Elena Behzadi

ebehzadi@andrew.cmu.edu — (310) 384-4361 — LinkedIn — Website

Education

Carnegie Mellon University, School of Computer Science   Expected May 2027
Bachelor of Science in Robotics   **GPA:** 3.57

- **Coursework:** Kinematics & Dynamics, Machine Learning, Computer Vision, Path Planning, SLAM, Control Systems, Reinforcement Learning, Computer Systems, Manipulators, Autonomous Vehicles, Drones

Experience

Kantor Lab at Carnegie Mellon University — Undergraduate Research Assistant   May 2025 - Present
- Conducting independent research on autonomous plant sampling for disease detection; authoring paper for **IROS 2026 submission** as primary author
- Developed SAM-based computer vision pipeline achieving **97%** leaf detection accuracy in field conditions
- Implemented **TensorFlow grasp pose estimation** integrated with MoveIt on 6-DoF gantry, achieving 80% grasp success rate
- **Tech Stack:** ROS, TensorFlow, OpenCV, MoveIt, Python, C++, Docker, RAFT-Stereo

Carnegie Mellon University — Teaching Assistant, Robot Building Practices   August 2025 - Present
- Co-designed curriculum and assignments for hands-on robotics course (16-220) serving **30+** students
- Mentored students through robot development: CAD, machining, electronics, system integration
- Led production: 3D printed **400+** parts, CNC routed components, conducted mechanical design reviews

Carnegie Mellon University — Teaching Assistant, Concepts of Robotics   March 2024 - May 2024
- Enhanced problem sets for graph search algorithms and PID control; held office hours for 16-170

Projects

140lb Autonomous Dodecacopter — *Large Air Vehicle Development Course*   Fall 2025
ROS2, Isaac Sim, ArduPilot, PID Control, Sim-to-Real
- Led software team for largest drone at CMU (140lbs, 600lbs thrust) designed for human transport
- Built autonomy foundation in Isaac Sim with AirStack for sim-to-real transfer and safety systems
- Tuned dual-GPS ArduPilot PID control; contributed to carbon fiber assembly, soldering, flight testing

Robotic Light Painting System — *Robot Kinematics & Dynamics Capstone*   Fall 2025
Python, Inverse Kinematics, Trajectory Generation, Franka Emika
- Implemented light painting with Franka Panda using inverse kinematics and trapezoidal velocity profiles
- Designed pick-and-place sequences for three flashlights with collision avoidance and reorientation logic

SLAM and Object Detection System — *Intelligent Robot Systems*   Spring 2025
ROS, Python, ICP, Roboflow, TurtleBot3
- Implemented SLAM and ICP algorithms on TurtleBot3 for autonomous navigation and mapping
- Trained custom Roboflow object detection model, integrated with camera module for real-time recognition

Two-Wheeled Balancing Robot — *Personal Project*   2024-2025
Arduino, MATLAB, Computer Vision, Kalman Filtering
- Built self-balancing robot with PD control, computer vision object following, and Kalman filter sensor fusion

Technical Skills

Programming: Python, C/C++, MATLAB, JavaScript, Arduino, Bash, Java, Rust
Robotics & ML: ROS/ROS2, OpenCV, TensorFlow, PyTorch, MoveIt, ArduPilot, Isaac Sim, SLAM
Tools: Linux, Git, Docker, CAD (SolidWorks/OnShape), PCB Design, Unity, Soldering, Machining, CNC