Iman Sharifi

AI, Autonomous Systems Researcher
PhD Student in Mechanical & Aerospace Engineering
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Summary

Ph.D. student in Mechanical & Aerospace Engineering at The George Washington University with a perfect GPA (4.0/4.0). Passionate researcher specializing in Neuro-Symbolic AI, Multi-Agent Reinforcement Learning, and Safe Autonomous Systems. Experienced in developing interpretable, safety-critical decision-making frameworks funded by NASA and applied to airspace management. Strong publication record with papers in IJCAI, Smart Agricultural Technology, TRR, and under review at AAAI, and hands-on expertise in Python, PyTorch, and MATLAB.

Education

The George Washington University — *Sep 2024 – Present*
Doctor of Philosophy in Mechanical and Aerospace Engineering — Washington, DC, USA
Research Areas: *Multi-Agent Reinforcement Learning, Neuro-Symbolic AI, Generative AI* — GPA: 4.0 / 4.0

Sharif University of Technology — *Sep 2019 – Mar 2022*
Master of Science in Mechanical Engineering — Tehran, Iran
Research Areas: *Reinforcement Learning, Computer Vision, Robotics, Dynamics & Control* — GPA: 4.0 / 4.0

K. N. Toosi University of Technology — *Sep 2015 – Sep 2019*
Bachelor of Science in Aerospace Engineering — Tehran, Iran
Relevant Courses: *Flight Dynamics & Control, Control & Navigation, Automatic Control* — GPA: 3.65 / 4.0

Experience

Research Assistant — *Sep 2024 – Present*
The George Washington University, Intelligent Autonomous Systems Lab (IASL), Washington DC, USA

- Developed a **decentralized-centralized training, decentralized execution multi-agent reinforcement learning framework** using an attention mechanism to ensure safe separation among heterogeneous and homogeneous small unmanned aerial systems. This project was funded by **NASA**, and the paper is under preparation for **ITSC**.
- Designed and developed a novel **attention-based neurosymbolic differentiable rule extractor** to learn logical rules on a novel continuous rule space using attention-based conjunction/disjunction operators and a new curriculum learning. This work is under review at **AAAI**.

Visiting Researcher — *Jan 2023 – Dec 2023*
University of Surrey, Connected and Automated Vehicles Lab (CAV-Lab), Guildford, UK

- Developed a safe **neuro-symbolic reinforcement learning** framework based on symbolic logic programming for autonomous driving systems, published at **TRR**.
- Developed a **symbolic imitation learning** strategy using inductive logic programming to learn human-like behavioral rules in highway driving. Under review at **Applied Sciences**.

Research Assistant — *Sep 2019 – Mar 2022*
Sharif University of Technology, Control Lab, Tehran, Iran

- Developed a novel **self-tuning PID controller using hybrid actor-critic neural networks** for quadcopters. Published at the **ISME** conference.

Teaching Assistant — *Sep 2019 – Mar 2022*
Sharif University of Technology, Department of Mechanical Engineering, Tehran, Iran

- Assisted in graduate courses: **Fuzzy Systems & Control**, **Advanced Applied Mathematics**; and undergraduate courses: **Automatic Control**, **Differential Equations**.

Publications

I. Sharifi, A. Zongo, B. Wang, P. Wei, "LLM-based Knowledge-Enhanced Safe Separation of Heterogeneous Aircraft," Under preparation for the *International Conference on Machine Learning (ICML)*, 2026.

I. Sharifi, H. T. Kim, M. H. Ahmed, M. Ghasemi, P. Wei, "sUAS Separation Assurance with Mixed Aircraft Equipage and Heterogeneous Tactical Deconfliction Policies," Under preparation for the *IEEE International Conference on Intelligent Transportation Systems (ITSC)*, 2026.

I. Sharifi, P. Wei, S. Fallah, "ANDRE: An Attention-based Neurosymbolic Differentiable Rule Extractor," Under review at the *Association for Advancement of Artificial Intelligence (AAAI) Conference*, 2025.

