

# An Nguyen

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## Objective

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Motivated and detail-oriented mechanical engineering graduate with strong foundations in control systems, robotics, and dynamics. Seeking to pursue graduate study in mechanical/aerospace engineering to advance research in autonomous systems and optimization. Committed to applying analytical skills, adaptability, and collaboration to contribute to cutting-edge innovations.

## Education

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**New Mexico Tech, NM, USA.** Aug 2024 – Present

*MSc in Mechanical Engineering with a minor in Mechatronics and Robotics.*

- GPA: 4.0/4.0; GRE quant: 168/170 (87th percentile); IELTS Academic: 7.5 (9.0 Listening and 8.0 Reading).
- Research Assistant at Autonomous Flight and Aquatic Systems Laboratory (AFASL).
- First Prize – Student Paper Award, 84th SAWE Conference

## Projects

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**MS Thesis: Direct collocation and learning based control for quadruped robot** Aug 2024 - Present

- Analyze the dynamic, kinematic, and contact models of quadruped robots to understand locomotion stability.
- Apply trajectory optimization in Casadi to integrate planning with learning-based control, improving robustness in uncertain environments.

**Coaxial monocopter for data acquisition system in underground mine** Aug 2024 - Present

- Calculate, design and fabricate a coaxial monocopter based on the principle of moving mass control with sensors and micro controllers for autonomous flight mission.
- Develop mathematical model, simulation and control of the drone.

**Airship Simulation and Control** Aug 2024 - Present

- Compare and validate mathematical model of airships for dynamic simulation.
- Implement MPC controller with reinforcement learning for navigation in environments with disturbances.

**Robot locomotion in underground mine environment** Aug 2024 - Present

- Use ROS and Gazebo to control and navigate a Husky robot in challenging terrains.
- Sensor nodes are developed for data transmission in underground mines environment.

**Honors Undergraduate Thesis: RL for quadruped robot locomotion over rough terrain** Aug 2023 - 2024

- Calculate and design a quadruped robot model, build a quadruped robot model using 3D printed parts.
- Deploy the simulation using PyBullet, implement the Soft Actor-Critic (SAC) algorithm for the control system.

## Experience

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**Robotics Engineer Intern, ABB Robotics and Automation Solution Center, HCM, VN.** June – Sept 2022

- Robot control with RAPID programming language for control 6-dof robot arm and delta robot.
- Use vision tools to pick and place object on conveyor belt. On-site repair and maintenance for industrial robots.

## Publications

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**Minimal Sensor Quadruped Locomotion via Reinforcement Learning** 10.2514/6.2026-1762

*An Nguyen, Rongwei Liang, Mostafa Hassanalian*

**Reinforcement Learning-Based Control of a Moving Mass Coaxial Monocopter Using Soft Actor-Critic (SAC) Algorithm** 10.2514/6.2025-3338

*An Nguyen, Rongwei Liang, Mostafa Hassanalian*

**A Dynamics Predictor-Augmented Soft Actor-Critic for Attitude and Trajectory Control of Unmanned Airships** 10.2514/6.2025-3195

*Rongwei Liang, An Nguyen, Mostafa Hassanalian*

## Technologies

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**Languages:** Python, Matlab, C++, C.

**Technologies:** Casadi, AutoCAD, Inventor, Pybullet, IsaacSim, ROS, Pytorch.