Initial Design Review: 
M.A.D. Dog

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Kevin Liou
What will it do?

M.A.D. Dog is an autonomous robot that will map and patrol an office space. If it detects an intruder then it will attempt to deter them with light and sound while sending a notification to a main security station.
Project Description

- How will it work?

  It will be a motorized wheel driven robot which will use a compass, IR sensors, and sonar to navigate a floor. It will use an array of PIR sensors to detect an intruder at which point it will begin an alarm sequence.
Project Description

Purpose: Security

- The primary usage for our design will be in buildings with large floors where human guards and other security systems might be too costly.
Initial Specifications

Navigation:

- (2) Gear motors with built in Hall Encoders
  - Will have a separate battery to power motors to deal with voltage differences and power capacity
  - Using Solarbotics L298 Motor Controller
- (3) IR sensors
  - Sharp GP2D120: 4 cm - 30 cm
- (1) Ultrasonic range detector
  - Devantech SRF05: 1 cm - 4 m
- (1) Digital Compass
  - Devantech CMPS03: 0.1° res, 3-4° accuracy
Initial Specifications

Detect and react:

- (3) PIR sensors
  - ZEPIR0AAS02MODG: 5 m/ 3 m
- Wi-Fi Module
  - RN121XVW
- High luminosity LEDs
- Speakers
Initial Specifications

The Processor: **LPC2478!!**

- Interfaces to be used:
  - PWM
  - A/D Converters
  - GPIO
  - RS-232
  - I2C
Additional Goals

- A Camera to add capture image of intruder.
  - Would be sent with alarm notification

- Microphones to add noise awareness to the device.
  - Have it investigate the source
Individual Roles

Nicholas:
- Leader, Software and Controls

Tim:
- Robotics and Electrical

Kevin:
- Networking and Interfaces
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Technology and IP Reuse

ZEPIR0AAS02MODG: (PIR sensor)
   It has settings for sensitivity which might allow for configurable detection capabilities.

Hall Encoders: (built into motors)
   Will be used to determine distance traveled

All of the previously listed sensors and modules.
Critical Elements

- **Navigation**
  - Needs to be able to tell where it is, where it should go next, and be able to go there.

- **Detection**
  - If the motion detection doesn't work then it fails as a security device.

Without either, this is just a large paperweight that isn't very nice to look at. At least the Wi-Fi would still work...
Are there any:

- Questions
- Comments
- Suggestions