Tyler Estrada

847-903-4045 • Estrada.89@osu.edu • tylerestrada2.github.io/TylerWebsite/

GRADUATE MECHANICAL ENGINEER – AUTONOMOUS VEHICLE CONTROLS, ROBOTICS, AND TESTING

EDUCATION

THE OHIO STATE UNIVERSITY Expected 07/2026
Master of Science in Mechanical Engineering ***GPA: 3.74/4.00***
Publication: Integration and Validation of Adaptive Cruise Control Algorithm Across Different Modes (Paper 26AE-0154), SAE WCX World Congress Experience, 2026.

THE OHIO STATE UNIVERSITY 12/2024
Bachelor of Science in Mechanical Engineering ***GPA: 3.95/4.00***
Dean's List: Aug 2020 - Dec 2024

PROFESSIONAL EXPERIENCE

THE OHIO STATE UNIVERSITY: ECOCAR EV CHALLENGE 10/2024 - Present
Graduate Research Associate

- Led an 8-member cross-functional engineering team developing autonomous longitudinal and lateral control systems (CACC and LCC) across SIL, HIL, and vehicle testing environments, ensuring 100% milestone completion and compliance.
- Designed and deployed a CAN-based diagnostic and observability framework enabling real-time fault detection, subsystem debugging, and controller validation, reducing debugging time during HIL and vehicle testing by 30%.
- Developed a C++ based CACC controller using V2X messaging for V2V/V2I coordination, reducing inter-vehicle latency by 50% in multi-vehicle scenarios and securing 1st place in the EcoCAR EV Year 3 competition.
- Analyzed V2X latency, CAN traffic, and closed-loop control performance to identify CACC bottlenecks, achieving 35% improvement in energy efficiency and smoother longitudinal response compared to previous design.

MARS PETCARE RESEARCH AND DEVELOPMENT 05/2024-09/2024
Process Engineering Intern

- Managed the development of a 3D digital twin of the pilot plant using LiDAR scanning technology, increasing operational efficiency and layout accuracy, reducing planning time by over 50% by enabling remote site measurements.
- Updated and optimized over 30 process flow diagrams through Visio, modernized legacy systems, and developed a standardized revision process for future updates that reduced future document update times and retrieval by 40%.

DUPONT 05/2023 – 12/2023
Reliability Engineering Co-op

- Identified diagnostics and reliability gaps in critical equipment on a major capital project, supporting proactive fault prevention and system reliability improvements for a cost savings of over $500,000.
- Collaborated with operators to design a waste-handling system that enabled safe disposal of hazardous materials while reducing environmental non-compliance fees and improving overall sustainability.

PROJECTS

4- DOF ROBOTIC ARM 01/2024 – 05/2025
Project Team

- Designed and built a custom 4-DOF robotic arm with a MATLAB-based inverse kinematics engine achieving sub-millimeter end-effector accuracy validated through precision writing tasks.
- Implemented PID, ROS2, and feedforward control for real-time trajectory tracking and closed-loop motion execution.

FORMULA BUCKEYES 01/2024 – 12/2024
Capstone Project

- Sized, selected, and integrated cooling fans and ducting to meet airflow, weight, and power constraints while maintaining battery temperatures below thermal derate threshold for the entire drive cycle.

BUCKEYE SOLAR CAR 11/2020 – 05/2022
Structural and Design Lead

- Led FEA and CAD modeling of structural components to improve chassis durability while reducing mass by 50 lb.
- Collaborated with electrical and aerodynamics teams to optimize component integration and manufacturability.

SKILLS & CERTIFICATIONS

Software & Embedded: C++, Python, ROS2, ros2_control, Linux, CAN, dSPACE, RTMaps, MATLAB, Simulink.
Autonomy & Controls: CACC, Longitudinal Control, PID, Sensor Fusion, State Estimation, Vehicle Dynamics, V2X.
Validation & Testing: Model-Based Design (MIL/SIL/HIL/VIL), Fault Injection Testing, Vehicle Validation, On-Road Testing.
Mechanical & Analysis: Ansys (FEA/CFD), LiDAR Scanning, SolidWorks (FEA/CFD/GD&T): CSWA Certified.