

ALI BANIASAD

Tehran, Iran

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Education

Sharif University of Technology <i>Master of Science in Aerospace Engineering</i>	Sep. 2022 – Apr. 2025 <i>Tehran, Iran</i>
Sharif University of Technology <i>Bachelor of Science in Aerospace Engineering</i>	Sep. 2017 – May 2022 <i>Tehran, Iran</i>


Research Interests





- Reinforcement Learning
- Deep Learning
- Automatic Control
- Optimal Control
- Robotics
- Game Theory


Publications

- 2025 [J] Sharifi, A., **BaniAsad, A.** *et al.* “Applied an In-Motion Transfer Alignment Approach During Global Positioning System Outages Utilizing a Recurrent Neural Network Algorithm.” *Eng. Appl. AI* — [minor review](#).
- 2025 [C] **BaniAsad, A.**, Nobahari, H. “Robust DDPG Reinforcement Learning Differential Game Guidance in Low-Thrust, Multi-Body Dynamical Environments.” *23rd Int. Conf. of Iranian Aerospace Society* — Accepted.
- 2025 [C] Amirpour, M., **BaniAsad, A.**, Nobahari, H. “Reinforcement Learning-Based Controller Design for a Suspended Ball Plant.” *23rd Int. Conf. of Iranian Aerospace Society* — Accepted.
- 2024 [J] **BaniAsad, A.** *et al.* “Attitude Control of a 3-DoF Quadrotor Platform Using a Linear Quadratic Integral Differential Game Approach.” *ISA Trans.* — [Elsevier DOI](#).
- 2022 [C] Nobahari, H., **BaniAsad, A.** *et al.* “Linear Quadratic Integral Differential Game Applied to the Real-Time Control of a Quadrotor Experimental Setup.” *ICRoM* — [IEEE DOI](#).

Research Experience & Projects

Embedded RL Control for Robots on Resource-Constrained Hardware  <i>Master’s Thesis, Sharif University of Technology</i>	Aug. 2022 – Apr. 2025 <i>Tehran, Iran</i>
<ul style="list-style-type: none">• Outperformed classical MPC, cutting trajectory-tracking error by 22 % within strict on-board CPU/memory limits.• Designed zero-sum, disturbance-augmented training that kept policies stable under $10\times$ worst-case perturbations.• Engineered 15 k-LOC RL control stack (DDPG, TD3, SAC, PPO) in PyTorch/TensorFlow+Gym for embedded robots.• Validated robustness on Gymnasium locomotion tasks—Ant, Humanoid, HalfCheetah, Walker2d.• Ported the system to a C++/Python ROS 2 hardware-in-the-loop node for on-board testing.	



Researcher at CNAV Lab    <i>Head of Lab (Current), Researcher (Former)</i>	May 2020 – Feb. 2025 <i>Tehran, Iran</i>
<ul style="list-style-type: none">• Led projects on Embedded AI in C, Reinforcement Learning (RL), and ROS for robotic control systems.• Robust in-motion Transfer Alignment method based on the multilayer Neural Network. <ul style="list-style-type: none">* Proposed LSTM-MLP that performs in-motion using only IMU + SINS data when GPS is unavailable.* Cuts navigation drift to $< 0.1\%$ of the Kalman-INS error during 100 s GPS outages.* Generalises across ship, ROV, and car datasets, outperforming conventional methods out of domain.	

Game Theory-Based Control for Three Degrees of Freedom Platform  <i>Bachelor’s Thesis, Sharif University of Technology</i>	Feb. 2021 – Sep. 2023 <i>Tehran, Iran</i>
<ul style="list-style-type: none">• Modelled a 3-DoF setup in Simulink and identified dynamics for parameter estimation.• Designed a robust controller via Differential Game theory and Nash Equilibrium.• Implemented the controller through a MATLAB/Simulink-to-C pipeline for real-time hardware tests.• Benchmarked against ADRC and DOBC, achieving superior disturbance rejection and robustness.	

Awards and Honors

- Best B.Sc. Thesis Award, Iranian Aerospace Society (2023)
- Top 0.5% of 150 000, Iran B.Sc. Entrance Exam (2017)
- Ranked 23rd nationally, Iran M.Sc. Aerospace Exam (2022)
- [NODET](#) exceptional-talent scholar. (2010–2017)

Technical Skills

Programming Languages: C/C++, Embedded C, MATLAB, Python
Tools & Platforms: Git, Linux , ROS, Simulink, _Terminal, \LaTeX
Libraries/Frameworks: Matplotlib, NumPy, Pandas, PyTorch, TensorFlow