

CprE / EE 492 - Sdmay18-25

Bi-Weekly Report 7

Autonomous Health Monitoring of Civil Infrastructure using UAV

Start Date - End Date: April 6 - April 20th

Faculty Advisor: Dr. Halil Ceylan

Team Members:

Nathan Conroy - Software Lead

Kevin Yen - Hardware Lead

Quade Spellman - Meeting Facilitator

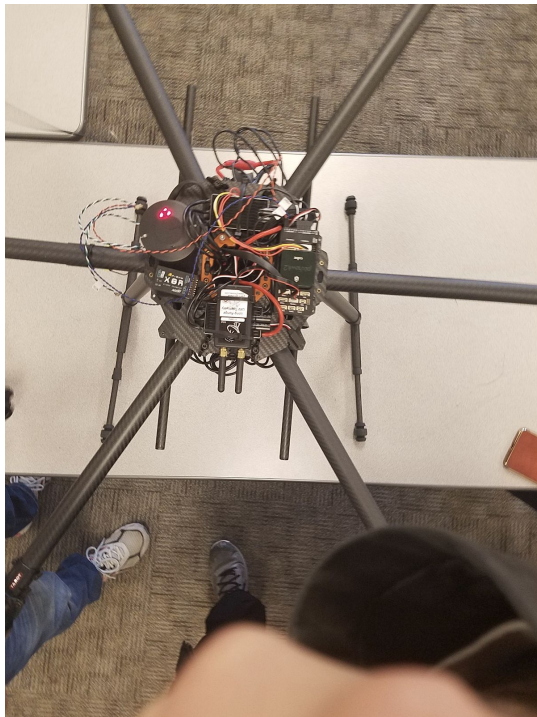
Isaac Bries - Test Engineer

Molly Hayes - Meeting Scribe

Rishab Sharma - Report Manager

Past Week Accomplishments

We have finally built our drone and it is ready to be flown. Everything that is necessary for the drone to function properly has been attached and the pictures of the final drone is shown below:





These pictures show that the important wires needed to connect the pixhawk and video and camera transmission are set up. A lot of the wires and cables that attach to our important components have been soldered and attached. The RC controller is binded to its receiver. We have been able to see data values change for various channels on the ground station. The pre-flight check has been set up, but for now has to be disabled so that we are able to ARM the flight controller. What the pre flight check does is that it looks for GPS signal, battery voltage, and a lot of other useful things, and can be reset.

We decided that the battery will be attached at the bottom of the drone and we are currently working on creating a gimbal for both the thermal and HD camera. These will be attached in a

way that we will be able to see the front of the drone and what is below the drone so that we can have a wider view of our flight path.

The thermal camera and GPS system have also been setup through the pixhawk system that we have established. We have connected our flight controller with the drone too so that once the drone is powered on we are able to control it during flight.

The motors, and battery are also correctly installed, and all the previous problems that we had last week have been solved and everything seems to fit properly. The hardest part about attaching the motors was trying squeeze the wires between the arms. In the end we were able to do this, but it took some time. The propellers are not attached yet because we only put the propellers when we are going to fly the drone, because it is better to be safe than sorry.

The goal that our client set for what the drone is supposed to do has been accomplished by our group. We have really built an amazing drone that can do many things related to capturing data for health monitoring for civil infrastructure.

Pending Issues

What is left for us to do is to make sure the flight of our drone is properly calibrated. We also have to make sure we know how to use the controller so that when we fly there will be no mistakes. Taking pictures of cracks, roads, and bridges is the ultimate goal.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Nathan Conroy	Got FLIR camera controlled from the pixhawk. Troubleshooted rotors, set up RC controller.	14	117
Kevin Yen	Help assemble drone. Looked into powering flir camera using battery pack.	5	95
Quade Spellman	Assisted in wiring up motors and worked on final poster.	7	67.5
Isaac Bries	Wired motors to controllers, re-oriented motor direction if	10	92

	necessary. Began ESC calibration process. Confirmed communication between flight controller and thermal imaging system.		
Molly Hayes	Helped with drone assembly and calibration, worked on final poster, created CyBox folder and started adding requested info for client	6	60.5
Rishab Sharma	Helped team assemble drone, including assisting with wiring and attaching the motors.	10	82

Plans for Upcoming Week

- Start flight testing, and figure out a place to practice that has roads and bridges
- Continue our research on how to fly and use the sensors so we will have an easier time setting it up.
 - How are we transferring video to the pilot? (drone image preview capabilities) streaming in HD?
 - What environments do you operate your drone in? For example have you ever tried light rain? How do you protect the drone.