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

```c
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)