

## **Project Abstract**

Capstone Group #61 – Home Defender

Tyler George, Vincent Vigliotti, Christopher Stiles, Anthony Lau, Chris Czechowicz

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We will be attempting to create the next generation of a home defense system. Current systems like ADT or Frontpoint lack in user-friendliness since it must be installed in your home. Also, the existing solutions cost upwards of \$300 a year, and just about all only surveil a single portion of the home.

With our Home Defender system there is no installation. Just connect the system to your phone and you're set to go!

Our system is completely autonomous using the ICreate 2 open-source Roomba platform; and will traverse through a user's home detecting unauthorized personal through thermal imaging. The user will be sent updates from our system on the status of their home. Accompanying features include measurements such as carbon monoxide, smoke detection, temperature, and humidity.

In our first iteration, we plan to only have the Roomba survey a single room for a human presence. If a human presence is detected, an alarm will go off and a notification will be sent along with a picture of the intruder to the user through a mobile app. Also, temperature and humidity data will be sent to the phone as well in our first version.

Advancements in the fields of signal processing and machine learning have made this type of a project possible. Putting us right at the frontier of the latest and greatest technologies.