EE/CprE 4910 – sdmay25-26
Week 6 Report
10/17/2024 - 10/24/2024

Cost-Effective and Easily Configurable High Voltage Motor Controllers for Automotive Use
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Summary

We are very close to having the initial prototypes up and running, more work needs to be done regarding the final design. Example code is starting to run and development hardware is coming together.

Accomplishments

- Successfully ran software on the dev board to test hardware – Bryce, Gavin
    - Basic generated example project functions as expected
- Full hardware setup built, waiting on replacement hall sensors – Marek, Jonah, Long
- Designed and ordered two revisions of hall sensor board – Jonah
    - Specced parts and hall sensors
    - Ensured placement of sensors was perfect

Pending Issues

Multiple hall sensors on the motor we planned to use are inoperable, we are now waiting on replacement parts from Detroit.

Individual Contributions

Member	Contributions	Week Hours	Cumulative Hours
Gavin Patel	Investigated Motor Controller Workbench	7	26
Bryce Rega	Software reverse engineering, blinky LED test	7	30
Marek Jablonski	Reverse-engineered faulty hall sensors	7	29
Jonah Frosch	Designed/ordered hall sensor boards	8	29.1
Long Yu	Soldered wiring harness, ordered hall sensors	7	28

Upcoming Week

- Continue reverse engineering software examples.
    - Further investigate “mc_api” files
    - This is a multi-week task and will be continuously done until minimum viable product (MVP) of software is ready
- Fill in the blanks for custom MVP implementation
    - Using clues from re-generated projects, fill in firmware mysteries as well as motor control mysteries
    - This will take a few weeks, but we can focus on just firmware or just motor control or just high-level application sections. What exactly gets done will be detailed in the next report.
    - Develop MVP stubs for sensor-less configurations vs sensor configurations
- Run more complicated generated projects on the development board
    - Test operation of three phase inverters
    - Connect to motor with generated projects are fixed
- Repair the spare solar car motor if parts arrive
- Develop the next sections of the Design Document

Motor testing setup hardware

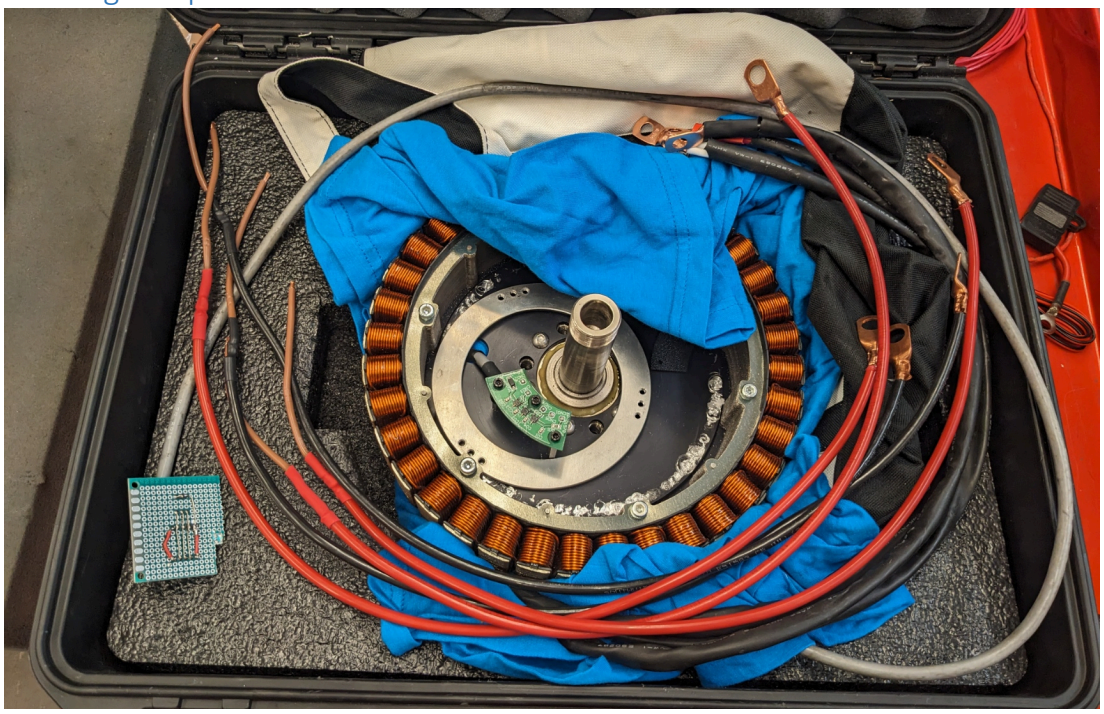

Figure 1. Test motor's stator and wiring harness

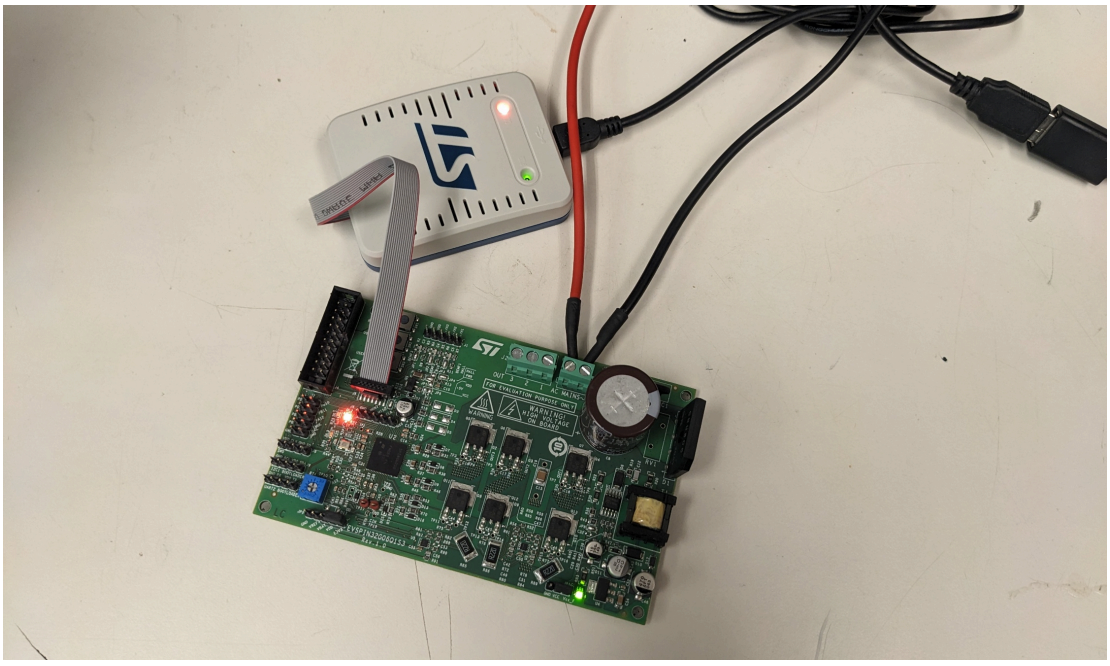

Figure 2. Development board running "Blinky" code