

EE/CprE/SE 491 Weekly Report #6

Aug 17 - Aug 31 2020

Group Number: 3

Project Title: Squirrel

Client: Bob Thompson; Advisor: Gary Tuttle

Team Members: Isaac Tegeler, Devon Driscoll, Richard Cushing, Dan Gilbert, Abraham

Contreras-Ramos, Cole Patton

Weekly Summary:

Met once to discuss where we were in the project and decided that we are going to do group meetings on Discord for the foreseeable future.

Past week accomplishments

Isaac: Worked on the main control application. We had not yet designed how our program was going to work previously and I worked mostly on the design of the program this week. We are planning to use python and start the application on boot-up of the jetson using the bashrc file that gets run at boot up. The python application will take care of any video streaming and classification for the image recognition. I also worked on figuring out how to do asynchronous threads so that we can both run the classification at the same time as scanning with the turret. I am still working on how to do event driven threads rather than polling since I am concerned that polling will result in too much CPU usage.

Cole: Finished annotating squirrel photos for the custom object detector. With the 250 images annotated this week, there are just over 400 annotated images total ready to be used. I also researched memory cards and power supplies for the Jetson Nano.

Devon: Found good candidates for the fishing reel that we can use.

Richard: Calculated sizing and torque requirements for gears, reworked movement plans, updated sketches

Abraham:

Dan: Calculated sizing and torque requirements for gears, reworked movement plans, updated sketches

Pending issues:

Creating a gear system will require CAD modeling the gears, fulcrum, and pieces for holding parts in place. Will have to look into CAD to even begin to 3D print a testable model. Will need to figure out how to load the ping pong ball to launch it. Need to determine how to attach the motors to the targeting/launching system effectively.

Hours Worked

<u>Name</u>	<u>Contributions</u>	<u>Hours this week</u>	<u>Hours cumulative</u>
Isaac	Started main control application	6	6
Cole	Annotated images for custom squirrel detector	6	6
Devon	Meetings, research on fishing reel.	6	6
Richard	Designed yaw/pitch gear CAD model, meetings	6	6

Abraham	Research, circuit design, meetings	4	4
Dan	Gear design, meetings,	6	6

Plans for the upcoming week

Isaac:

Figure out what gaps there are in the main control application and begin to attack them. I also will work to get the parts that we need for the launching system and targeting system printed.

The biggest issues that still need to be addressed are loading the ping pong ball, attaching the motors to the launching/targeting system

Cole: Place orders for the Jetson Nano's memory card and power supply. Then convert the annotated images to weights and use them to train the detector. If the parts arrive, set up the Nano and Raspberry Pi camera and install Yolo V3.

Devon: Finish research on fishing reel (really not important at the moment) and find other tasks to work on next.

Richard: Print and test part pitch for the gearing systems (yaw/pitch gear). Design pitch frame, possibly adjust Isaac's Pitch to be one part with flanges

Abraham: Researched power circuit designs and continued looking for ways to save power.

Dan: Print and test parts for the gearing system(yaw/pitch gear). Model pitch frame, combine pitch gear + flange to attach to launching box