CP eWheel

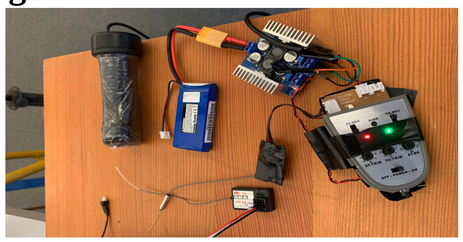
ELECTRICAL ENGINEERING SENIOR PROJECT SPRING 2019

CAL POLY
SAN LUIS OBISPO

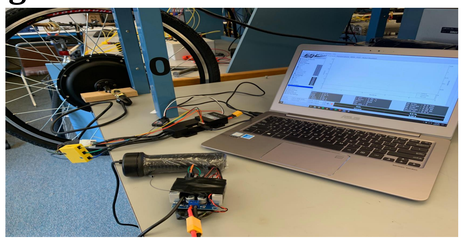
Problem Statement: There is no affordable self contained electric bike wheel that can turn most ordinary bikes into an electric bike.

Development Stages

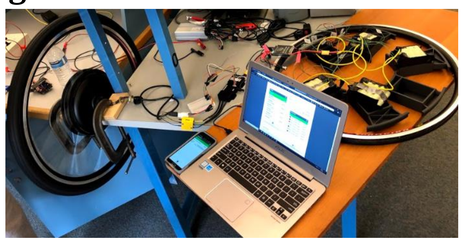
Stage 1



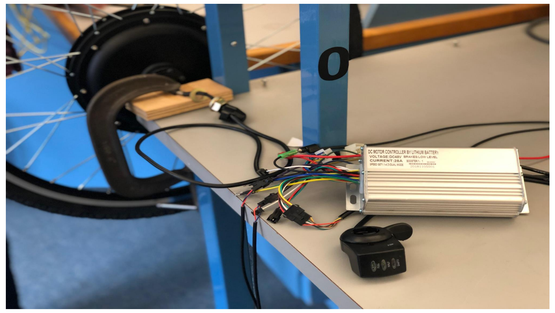
Stage 2



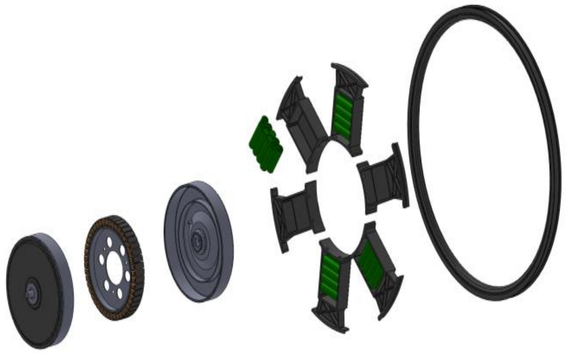
Stage 3



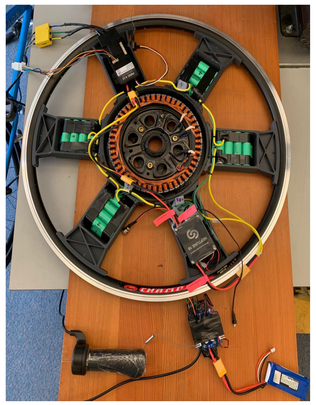
Lab Prototype(s)



"Electrifying your ride"



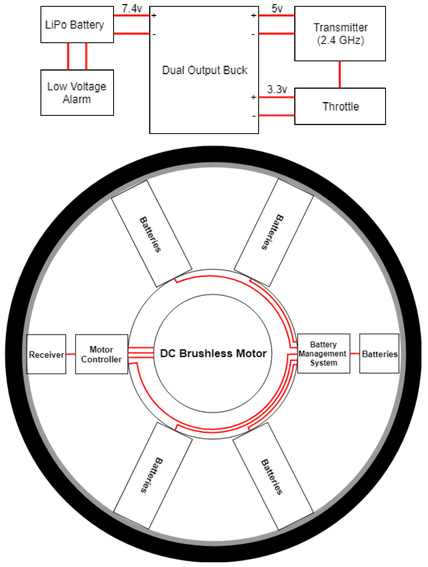
Solid Works model of the modular hub, batteries, and motor.

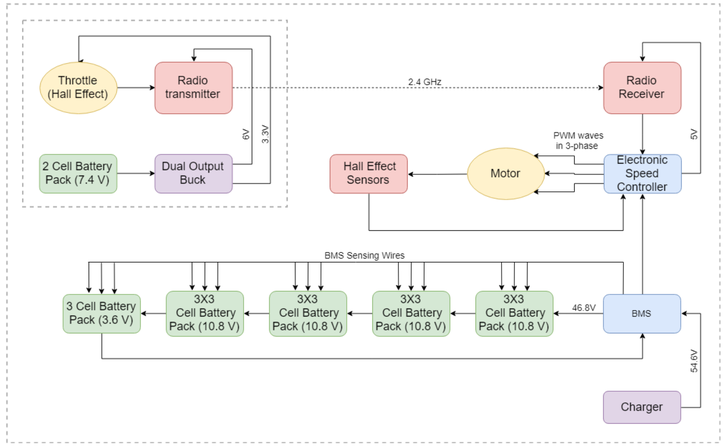


Assembled wheel showing the main subsystems.

Android app user interface.

Component Wiring Diagram and Flowchart





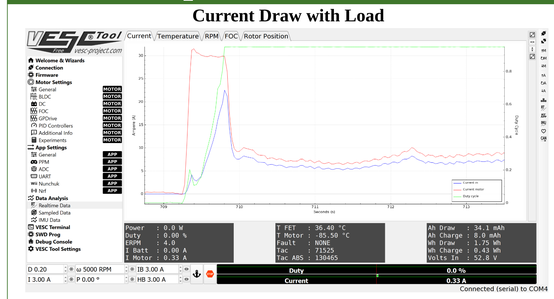
Key Components

Component	Primary Features
BLDC Motor	• High power (1000W) • Electronic control
Motor Controller	• Small profile and light weight • Open source programmable software
BMS	• Android app and BLE functionality • Temperature sensor • Programmable

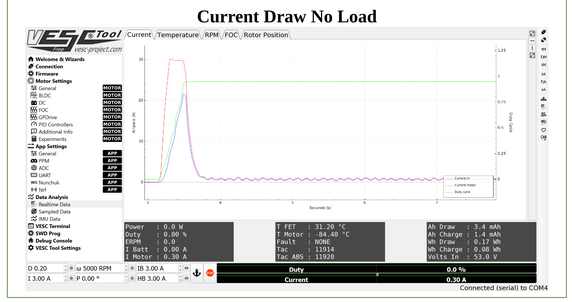
Component	Secondary Features
Wireless Throttle	• 2.4 GHz radio transceiver • Twist throttle
Batteries	• 18650 Li-Ion (13s3p) • High current drain • 46.8V nominal

Experimental Data

Current Draw with Load



Current Draw No Load



Team

Adam Berg
Jacob Butler
Roy Evans
Logan Griffith
Garrett Maxon

Project Results:

Redesigned the concept of an electric bike to create a modular self-contained solution that easily mounts to most standard frames, while using a wireless throttle and keeping costs lower than competitors.

Client/Advisor

Professor Murray

Sponsor

Electron Wheel
Cal Poly Electrical Engineering Department