CprE / EE 492 - Sdmay18-25

Bi-Weekly Report 6

Autonomous Health Monitoring of Civil Infrastructure using UAV

Start Date - End Date: Mar. 23 - April 6

Faculty Advisor: Dr. Halil Ceylan

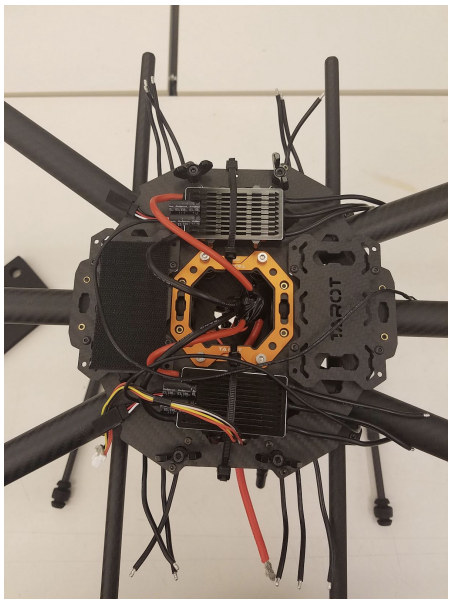
Team Members:

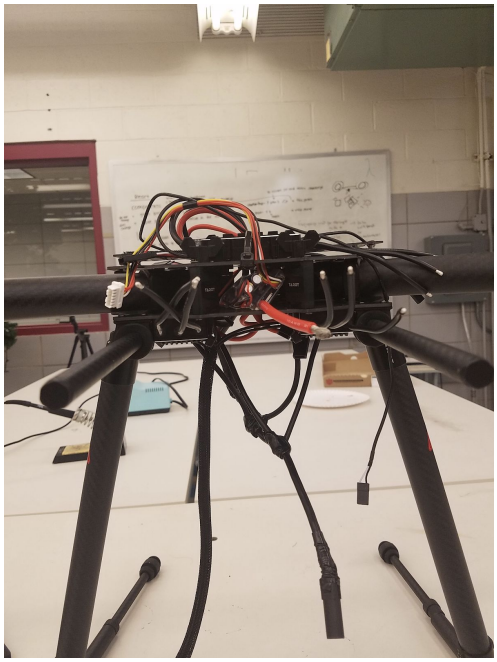
Nathan Conroy - Software Lead
Kevin Yen - Hardware Lead
Quade Spellman - Meeting Facilitator
Isaac Bries - Test Engineer
Molly Hayes - Meeting Scribe
Rishab Sharma - Report Manager

Past Week Accomplishments

These are the weeks were we have have started to assemble our drone, and also learned how to fly a drone when we are ready to start.

The frame of the drone has been built and here is a picture of what it looks like:






Redux
reducers → state management
selectors
react component
render () {

}
dispatch
a redux
action
called
"getItems"
asynchronously
make a
http request
to our server
server
responds
res.body
= some
data
use response
body and add
it to the
redux
application
State
redux
triggers
a state
change
in React,
the components
rerender
react component
render() {

}
no longer null

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.

The motors, propellers, and battery still need to be set up on the drone, but that should be easily doable once some of the parts we had to 3D print are available. To attach the motors to the sides of our frame we need to make our own plates, and that way the motors will be held properly. Doing this took some time because there is an approval processes to use these printers that require a back forth between our client and the 3D printing place. This took a while but the plates have been built and we will put them on ASAP.

We ran into a little problem with the battery due to the fact that the battery needs dc power to operate which meant that we simply could not just plug our charger to the wall. So we will need to use a power supply that we got from ETG.

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.

Pending Issues

Make sure that everything that we have assembled is in the correct placement and all configurations are set so that we will be able to fly the drone and capture some data. Make sure we know how to use the controller so that when we fly there will be no mistakes.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Nathan Conroy	Started fight controller to flir controller communication	10	103
Kevin Yen	Assisted assembling the drone. Created a motor mounting adapter. Helped order	18	90

	aluminum needed for the adapter. Practiced flying a drone. Started developing a way to mount the camera to the frame. Ordered connectors. Looked into issues with battery.		
Quade Spellman	Assisted in assembling the drone	4	60.5
Isaac Bries	Wired/routed speed controllers. Explored battery charging issues. Assembled connectors for battery, speed controllers. Mounted flight controller and other components	10	82
Molly Hayes	Assisted in drone assembly, practiced flying other drone with Aerospace student, submitted order for aluminum for motor mount	7	54.5
Rishab Sharma	Assisted in drone assembly, practiced flying other drone with Aerospace student, helped understand how flight control and thermal camera work	7	72

Plans for Upcoming Week

- Attach the camera gimbals once created
- 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?
    - What do you view your live video feed on? What device?