**Background**

First responders, law enforcement, and military are tasked with entering dangerous, often unknown environments on a daily basis. Moreover, many of these dangerous situations present environments with limited or no visibility. Due to this lack of visibility, the people entering these environments are less likely to gain an accurate understanding of their surroundings. The IR Scout addresses these issues by performing remote, thermal visibility. The people entering these environments are less likely to enter dangerous, open unknown environments on a daily basis. Moreover, many of these dangerous situations present a high risk to the user interface. With these features, the IR Scout provides first responders with knowledge of a hazardous environment prior to entering, regardless of visibility.

**Overview**

The IR Scout is a highly durable sensor package that wirelessly transmits high-quality, thermal images to a remote user. The system is composed of a throw-able sensor package and a laptop that displays the thermal images. The device requires minimal user operation: simply turn it on and throw it into the area of interest. Once the sensor package reaches a stable position, the appropriate cameras on the device each snap an infrared image and wirelessly transmit the data to a laptop. The laptop then processes the necessary image processing to display multiple images neatly on the user interface. With these features, the IR Scout provides first responders with knowledge of a hazardous environment prior to entering, regardless of visibility.

**User Interface:** Uses MATLAB to automatically receive, process, and display the images sent from the throw-able sensor.

**Device:**

The final product is a combination of the outer shell designed by a 5 person ME team as well as the internal electronics designed by us.

**Future Goals**

- Convert the MATLAB user interface into a mobile application. This will allow for a more compact, practical product.
- Expand on the number of cameras in the throw-able sensor package for an increased field of vision.
- Combine both visual and thermal cameras in the device and then use FLIRs MSX blending algorithm to give a more detailed view.
- Add video streaming for one camera module at a time.
- Rotate the images so that they are all oriented correctly.