Amirmohammad Mohammadi

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RESEARCH INTERESTS

Foundation Models; Physics-Informed Machine Learning; Parameter-Efficient Fine-Tuning; Continual Learning; Explainable AI; Multi-Modal Learning; Generative AI; Time-Series Analytics; Signal Processing; AI for Health

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

SKILLS

AI/ML & Data Science (Python; PyTorch; NumPy; Pandas; VS Code; High-performance Computing)
Electrical & Computer Engineering (Circuit & system design; Embedded systems; SPICE; MATLAB; C)

EXPERIENCE

Texas A&M University, College Station, Texas — September 2022 – Present
Ph.D. Research Assistant

- **Proposed** an architecture-agnostic pooling layer that improved remote sensing classification accuracy by up to **2.5 percentage points** over standard pooling with near-zero added overhead.
- **Reduced** Transformer-based foundation models fine-tuning parameters **(>10%)** compared to conventional adapters by developing a distribution-aware fine-tuning algorithm.
- **Raised** classification accuracy of a convolutional-based deep learning model **7 percentage points** by constructing a time-frequency feature engineering for audio applications.
- **Demonstrated** that ImageNet-pretrained models outperform audio-pretrained models by **3 percentage points** in acoustic classification, establishing a cross-domain transfer learning benchmark.
- **Cut** required ground truth by a factor of **15** in physiological time-series signals by using physics-informed neural networks & domain knowledge integration for cuffless blood pressure measurement.
- **Led** research efforts spanning audio, image, and physiological sensing, resulting in **6** publications.

Sharif University of Technology, Tehran, Iran — July 2019 – February 2021
Graduate Student Researcher

- **Designed** an ECG + EDA sensor (BLE SoC) that has a higher battery life **(3×)** compared to alternatives and delivers **94%** mental stress detection accuracy across 18 participants (HW-SW co-design).
- **Published** a first-authored peer-reviewed Q1 journal paper.

AWARDS

- **Received** fully-funded Ph.D. position through Massachusetts Institute of Technology Lincoln laboratory.
- **Received** fully-funded Ph.D. position through National Institute of Health.
- **Received** funded tuition through National University Entrance Exam for M.Sc. studies.
- **Received** funded tuition through National University Entrance Exam for B.Sc. studies.

PUBLICATIONS

- Neighborhood Feature Pooling for Remote Sensing Image Classification., *Orvati Nia, F.,* ***Mohammadi, A.****, Al Kharsa, S., Naikare, P., Hampel-Aria, Z., & Peeples, J.*, (2026). IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) Workshops (Computer Vision for Earth Observation). [link]
- Histogram-based Parameter-efficient Tuning for Passive Sonar Classification., ***Mohammadi, A****., Carreiro, D., Van Dine, A., & Peeples, J.,* PREPRINT. [link]
- Structural and Statistical Audio Texture Knowledge Distillation (SSATKD) for Passive Sonar Classification., *Ritu, J.,* ***Mohammadi, A****., Carreiro, D., Van Dine, A., & Peeples, J.,* PREPRINT. [link]
- Investigation of Time-Frequency Feature Combinations with Histogram Layer Time Delay Neural Networks., ***Mohammadi, A****., Masabarakiza, I., Barnes, E., Carreiro, D., Van Dine, A., & Peeples, J.,* (2025). IEEE OCEANS. [link]
- Cross-Domain Knowledge Transfer for Underwater Acoustic Classification Using Pre-trained Models., ***Mohammadi, A****., Kelhe, T., Carreiro, D., Van Dine, A., & Peeples, J.,* (2025). IEEE OCEANS. [link]
- Physics-informed neural networks for modeling physiological time series for cuffless blood pressure estimation., *Sel, K.,* ***Mohammadi, A.****, Pettigrew, R. I., & Jafari, R.* (2023). Nature NPJ Digital Medicine, 6(1), 110. [link]
- An integrated human stress detection sensor using supervised algorithms., ***Mohammadi, A.****, Fakharzadeh, M., & Baraeinejad, B.* (2022). IEEE Sensors Journal, 22(8), 8216-8223. [link]

EXTRACURRICULARS

- **Reviewer** for the 2023 IEEE International Conference on Acoustics, Speech and Signal Processing.
- **Reviewer** for the Expert Systems With Applications international journal.
- **Helper** for the 2024 IEEE International Conference on Acoustics, Speech and Signal Processing.
- **Graded** exams and homework for undergrad electronics course.
- **Provided** guidance on developing AI projects for undergrad and grad students.

LANGUAGES

English (proficient); **Farsi** (native/bilingual); **Azerabijani Turkish** (native/bilingual)