Dominick Braico

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Education

University of Illinois Urbana-Champaign May 2026
BS Mechanical Engineering, Minor in Computer Science GPA: 3.92
Relevant Coursework: Software Development for Mobile Robots, Robotic Software Engineering, Intro to Robotics, Dynamics of Mechanical Systems, Applied Machine Learning, Computational Linear Algebra, Signal Processing

Work Experience

Field Robotics Engineering Intern May 2024 – March 2025
Robotics for Engineer Operations - Construction Engineering Research Laboratory

- Designed a rugged electronic control module for robot sensors and compute unit, reducing the volume of the electrical system and improving weatherproofing for a modular cable-driven construction robot
- Modeled and fabricated 10+ custom sensor mounts in SolidWorks for LiDAR and IMU systems, improving sensor data integrity on heavy equipment mobile robots

Powertrain Engineering Intern May 2025 – Aug 2025
Whisper Aero

- Developed firmware in C/C++ for motor controllers and a Python GUI for control and tuning of high power density 3-phase motors using field-oriented control
- Manufactured motor dynamometer testing fixtures and conducted performance testing to characterize the powertrain system across the electric propulsor duty cycle
- Automated dynamometer testing using Python scripts for data collection and torque sweep demands to dynamometer

Extracurriculars & Leadership

Control Systems & Sensor Integration Lead February 2024 - Present
GHOST Electric Motorcycles

- Collected data from motor encoder, IMU, temperature sensors, and BMS to create a vehicle performance dashboard
- Implemented feedback control algorithms to fine tune torque response of 45kW PMAC motor
- Designed wiring harness and high power cabling for 103.6 nominal voltage electric motorcycle

Moon Rover Excavation Project Lead August 2023 - February 2024
Illinois Robotics in Space

- Designed and fabricated regolith collection mechanism which transports BP-1 lunar regolith simulant on robotic excavation system used in a NASA Artemis Challenge
- Led design for Aluminum 6061-T6 structural components for electric motors and drivetrain system mounting

Projects

Robotic Mobile Manipulator Simulation

- Developed a comprehensive high-fidelity simulation environment in Gazebo featuring a Clearpath Husky mobile platform integrated with a UR3 manipulator arm and Robotiq 2F-85 gripper
- Created ROS 2 package for control of all robot joints, enabling trajectory planning for complex manipulation tasks
- Integrated virtual sensor systems, including wheel encoders and LiDAR, and developed Python nodes for data acquisition and robot state estimation

Skills

Mechanical Design: SolidWorks (Certified Mechanical Design Associate), Autodesk Fusion
Fabrication: 3D Printing, Waterjet, Laser Cutter, Shop Tools, Soldering
Programming: Python, C/C++, ROS 2