Amirmohammad Mohammadi

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PROFILE SUMMARY

Doctoral Researcher in Computer Engineering with proven leadership in developing AI-driven solutions for biomedical applications, physiological time-series analysis, and audio and image perception. Experienced in transformer-based efficient transfer learning and physics-informed modeling.

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

University of Tabriz, Tabriz, Iran   September 2018
Bachelor of Science in Electrical Engineering

EXPERIENCE

Texas A&M University, College Station, Texas   January 2024 – Present
Graduate Research Assistantship, Advisor: Prof. Joshua Peeples
- Developed a feature engineering method for time-delay neural networks, achieving higher 7% accuracy on time-frequency/audio data.
- Introduced the histogram-based parameter-efficient transfer learning method for resource intensive audio/vision transformer models, reducing tunable parameters and improving training convergence.
- Contributed to cross-domain knowledge transfer learning applications of acoustic data using ImageNet and AudioSet pre-trained CV models and gradient-based explainable AI.

Texas A&M University, College Station, Texas   September 2022 – December 2023
Graduate Research Assistantship, Advisor: Prof. Roozbeh Jafari
- Analyzed physiological time-series signals with AI models and physics-informed neural networks for cardiovascular dynamics, decreasing required ground truth by an average factor of 15.

Sharif University of Technology, Tehran, Iran   July 2019 – February 2021
Graduate Student, Advisor: Prof. Mohammad Fakharzadeh
- Developed low-power sensor for human mental stress diagnosis achieving high accuracy w/ ML models.
- Designed the schematics and PCB, programmed the microcontroller, and conducted the data collection.

COMPUTATIONAL SKILLS

Python, PyTorch (Lightning), TensorFlow, and MATLAB were used for AI/ML/CV graduate assistantship projects. C, HSPICE, Cadence, ADS, and Altium Designer were used for a wide range of undergraduate course projects.

JOURNAL PAPERS

1. 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]

2. **Mohammadi, A.**, Fakharzadeh, M., & Baraeinejad, B. (2022). An integrated human stress detection sensor using supervised algorithms. *IEEE Sensors Journal*, 22(8), 8216-8223. [link]

POSTER PRESENTATIONS

1. **Mohammadi, A.**, Masabarakiza, I., Barnes, E., Carreiro, D., Van Dine, A., & Peeples, J. (2024, April). Investigation of Time-Frequency Feature Combinations with Histogram Layer Time Delay Neural Networks. Poster session presented at the *Electrical & Computer Engineering Graduate Spring Poster Event*, College Station, TX.
2. **Mohammadi, A.**, Sel, K., Pettigrew, R. I., & Jafari, R. (2023, October). Physics-Informed Neural Networks for Modeling Cardiovascular Dynamics. Poster session presented at the *2023 AI in Health Conference*, Houston, TX.

PREPRINTS

1. **Mohammadi, A**., Masabarakiza, I., Barnes, E., Carreiro, D., Van Dine, A., & Peeples, J. Investigation of Time-Frequency Feature Combinations with Histogram Layer Time Delay Neural Networks. [link]
2. **Mohammadi, A**., Kelhe, T., Carreiro, D., Van Dine, A., & Peeples, J. Transfer Learning for Passive Sonar Classification using Pre-trained Audio and ImageNet Models. [link]
3. Ritu, J., **Mohammadi, A**., Carreiro, D., Van Dine, A., & Peeples, J. Structural and Statistical Audio Texture Knowledge Distillation (SSATKD) for Passive Sonar Classification. [link]

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 and reviewer assignments.
- Served as Reviewer for IEEE ICASSP 2023, providing feedback on three paper submissions.

Research Mentorship:
- Guided an undergraduate student on a Diffusion Generative AI research project, offering training on AI/ML pipeline development.

Teaching Support:
- Graded coursework in Principles of Electronics, providing timely feedback.