# Greg Emmen

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## Professional Experience

### General Motors

**Software & Controls Engineer for GM Defense,** *Sep 2021 – Present*

- Prototype control systems for military vehicles to meet customer requirements with tight deadlines
- Utilize real-time CAN communication tools (neoVI, ETAS INCA/MDA) to troubleshoot vehicle issues
- Develop software to integrate GM standard technology onto non-standard defense applications
- Coordinate with suppliers on hardware and software integration for off-the-shelf components
- Collaborate with GM Defense team members to maintain and pursue defense contracts
- Perform hardware validation activities with dyno cells and mule vehicles

**Controls Design Engineer,** *Dec 2018 – Sep 2021*

- Led a cross-functional team of engineers to enable HV propulsion capability and safety features
- Defined a leader/follower communication protocol for coordinating actions across controllers
- Refactored C++ code to improve run-time execution, maintainability, and software quality
- Wrote embedded controls software in a scaled agile development environment
- Directed the automation of unit and behavioral software tests with global team
- Engaged in GM standard system analysis of failure modes (DFMEA)

**Plant Modeling & HIL Integration Engineer,** *Jun 2015 – Dec 2018*

- Technical expert on the implementation of controller software to Hardware-in-the-Loop (HIL) benches
- Built and maintained MATLAB plant models to simulate vehicle hardware capability
- Spearheaded initiative to organize tools and workflow in laboratory environment
- Managed multiple HIL benches to meet customer requirements for testing
- Enabled Python scripted test automation capabilities for HIL benches

### Cummins Inc

**Facilities Engineering Intern,** *Jun 2014 – Aug 2014*

- Identified and resolved issues with air-handler failures on engine test cells
- Assisted in implementing an ISO 50001 energy management system

## Education

**Master of Science in Engineering (Energy Systems Engineering)**

University of Michigan – Dearborn, *2019 – 2021*

- Regenerative Braking Control of a Brushless DC Motor Drive (regen braking project writeup)
  - Designed a vehicle model to analyze six-switch inverter strategies for regenerative braking
- Satellite Attitude Control Model (attitude control project writeup)
  - Simulated and analyzed various aspects of attitude control on a rigid body in zero-gravity

**Bachelor of Science in Mechanical Engineering**

Colorado State University, *2011 – 2015*

- CSU EcoCAR3 Controls Team
  - Built the supervisory control framework and selected hardware for use on competition vehicle

## Skills

Data Acquisition & Analysis · Agile Software Development · Version Control (Git/Github)
Vehicle Communication (CAN/CANFD, J1939) · Project Coordination · MATLAB/Simulink · Python · C++