M.A.D. Dog is an autonomous robot designed to patrol office buildings for intruders.

If an intruder is found, M.A.D. Dog has:
- Wi-Fi Module
- Speaker
- LEDs
Issues
IR Sensors

- Purpose: Navigation
- Interface: Analog-Digital Converter
- Range: 4-30cm
Sonar

- Purpose: Navigation
- Interface: Capture Timer/GPIO
- Range: 3cm – 4m
Compass

- Purpose: Navigation
- Interface $I^2C$
- Precise Coordinates
PIR Sensors

- Purpose: Intruder Detection
- Interface: UART
- Range: Up to 5m
- Wide FOV
Wi-Fi

- **Purpose:** Communication
- **Interface:** UART
- Communicates with server and runs several checks.
  - Is M.A.D. Dog currently running?
  - Is there an intruder?
  - Where am I?
Motor Controller

- Purpose: Control Motors
- Interface: PWM/GPIO
- Handles speed and direction of motors
Motors

- Purpose: Mobility
- Interface: GPIO
- Built-in motor encoders to give precise readings on wheel movement.
Chassis
Software

Main
- Initialization
- PID
- Adjust
- Update Position
- Navigation

Interrupts
- Update Encoders
- Trigger Sonar
- Sample ADCs
- Capture Echo
Advice

- Keep up with checkpoints.
- Do NOT fall behind.
- Quadruple check everything.
- Read the manual
- Make an awesome robot!
Thank You!

Professor Johnson

Joseph Malcolm

ECE Shop

COE Machine Shop

Sponsors

2013 Capstone Class
Questions?