Prototype Electric Vehicle Phase III

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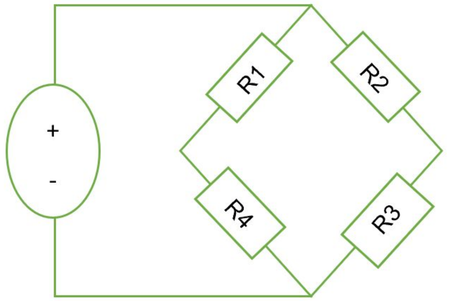
Abstract

The primary focus of this project was to continue the development of the benchtop prototype electric vehicle through the applications of regenerative braking and mechanical load. Unforeseen issues came up, but the Team took the challenge and changed its focus on organizing the circuit to PCB boards and to build a torque transducer to assist the mechanical load.

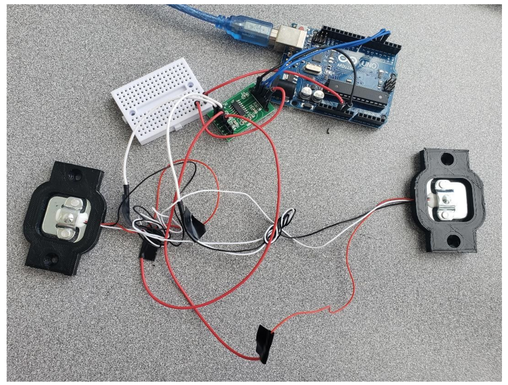
Introduction

The electric vehicle prototype phase III moved its focus to building a torque transducer and cleaning up circuity after Team 16 could not turn on the motor. By using a PCB board, the circuit will be cleaner to read. The torque transducer will be used to calculated torque and potentially control torque and speed. The last will be possible by using a wheatstone bridge as shown in the picture below.

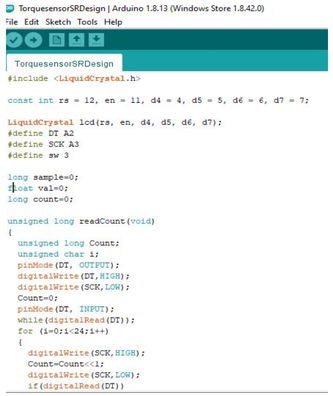


Methods and Materials

- The torque transducer consists of 4 pieces of 50kg half-bridge strain gauge load cell body scale weighing sensor amplifier to measure the mass.
- A HX711 was needed to convert the measured changes in resistance value changes, through the conversion circuit into electrical output.
- The sensors have 3D printed frames to minimize error readings and to be easily installed under the board, where the motor will be on.



- Arduino code control the functions of the scale measuring sensor. The end goal is to have a code to calculate torque.



Results and Discussion

Team 16 was facing many issues with the system therefore decided to clean up the circuitry and create a torque transducer. The PCB boards are still being created. As for the torque transducer team 16 will measure the weight through the half bridge load cells.

Conclusions

The scale sensor will help to calculate the torque and for with it eventually be able to control torque and speed. The team has worked on a Arduino code to be able to read torque instead of weight alone. The PCB boards will be installed to clean up and organize the circuity of the system. Finally the team should be able to run the system properly.

Acknowledgements

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