Team 3 Bi-weekly Report : 05
March 9th - March 23rd

Summary:

Object Detection: Wrote script that takes in a video feed, detects objects and returns the most significant bounding box coordinates. Unsuccessfully tried to run the model on windows. Plan on gaining access to the EC2 instance over the weekend to improve accuracy.

Distance Measurement: This work period we used MATLAB to calibrate the cameras since OpenCV wasn't providing sufficient results. The MATLAB script worked far better, however it is not directly usable by our Python code. We wrote a Python script to read the calibration data from a text file, which can then be used by OpenCV to undistort images.

Pending Issues

It is challenging to accurately focus the two cameras together since only one has adjustable focus. If this proves to be a substantial issue after testing, we may need our client to obtain another camera for us.
Challenges arrive during testing as we need to actually get fences and tractors in our field of view for our model to detect them.

Plans for the Upcoming Work Period

With the cameras calibrated, we should be able to begin taking and testing distance measurements.
We also intend to integrate both our systems by the beginning of next week and do some preliminary testing on the field.

Individual Contributions

John:

- Team Role: Communications Lead
- Contribution:
    - Setup MATLAB script to calibrate the two stereo cameras in place of the insufficient OpenCV script.
        - Export the results of this calibration to a text file
    - Wrote a Python script to read the calibration data written by the MATLAB script and parse it to be usable by OpenCV to undistort images

- Hours Worked: 6.5
- Total Hours: 36.5

Souparni:

- Team Role: Meeting Facilitator
- Contribution:
    - Worked with the team to try and get our script running on my computer in order to test the real-time performance of our model.
    - Was unsuccessful in getting it to work on windows. Need to try doing it on the EC2 instance once again.
    - Looked into how reinforcement learning was used in one of the earliest autonomous vehicles and how multiple objects were detected, as we are still having slight troubles with that.

  Hours Worked: 5
- Total Hours: 36

Fahmida:

- Team Role: Tester
- Contribution:
    - Collaborated with Souparni to plan on integrating the distance measurement system with object detection
    - Started working on extending the code written by John to undistort both the left and right cameras
    - Hours Worked: 3.5
    - Total Hours: 26

Ashley:

- Team Role: Document Manager
- Contribution:
    - We took spring break off so I spent that time reading over our major competitors advancements in the field
    - Assisted with attempting to focus cameras as they need to be equally unfocused.
    - Total Hours: 4

Eric:

- Team Role: Webmaster
- Contribution:
    - Not much work done during spring break, but I've been working to become more familiar with python and exploring some more of the Tensorflow API tutorial series
- Hours Worked:6

- Total Hours:

Bowen:

- Team Role: Hardware Maintainer
- Contribution:
    - Setup Paper Space for training.
    - Did research on object detection for multiple objects.

- Hours worked:3
- Total Hours: