Done as teams of 2

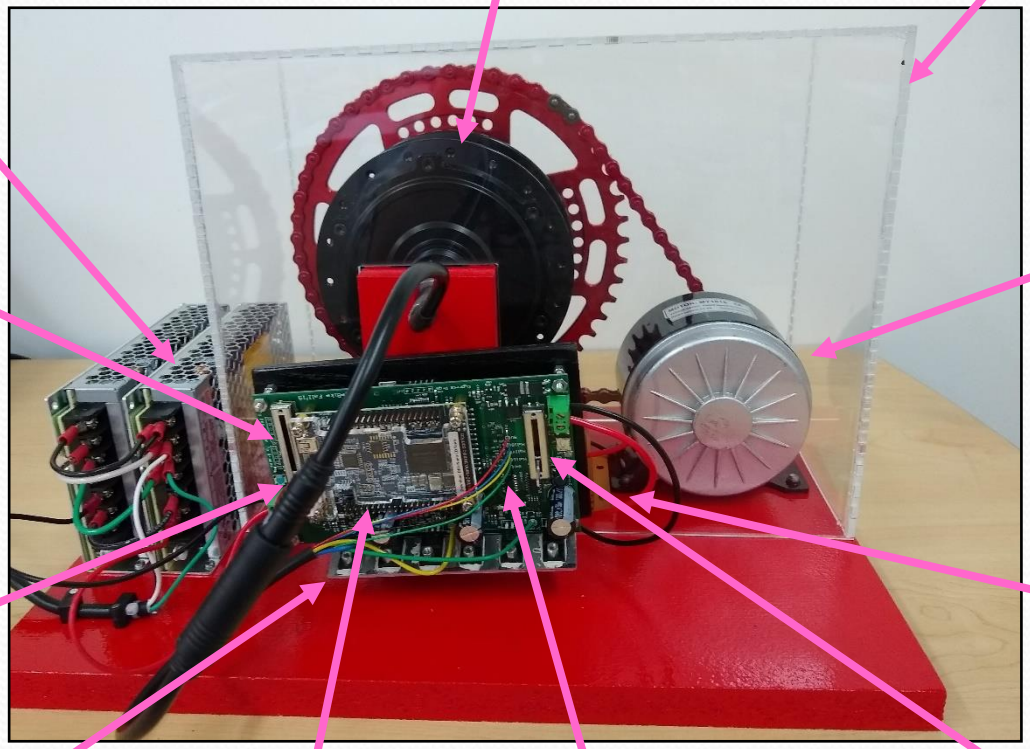
Exercise 16: Mapping brushless & mtr_drv to platform

Whole controller board mounted on a pivot to mimic going up/down hill

E-Bike hub motor (250W brushless DC)

Wouldn't want you getting your hair caught in the chain.

2 series 18V supplies to provide 36V DC



This slide potentiometer on the board mimics the pedaling torque sensor

E-Bike motor is coupled (via chain) to generator. The generator serves as a mechanical load on the motor.

Push button that mimics rider squeezing the brake handle

Load resistor to dissipate the power the generator generates.

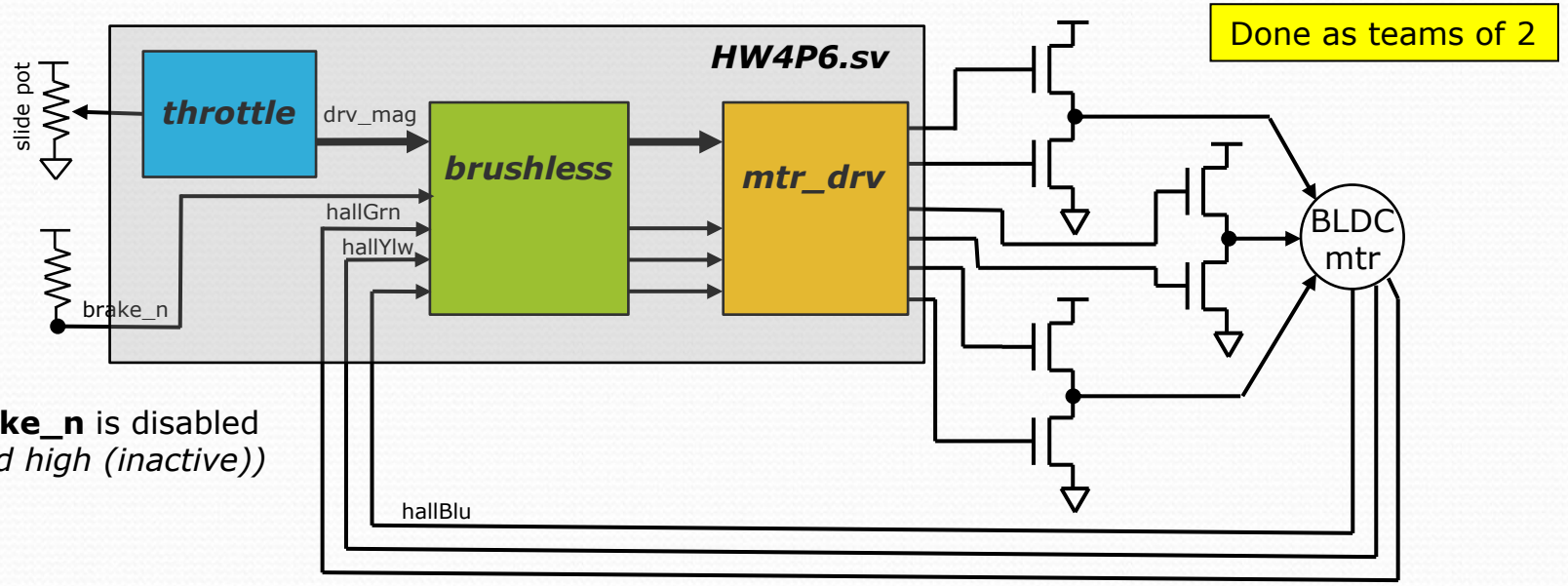
You can see the 6 Power FETs that drive the motor coils are mounted to an aluminum heat sink

The DE-0 Nano board contains the FPGA that is the "brains" of the operation.

Here you can see the Hall effect sensor wires coming in from the motor.

This slide potentiometer mimics the cadence sensor

Exercise 16: Mapping brushless & mtr_drv to platform



brake_n is disabled
(tied high (inactive))

- For this problem you will map your **brushless** and **mtr_drv** designs to a FPGA that exists on the test platform, and test that they function properly by driving a ebike hub motor (BLDC mtr).
- The code to interface to the slide potentiometer (that serves as a throttle) is provided (**throttle.sv**). The shell to wrap things together **HW4P6.sv** is also provided.
- Download the provided .sv files along with **HW4P6.qpf** and **HW4P6.qsf**. Launch Quartus using the provided .qpf. Compile and map to the DE-0 on the test platform.
- Submit a video showing you download the code to the DE-0 and running the motor **at various speeds**. Include a shot of **your faces** in the video (helps me associate names with faces).