Alireza Alinejad

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Objective

I believe that as AI models continue to evolve, we are closer than ever to achieving a human-like robotic brain. However, this brain needs an advanced, adaptable body to execute actions that genuinely ease human lives. I am driven to explore the creation of such robots, merging intelligent design with purposeful functionality to bridge the Moravec's Paradox gap.

Education

Sharif University of Technology (SUT), B.Sc. in Aerospace Engineering — *Sep 2021 – Present*

- **GPA:** 3.67 (17.36 out of 20) — *[Original Transcripts]*

Areas of Interest

Robotics | Machine Learning | Control & Autonomy

Mechatronics | Swarm Intelligence | Mechanical Design

Academic Experience

- **Aircraft Design, Teaching Assistant** — *Sep 2025 – Present*
  ↪ *Sharif University of Technology (SUT)* — *Instructor:* ***Prof. Afshin Banazadeh***
- **Numerical Methods, Teaching Assistant** — *Sep 2025 – Present*
  ↪ *Sharif University of Technology (SUT)* — *Instructor:* ***Dr. Hossein Hashemi Nasab***
- **Control Systems Lab, Teaching Assistant** — *Sep 2024 – Jan 2025*
  ↪ *Sharif University of Technology (SUT)* — *Instructor:* ***Prof. Alireza Sharifi***
- **Engineering Dynamics, Teaching Assistant** — *Sep 2023 – Jan 2024*
  ↪ *Sharif University of Technology (SUT)* — *Instructor:* ***Prof. Alireza Sharifi***

Patents and Publications

C=Conference, J=Journal, P=Patent, S=In Submission, T=Thesis

[P.1] A. Alinejad, T. Alikhani, S. H. Pourtakdoust, S. M. S. Mousavi. (2025). **Design and Development of a Dragonfly-Inspired Flapping Mechanism**. Iran Intellectual Property Office. Filed: November 2025 (Pending).

Research Projects

- **Dragonfly-Inspired Flapping Wing Micro Air Vehicle (FWMAV)** — *Aug 2023 – Sep 2025*
  ↪ *Tools: SolidWorks, Rapid Prototyping (mostly FDM), Arduino, MATLAB*
  - Designed biomimetic flapping mechanism via more than 4 iterative prototyping.
  - Integrated control system for enhanced maneuverability and efficiency.
  - Validated performance through simulations and physical tests.

Other Projects

- **Inverted Rotary Pendulum Control with Raspberry Pi** — *Sep 2025*
  ↪ *Tools: Raspberry Pi, SSH Protocol, C++*
  - Configured Raspberry Pi via SSH for control experiments.
  - Implemented stabilization algorithm for rotary pendulum.
  - Tested system performance in self-directed project.
- **ROS2-Based Mobile Robot Navigation and NAO Robot Interaction** — *Feb 2025 – Jun 2025*
  ↪ *Tools: ROS2, Gazebo, TurtleBot3, NAO Robot, CHOREGRAPHE*

- Simulated TurtleBot3 for environment mapping in Gazebo.
- Deployed code on real robot for autonomous exploration.
- Programmed NAO for movement and interaction tasks.

- **Reimplementation of MCST Tracking Algorithm** *Feb 2025 – Jun 2025*
  ↪ *Tools: Python, Bi-LSTM Networks, PyTorch*
  - Reproduced adaptive tracking model for high-speed targets.
  - Incorporated Bi-LSTM and maneuver compensation unit.
- **Amphibious Aircraft Design (RAeS 2024-2025 RfP)** *Sep 2024 – Jan 2025*
  ↪ *Tools: MATLAB, SolidWorks, Analytical Modeling*
  - Developed conceptual design meeting CS-23 standards.
  - Conducted sensitivity and performance analyses.
  - Optimized aerodynamics for operational versatility.
- **Quadrotor Control System Simulation** *Feb 2024 – Jun 2024*
  ↪ *Tools: MATLAB, Simulink, SolidWorks, Simscape*
  - Modeled 6DOF dynamics with PID control strategy.
  - Simulated system for stability validation.
  - Aligned results with robotics precision standards.
- **Cessna 310 Flight Dynamics Analysis** *Feb 2024 – Jun 2024*
  ↪ *Tools: MATLAB, DATCOM*
  - Extracted aerodynamic derivatives for stability assessment.
  - Analyzed longitudinal and lateral modes.
  - Validated using computational simulations.
- **Airline Performance Optimization** *Sep 2023 – Jan 2024*
  ↪ *Tools: Python, Data Analysis, Web Scraping*
  - Integrated multi-source metrics via data analytics.
  - Developed predictive models for decision support.
  - Automated web scraping for insights.
- **Solar-Powered Aircraft Evolution** *Feb 2022 – Jun 2022*
  ↪ *Tools: Research, Conceptual Analysis*
  - Co-authored review on solar aircraft history and continuous flight tech.
  - Analyzed designs like Sunrise I/II for energy efficiency.
  - Explored HAPS applications for telecom, emphasizing sustainability.

