

EE/CprE/SE 491 Weekly Report #7

Sept 1 - Sept 14 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:

Presented our first PIRM presentation of the semester.

Past week accomplishments

Isaac: Worked on the main control application. Continued to work on the API definition, and wrote the skeleton for our application. Spent time working on the PIRM as well. We now have the skeleton code for our API, and we can begin filling out the different modules. I also began to research how to communicate with the PIR sensor on the Jetson nano, and found that the sdk that exists for the jetson nano has code that supports the GPIO python library for the raspberry pi. I began work on the program to poll the PIR sensor, and plan to have some test code ready for the Jetson by the next status report.

Cole: Trained the detection model that the vision system will use to identify squirrels. It successfully identifies squirrels with high (60% to 99%) confidence, but it also incorrectly labels other small animals as squirrels. Also started doing research on using the detector with a live video stream. Also ordered the memory card and power cord for the Jetson Nano.

Devon: Working on running Python scripts that will work like an interrupt when squirrel images are detected. It is just in the testing phase and not actually working yet. Also working on how to get skeleton code ready for the LCD that will display notifications related to our machine.

Richard: Calculated sizing and torque requirements for gears, reworked movement plans, updated mechanical design sketches and measurements. Presented PRIM report.

Abraham:

Dan: Calculated sizing and torque requirements for gears, reworked movement plans, updated sketches, began creating 3d models for targeting system in fusion 360, Presented PRIM report #1

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	Finished application API, began work on PIR communication	6	12
Cole	Trained vision system detector and looked	8	14

	into running the detection with live video		
Devon	Meetings, research on fishing reel.	8	14
Richard	Designed yaw/pitch gear CAD model, drew mechanical drafts, meetings	8	14
Abraham	Research, circuit design, meetings	4	8
Dan	Gear design, meetings,	8	14

Plans for the upcoming week

Isaac:

Will finish work on the PIR sensor, will also communicate with other members of the team to find out what work needs to be done for making the models for the launching system. If no one is working on this I will stop work on PIR communication and instead work on modeling parts for launching as it is a higher priority.

Cole: Begin working on incorporating live video with the squirrel detection. If the power cord and memory card for the Jetson Nano come in, try running the detection model on the Nano.

Devon: Continue working on functions in our API on our repository. Work on LCD notifications.

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. Finish mechanical drafts and begin making parts and assembling them in CAD. Begin purchasing parts for the assembly.

Abraham: continue research. Calculate how much power would be consumed by each component. Coordinate with group members to find out how to efficiently supply power. Look

into reducing physical vibration due to AC 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