

ALI BANIASAD

Tehran, Azadi Ave, P932+FM4, Iran

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Education

Sharif University of Technology Sep. 2022 – Nov 2024 (Expected)
Master of Science in Aerospace Engineering Tehran, Iran

Sharif University of Technology Sep. 2017 – May 2022
Bachelor of Science in Aerospace Engineering, GPA: 3.72/4 (17.56/20) last 6 semesters Tehran, Iran

Research Interests

- Reinforcement Learning
- Artificial Intelligence
- Robotics
- Automatic Control
- Optimal Control
- Deep Learning
- Computer Vision
- Game Theory

Publications [[Google Scholar profile](#)

- **Ali BaniAsad**, Alireza Sharifi, Reza Pordal, Hadi Nobahhari. "Attitude Control of a 3-DoF Quadrotor Platform Using a Linear Quadratic Integral Differential Game Approach." *ISA Transactions*, [Elsevier](#), 2024.
- Hadi Nobahhari, **Ali BaniAsad**, Alireza Sharifi. "Linear Quadratic Integral Differential Game Applied to the Real-time Control of a Quadrotor Experimental Setup." *ICRoM*, [IEEE](#), 2022.
- Alireza Sharifi, **Ali BaniAsad**. "Robust In-Motion Transfer Alignment of Low-Grade Inertial Navigation Systems with Recurrent Neural Networks in the Event of Reference Malfunction." *IEEE*, 2024 (Active)
- **Ali BaniAsad**, Hadi Nobahhari. "Robust Differential Game Reinforcement Learning with Soft Actor-Critic for Guidance in Low-Thrust Multi-Body Environments." *AIAA*, 2024 (Active)

Research Experience

Researcher at CNAV Lab    May 2020 – Ongoing
Head of Lab (Current), Researcher (Former) Tehran, Iran

- Led projects on embedded AI in C, Reinforcement Learning (RL), and ROS for robotic control systems.
- Developed quadrotor tech and AI navigation, enhancing vehicle precision and safety.

Master's Thesis [[GitHub](#) ] August 2022 – November 2024 (Expected)
Reinforcement Learning for Robotics in Complex Dynamical Systems Tehran, Iran

- Investigated various Reinforcement Learning methods and compared their performance to classic control strategies.
- Integrated ROS to implement and test real-world robotic systems, validating performance in practical scenarios.

Bachelor's Thesis [[GitHub](#) ] February 2021 – September 2023
Game Theory-Based Control for a Quadrotor with Three Degrees of Freedom Tehran, Iran

- Controlled a quadcopter stand using differential game theory, employing Nash equilibrium for robust controller.
- Evaluated performance through Simulink simulations and practical implementation on a three degree of freedom setup.

Projects

Optimized Flocking of Autonomous Drones | *Embedded C, HIL, Optimization, Simulink, Swarm* July 2023

- Developed a UAV swarm model optimizing flocking under real-world constraints such as delays and obstacles.
- Implemented and validated the model with Simulink simulations and HIL testing using a microcontroller.

Multi-Objective Heuristic Optimization | *OOP, Optimization Algorithms, Python* February 2023

- Implemented the **REMARK** algorithm for multi-objective optimization with conflicting objectives.
- Utilized heuristic methods to achieve high approximations of the Pareto set, balancing trade-offs between objectives.

Advanced Aircraft Trim Stability Analysis with DATCOM | *Advanced UI, Aircraft Control, Python* March 2022

- Developed an advanced UI for USAF DATCOM software, optimizing analysis and enhancing design precision.


AIAA Regional Jet Design Competition | *Aircraft Design, Computer Modeling, MATLAB, Python* June 2021




- Fully designed a regional jet, encompassing coding, computer design, and simulations.

Awards and Honors

- Iranian Aerospace Society's **Best Undergraduate Thesis Award**.
- Ranked **Top 0.5%** in Nationwide Undergraduate Entrance Exam among more than 150,000 participants, 2017.

Technical Skills

Programming Languages: C/C++, Embedded C, MATLAB, Python 

Tools and Platforms: Git , Linux , ROS, Simulink, _Terminal, L^AT_EX

Libraries/Frameworks: Matplotlib, NumPy, Pandas, PyTorch, TensorFlow

Quantitative Skills: Artificial Neural Networks, Data Structures, Deep Learning, Embedded Machine Learning, Heuristic Optimization, Image Processing, Machine Learning, Optimization, Reinforcement Learning, Robotics