EE/CPRE/SE 492

Weekly Report 14

Goose Chaperone
SDDEC19 - 17
10/25/2019 - 11/8/2019

Client/Advisor:
Randall Geiger

Team Members:
Weston Berg
Zhihao Cao
Alec Morris
Johnson Phan
Woodrow Scott

Past Weeks Summary
The team has continued its work in the prototyping phase. We are now onto final prototyping for the project. Refinement of the image processing has produced a working model which can classify geese, humans, and several environmental hazards and determine their location within the picture. Wheels, axles, and motors have arrived and are reading to be attached to the chassis. All individual components, with the exception of the distance sensor, have been successfully tested with the Beaglebone. Portable battery packs have been ordered or are on order to power the various system components.

Past Weeks Accomplishments
- PWM Control for DC Motors - Weston
  - Successfully tested PWM control of two DC motors via an H-bridge motor driver board.
- Battery Requirements - Weston
  - Determined all necessary power supplies needed to power the system. Ordered battery packs which provide necessary volts and amps.

- FInal Prototype Parts - Weston
  - Almost all parts for the final prototype are on order or have arrived.
  - The last part needed is a battery for the system's stepper motor
- Distance sensor test with Beaglebone -Zhihao
  - Distance senior works well with beaglebone
- Software Architecture - Woodrow
  - Building a modular IO system for easily registering and interacting with component drivers
- Tensorflow Updates - Woodrow
  - Improving model and OpenCV integration
- Looked into RTK modules and accessibility for GPS precision improvement - Alec
- PVC and Motor Mounting - Johnson
  - Mount bearing to PVC and clamped
- GPS Update - Alec
  - Did further cleanup of GPS data and researched GPS protocols that could improve precision & accuracy.

Pending Issues
- Mounting axle bearing to chassis, motor to chassis
  - First Attempt: Require testing for stability and possibility of falling out
- Attaching camera & distance sensor to swivel, swivelling via stepper motor

Individual Contributions

Team Member	Hours (Report Duration)	Cumulative Hours
Weston Berg	22	116

Zhihao Cao	6	49
Alec Morris	5	58
Johnson Phan	9	60
Woodrow Scott	15	96

Plans For Upcoming Weeks
- Weston Berg
  - Mount wheels/axles/motors to chassis
  - Wire up chassis and get running
  - Mount camera and distance sensor to chassis
  - Final ordering of parts
- Zhihao Cao
  - Make improvement on coding distance sensor with Python.
- Woodrow Scott
  - Continue working on component integration
  - Test component integration
  - Re-Consider Faster RCNN Tensorflow Architecture, may provide detection box benefits
- Johnson Phan
  - Testing/Construct bearing, PVC, and motor procedures
  - Adjust PVC length of model
  - Drill and screw nuts and bolts to keep PVC from any possibility of shifting out of position during testing/operation
- Alec Morris
  - Begin work on master algorithm for whole unit.
  - Continue GPS development.

Weekly Advisor Meeting Summary
Progress report and future plans.