Tyler Estrada

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EDUCATION

THE OHIO STATE UNIVERSITY **Columbus, OH**
Master of Science in Mechanical Engineering **Expected 07/2026**
Relevant Courses: Energy Modeling Optimization, Principles of Electrification for Vehicle Propulsion Systems
THE OHIO STATE UNIVERSITY **Columbus, OH**
Bachelor of Science in Mechanical Engineering **05/2025**

SKILLS/ CERTIFICATIONS

Programming & Embedded Systems: C++, Python, MATLAB, Simulink, Linux, Real-Time Systems, CAN Communication.
Controls & Vehicle Systems: Longitudinal Control, Cooperative Adaptive Cruise Control (CACC), PID Control, Feedforward Control, State Estimation, Hybrid Electric Powertrains.
Validation & Testing: Model-Based Design (MIL/SIL/HIL/VIL), Test Case Development, Fault Injection Testing, Diagnostics, Vehicle Validation, On-Road Testing.
Tools & Analysis: Ansys (FEA/CFD), SolidWorks (FEA/CFD/GD&T), dSPACE RTMaps, LiDAR Scanning, CSWA Certified.

PROFESSIONAL EXPERIENCE

THE OHIO STATE UNIVERSITY: EcoCAR/ CAVS **Columbus, OH**
Graduate Research Associate **10/2024 - Present**

- Team Lead for Connected and Automated Vehicles (CAVs) within the Ohio State EcoCAR competition; mentored new members, led subsystem integration efforts, and supported outreach initiatives focused on autonomous vehicles.
- Architected and implemented a CAN-based diagnostics and observability framework enabling real-time vehicle state monitoring, fault detection, and subsystem-level debugging across autonomous driving controllers.
- Improved Cooperative Adaptive Cruise Control (CACC) performance by implementing V2V/V2I coordination using V2X messaging, reducing communication latency and improving string stability in multi-vehicle scenarios.
- Diagnosed CACC performance limitations through V2X latency analysis, CAN traffic profiling, and closed-loop control evaluation, achieving approximately 10% improvement in energy efficiency.
- Redesigned and integrated low-voltage wiring harnesses to resolve CAN communication faults and improve reliability.

MARS PETCARE RESEARCH AND DEVELOPMENT **Nashville, TN**
Process Engineering Intern **05/2024-09/2024**

- Managed the development of a 3D digital twin of the pilot plant using LiDAR scanning technology, increasing operational efficiency and layout accuracy by over 50%.
- Updated and optimized all process flow diagrams, modernized legacy systems, and developed a standardized revision process for future updates.

DUPONT **Columbus, OH**
Reliability Engineering Co-op **05/2023 – 12/2023**

- Identified diagnostics and reliability gaps in critical equipment on a major capital project, supporting proactive fault prevention and system reliability improvements for a cost saving of $.5MM.
- 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 AND LEADERSHIP

4- DOF ROBOTIC ARM **Columbus, OH**
Project Team **01/2024 – 05/2025**

- Designed, built, and programmed a 4-DOF robotic arm for autonomous object manipulation using Matlab.
- Implemented PID, feedforward control, and inverse kinematics to achieve precise motion control.

FORMULA BUCKEYES **Columbus, OH**
Capstone Project **01/2024 – 12/2024**

- Performed CFD analysis on the battery compartment to determine required airflow for safe thermal management.
- Sized and selected cooling fans balancing airflow, weight and power constraints to meet competition requirements.
- Designed and integrated the final fan housing and ducting system, maintaining battery temperatures below derate.

BUCKEYE SOLAR CAR **Columbus, OH**
Structural and Design Lead **11/2020 – 05/2022**

- 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.