Skills

- **Languages:** English (TOEFL iBT: 97 [R: 24, L: 28, S: 24, W: 21]), Persian (Native)
- **Soft Skills:** Problem-Solving, Communication, Teamwork, Critical Thinking
- **Programming Languages:** Python, C++, MATLAB, Simulink, Arduino
- **Data Science & Machine Learning:** Python, TensorFlow, MATLAB
- **Mathematical & Statistical Tools:** MATLAB, EES (Engineering Equation Solver)
- **Other Tools & Technologies:** ROS2, SOLIDWORKS, Linux, DATCOM
- **Research Skills:** Data Analysis, Statistical Modeling, Literature Review, Experimental Design, Qualitative Research, Quantitative Research

Honors and Awards

- **Top Rank** *Sep 2021 – Present*
  ↪ *Sharif University of Technology (SUT)*
  - Studying Aerospace Engineering at 1st rank Engineer University in Iran, SUT.
- **Elite National Rank** *Jul 2021*
  ↪ *Iranian Nationwide University Entrance Exam*
  - Ranked among the top 0.3% of participants in the Iranian Nationwide University Entrance Exam.

Professional Memberships

- **Head of Welfare Committee** *May 2023 – Sep 2024*
  ↪ *Aerospace Engineering Department's Student Council, SUT*
  ◦ Led the Welfare Committee, overseeing student well-being initiatives.
  ◦ Developed and implemented programs improving student support and resources.
  ◦ Honed leadership, organizational, and communication skills.
- **Environmental Cooperation** *Apr 2023 – Dec 2023*
  ↪ *Association of Environmentalists, SUT*
  ◦ I have been associated with multiple programs such as tree-planting, paper waste recycling, etc.
- **Technical Editor** *Oct 2022 – Apr 2023*
  ↪ *Aerospace-Based Trade Magazine, OWJ Publications, SUT*
  ◦ Edited multiple magazines for grammatical and scientific accuracy.

Certifications

- **Deep Learning Fundamentals: Unlocking the Power of AI** *Aug 2025*
- **Artificial Neural Network and Machine Learning using MATLAB** *Jul 2024*
- **Simulink Onramp** *Mar 2024*
- **MATLAB Onramp** *Nov 2022*

References

- **Seyed Hossein Pourtakdoust**
  Professor, Faculty of Aerospace Engr Dept
  Sharif University of Technology, Tehran, Iran
  Email: pourtak@sharif.edu
  Phone: +98-21-66168163
  Relationship: B.Sc. Team Project Supervisor, Course Instructor

- **Alireza Sharifi**
  Assistant Professor, Faculty of Aerospace Engr Dept
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  Associate Professor, Faculty of Aerospace Engr Dept
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  Relationship: Course Instructor

- **Afshin Banazadeh**
  Professor, Faculty of Aerospace Engr Dept
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  Relationship: Teaching Assistant, Aircraft Design Team Project Supervisor, Course Instructor

- **Hossein Mohammad Navazi**
  Associate Professor, Faculty of Aerospace Engr Dept
  Sharif University of Technology, Tehran, Iran
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  Relationship: Course Instructor

- **Azadeh Kebriaee**
  Assistant Professor, Faculty of Aerospace Engr Dept
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  Relationship: Course Instructor