

## **SENIOR DESIGN PROJECT: DRONE 2 ABSTRACT**

The purpose of our project was to take a commercial drone kit, the Coex Clover, and modify it to serve as a search and rescue drone for firefighters. Our drone functions as a camera in the sky with thermal imaging that assists firefighters in watching a fire from a higher vantage point. Other methods of viewing a burning building would be unsafe or require lots of time and equipment, such as taking a ladder to a location to assess fire damage. With the drone, this can be done remotely from a laptop with an easy-to-use web page interface. The drone also functions as a location tracking device, sending its coordinates back to the computer, and highlighting points of interest on a grid. These features allow firefighters to get their jobs done more efficiently and safely, all while using equipment with a more affordable price point.

Most of the research for this project was to figure out which specific hardware components to use, since we had to find solutions that were cost effective yet had the functionality required. After the hardware was selected, it was a matter of connecting everything together, including designing housings to hold the components in place. The software was also written in this time and tested to ensure smooth operation. The main issues encountered were getting the hardware and software to work together, especially the components included with the drone kit. Our project ended up meeting the initial goals laid out, plus being almost four times cheaper than a local fire department's price recommendation for the feature set. After presenting the project to the fire department, we learned that the thermal imaging and location features are useful in many different scenarios, and that they would be willing to use such a drone in practice.