoustic Classification Using Pre-trained Models. *IEEE OCEANS*. [link]
- Sel, K., **Mohammadi, A.**, Pettigrew, R. I., & Jafari, R. (2023). Physics-informed neural networks for modeling physiological time series for cuffless blood pressure estimation. *Nature NPJ Digital Medicine*, 6(1), 110. [link]
- **Mohammadi, A.**, Fakharzadeh, M., & Baraeinejad, B. (2022). An integrated human stress detection sensor using supervised algorithms. *IEEE Sensors Journal*, 22(8), 8216-8223. [link]

POSTERS

- **Mohammadi, A.**, Sel, K., Pettigrew, R. I., & Jafari, R. (2023). Physics-Informed Neural Networks for Modeling Cardiovascular Dynamics. Poster presented at the *2023 AI in Health Conference*, Houston, TX.

LEADERSHIP & SERVICE

Peer-Review and Conference Support:

- Served as a Helper/Area Chair for Applied Signal Processing Systems at IEEE ICASSP 2024, helping manage the peer-review process. Served as Reviewer for IEEE ICASSP 2023.

Research Mentorship:

- Guided an undergraduate student during development of a pipeline for an AI project.

Teaching Support:

- Graded coursework in Principles of Electronics.