EE/CprE/SE 491 Weekly Report #4

Feb 2nd - Feb 16th, 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

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Weekly Summary:

Worked on lightning talk and scheduled for this semester and next. Begin planning to order parts. Broke up subsystems among group members.

Past week accomplishments

Isaac: Scheduled meeting with the group and Dr.Tuttle. Worked towards finding parts for the vision system. Found the the Jevois camera is likely the best available option on the market due to its low cost and ease of use. Need to start looking at sonar and motion detection in the coming days. Worked with the group to determine deadlines for ordering parts and building prototypes for this semester. Also planned in deadlines for the design document.

Cole: Attended team meetings and helped put together the slides and voices for our lightning talk. Did some research toward the parts that we'll need for the vision system and looked into other similar projects to see what worked and what didn't work.

Devon: Attended meeting with team to create timeline/schedule where we also obtained more concrete responsibilities individually. I'm looking into the reeling system for the fishing line that

will reel in the ping-pong ball after being launched. The fishing line should be as lightweight as possible and also not easily tangled. Momoi's Hi Catch monofilament seems to be the frontrunner at the moment for not tangling easily. As for the reeling apparatus, I'm still brainstorming.

Richard: Met to work on lightning talk and continue thinking about what hardware we should be looking into. Looked more into YOLO and OpenCV with Cole to become familiar with what hardware might be needed and which algorithms would be best for our purposes. Consulted with mechanical engineers on design for moving the pitch and yaw of the launcher.
Newest design introduces a semi-circle gear to pivot pitch up and down. A non-moving, hollow neck between the main box replaces the neck with gears at both ends. On the neck, a gear and servo will be attached to adjust yaw. On top of the yaw gear, a see-saw fulcrum will connect the yaw turning and the pitch of the semi-circle gear that attaches in the middle of fulcrum. Adjustments of this system could be made for the launcher we decide to use by putting it near the rear of the launcher box.

Pending issues:

COVID-19 outbreak will limit our access to campus and make it difficult to meet. We need to find out how our schedule will change, and what steps need to be taken to still get the parts that we need.
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.

Hours Worked

Name	**Contributions**	**Hours this week**	**Hours cumulative**
Isaac	Organized meetings. Worked towards ordering parts for vision system.	6	24
Cole	Meetings, vision system research, lightning talk, researched potential parts.	6	22
Devon	Meetings, research on fishing line, reeling apparatus.	6	24
Richard	Meetings, lightning talk, researched more existing launchers, vision system research, designing pitch/yaw gear system	8	28
Abraham	Met with group and faculty, lightning talk, continued work on design document	8	18
Dan			14

Plans for the upcoming week

Isaac: Required that by the end of the next status report all parts for the vision system will be decided on. Will also need to have our second draft of the design document due. Based on the requirements will find a way to set up a remote meeting with the group to go over part 5 of the design document so that we can have a tentative version of this complete for draft two. Will

work towards the completion of part 4 and touch up on parts 1 through 3 for the second draft of the design document.

Cole: Working on getting a solidified list of parts to order for the vision system. Also planning on working on the design document.

Devon: Finding a good solution to reeling the fishing line (and ping-pong ball) in as well as testing fishing line for tangling. Also, helping with the design document that is due in two weeks.

Richard: Continuing research for Machine Vision especially hardware, looking into CAD modeling the specific gears we need for moving the launcher, design documentation, and having group meetings online.

Abraham: Looking into parts for power supply and looking how to connect the camera we will use to the power supply we need.

Dan: