Presentation: 10~15 min

Introduction - Names, what we have been doing and what are class is

Function

Electrical Components

The controller sends signals to the transmitter which is connected to the CC3D which detects it’s angle and sends outputs to ESC which sends electrical impulses to the motors which cause them to rotate and move the drone.

Here is a diagram of the what the wiring looks like.

Controller

The way that the CC3D interprets the controller signals is configured using a program called LibrePilot, which is a open source software project for vehicle control and stabilization. We are using it to control and stabilize our drone to fly it.

Structure

Main Body

Designed to have space for a 11.1V LiPo battery in the center. The battery is held in place by a few plastic walls and a screwed in part that goes on top of the battery to keep it from falling out of the it’s containment. On the side it has barely enough space for all the wires and the transmitter. The lid goes on top and is attached with 4 screws. This keeps all the wires from falling out.

Arms

This part is designed to be able to support itself despite strong forces. It can also survive a few crashes. The triangular structure, similar to what you would see with towers for an overhead power line, are designed to be as structurally sound as possible while using less material. Attached to the end of the arm with 2 screws is an extension that allows for the secure attachment of the motors using 4 small screws. We found that in past versions of the drone the motor mount was one of the parts more susceptible to breaking from crashes so we make it stronger in this version.

Legs

We made this part because in our second design, we found landing without hitting the propellers on the ground to be very difficult; We decided that legs would really improve our ability to land and takeoff. Each leg is made up of 3 parts which are connected with a small peg and glue. Each leg uses 4 screws to attach to the main body to ensure a very secure connection. The lid has small notches to accomodate for the space that this takes up.

Process

General

The general process of engineering is a cycle. The first step is setting a goal. For example with our project the initial goal would have been to make a functional drone. The next step is planning and researching solutions. This would be sketching out designs based on research and looking at other designs. The you select the design you’re going to try first and move onto the next step. Building the selected design. For this stage we designed it in a 3D modeling environment and then print it using a 3D printer. The final step is testing and evaluating the completed design and looking for room for improvement. Then you got back to repeating the process.

Previous Designs

Improvement

Version 3

Collaboration

Conclusion - Wrap-up + ask questions that they have

Portfolio:

Update Log

Summary Page