I. Sharifi, M. Yildirim, S. Fallah, "Symbolic Imitation Learnig: From Black-Box to Explainable Driving Policies," Under review at the Journal of *Applied Sciences*, 2025. [PDF][Code]

M. Ghazanfari, **I. Sharifi**, A. Taye, P. Wei, G. Biswas, B. Ward, X. Koutsoukos, M. Ghasemi, V. Gupta, A. Chen, A. Shirkhodaei, S. Hasan, I. Amundson, F. Fotiadis, U. Topcu, et al., "A Survey of Security Challenges and Solutions for Advanced Air Mobility and eVTOL Aircraft," Accepted at *AIAA SciTech Forum*, 2026.

I. Sharifi, M. Ghazanfari, A. Taye, P. Wei, G. Biswas, B. Ward, X. Koutsoukos, M. Ghasemi, V. Gupta, A. Chen, A. Shirkhodaei, S. Hasan, I. Amundson, F. Fotiadis, U. Topcu, et al., "A Survey of Security Challenges and Solutions for UAS Traffic Management (UTM) and small Unmanned Aerial Systems (sUAS)," Accepted at *AIAA SciTech Forum*, 2026.

K. Acharya, **I. Sharifi**, M. Lad, L. Sun, H. H. Song, "Integrating Neurosymbolic AI in Advanced Air Mobility: A Comprehensive Survey," *Proceedings of the Thirty-Fourth International Joint Conference on Artificial Intelligence (IJCAI)*, 2025. [PDF]

A. Talaeizadeh, **I. Sharifi**, Shirin Gh. Samani, A. Alasty, "Agricultural Spraying Drones: A Comprehensive Review," Accepted at *Smart Agricultural Technology*, 2025.

I. Sharifi, M. Yildirim, S. Fallah, "Towards Safe Autonomous Driving Policies using a Neuro-Symbolic Deep Reinforcement Learning Approach," *Transportation Research Record (TRR)*, 2025. [PDF][Code]

I. Sharifi, A. Alasty, "Self-Tuning PID Control via a Hybrid Actor-Critic-Based Neural Structure for Quadcopter Control," *30th Annual International Conference of Iranian Society of Mechanical Engineers (ISME)*, 2022. [PDF][Code]

Peer Reviews

Journal Reviews: Journal of Aerospace Information Systems (2 papers, 2025)

Conference Reviews: Association for the Advancement of Artificial Intelligence (AAAI) Conference (4 papers, 2025)

Selected Courses (Grade)

Machine Learning (A)	Deep Reinforcement Learning (A)	Large Language Vision Models (In Progress)
Computer Vision (A)	Nonlinear Control (A)	Advanced Mathematics (A)
Advanced Control (A)	Advanced Dynamics (A)	Fuzzy Systems & Control (A)
Control Systems Design (A)		

Technical Skills

Programming	Python, Jupyter Notebook, MATLAB/SIMULINK, Prolog, ProbLog
Libraries	Numpy, Matplotlib, Pandas, Pygame, Scikit-Learn, PyTorch, OpenCV
Tools	Git, GitHub, VS Code, PyCharm, VirtualEnv, LINUX UBUNTU, LaTeX
CAD	SolidWorks

Achievements

George Washington University Fellowship *Fall 2024 – Present*
Funded by NASA, as part of NASA's University Leadership Initiative (ULI).

Master's GPA Distinction *Mar 2022*
Ranked among the top three graduate students in Dynamics and Control at Sharif University of Technology.

Bachelor's Thesis Award *Nov 2019*
Recognized as the top Bachelor's thesis by the Iranian Aerospace Association.

National Entrance Exam Distinction *2015, 2019*
Ranked among the top 1% of students nationwide in the Iranian Master's and Bachelor's entrance examinations.

References

Dr. Peng Wei
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