

sdmay18-03: Use of imaging devices and machine learning software to assist in autonomous ve

Week 8 Report

October 26 - November 9

Team Members

John Orefice — *Communications Lead*

Souparni — *Souparni*

Fahmida — *Tester*

Ashley — *Document Manager*

Eric — *Webmaster*

Bowen — *Hardware Maintainer*

Summary of Progress this Report

We successfully ran MobileNet SSD and made predictions on static images, yielding an accuracy between 97%-100% for all images. Additionally, we successfully ran SSD to predict objects in real time using a webcam. With images that were 100x100 using the Titan X GPU, this ran at 30 FPS, which is the highest speed attainable from the webcam used. We also successfully extracted the image data from the example ROS bag file, which is a process that can easily be extended to the main FieldSAFE data set file.

Pending Issues

We are still unsure how we will realistically download the main ROS data file. It has a size of about 130 GB which is not only a large file to store, but could potentially take over a week to download due to the unusually slow download speeds from FieldSAFE's website.

Plans for Upcoming Reporting Period

While we currently have a number of farm related images collected, we must research ways to provide the images and their labels in an mbd database format which is required to train the neural net. Once we accomplish this, we plan to begin labeling images and training the neural net.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
John Orefice	Further researched ROS and successfully extracted image data from the ROS bag file. Additionally watched Stanford's CS 231n lectures on neural nets.	8	50.5
Souparni	Worked out file permissions on the Linux computer in the ISU durham lab. Upon completing this, further worked on MobileNet-SSD and fixed issues with training SSD. Ultimately worked with Bowen and Ashley to successfully run MobileNet-SSD classification on images.	7.5	52

Fahmida	Performed troubleshooting regarding issues with ROS bag files and collaborated with John to successfully extract image data. Obtained VM from ETG and set up ROS in it. Updated the team website to make the documents more accessible..	6.0	41.0
Ashley	Collaborated with Bowen and Souparni to test the MobileNet-SSD on the TitanX box. Continued to work with them to identify issues with the current implementation and come up with ideas to mitigate them in the next sprint.	4	39.0
Eric	Focused on experimenting with ROS to see if it could be of further help to our project.	4	40.0
Bowen	Worked with Souparni and Ashley to test MobileNet SSD on the Titan X computer in the ISU lab. Successfully processed static images and live webcam video to produce object classifications with bounding boxes.	4	40.5