# Amirmohammad Mohammadi

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## RESEARCH INTERESTS

Fundamental and applied artificial intelligence; Deep learning; Computer vision; Multimodal AI; Data science

## 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 foundation models by proposing a distribution-aware algorithm.
- **Raised** classification accuracy of a deep learning model **7 pp** by constructing a time-frequency feature engineering for audio input data.
- **Cut** required ground truth by a factor of **15** in physiological signals by using physics-informed neural networks and integrating domain knowledge.
- **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 / May 2027 (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.