Project 4: Motor Control

Project 4: Motor Driver Control

Four ducted fans for our hovercrafts:

- One lift fan: bidirectional control
- Three lateral fans

Component 1: Circuit

- H-bridge to power
- H-bridge to fans

- H-bridge to Teensy
  - For each fan: PWM magnitude and 2 direction control signals
    - Lift fan: hard-wire direction to hover
  - Teensy power and ground

Be careful with direct battery power!

Component 2: Interface Functions

```
int16_t clip(int16_t value, int16_t min_value,
             int16_t max_value)

void set_lift_motor_magnitude(int16_t magnitude)

void set_lateral_motor_magnitudes(int16_t magnitude[3])
```

Component 3: loop() Function

Depending on switch state:

- Ramp the middle fan up, then down, then reverse up and then down
- In sequence:
  - Ramp left up, then down,
  - Ramp right up, then down
  - Ramp back up, then down

Coding

- Make sure that each function that you implement does exactly what the specification says & no more
- Stick to the documentation specification

New Hardware for Today

- Dual H-Bridge modules
- Four motor cables
- One more trickle charger

Be careful with the battery power! (go slow)