Proposal - A Miniature Dorm Room Security System

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A dorm room security system would allow users to monitor activity within their room, whether it be from roommates, maintainance, or geese. The Arduino will be connected to a motion detector or rangefinder, and when movement is detected while the system is armed, a message will be sent to a custom app on the user's phone, noting that activity has been detected within their room.

The major software component of the project would be developing an app on the user's phone to log activity within the room, receive information sent from the Arduino over the internet, and arm/disarm the security system itself.

Potential Challenges:
Learning Android Studio / Swift
Sending information over the internet from the Arduino
Logging and displaying data through the app in a good way

Prototype:
We will utilize a vertical and evolutionary prototype, refining the main parts of the project, the app and detection system, then integrating them at the end, as there are only two main sections: the hardware of the security system, and the software to log data on your phone.

For individual parts of the project, we will use a vertical and experimental prototype to figure out how it works, such as for the motion detector and components of the app code. Examples include sending simple integer values from the Arduino to the app, figuring out the capabilities of a rangefinder/motion detector, or storing data on a smartphone.

Hardware:
- Elegoo Arduino Mega 2560 (acquired)
- Smartphone (acquired)
- Motion Detector
- Rangefinder
- Breadboard and connecting wires
- Wifi/Ethernet module