sdmay18-03: Use of imaging devices and machine learning software to assist in autonomous ve
Week 9 Report
November 10 - November 22

Team Members
John — *Communications Lead*
Souparni — *Meeting Facilitator*
Fahmida — *Tester*
Ashley — *Document Manager*
Eric — *WebMaster*
Bowen — *Hardware Maintainer*

Summary of Progress this Report
After running SSD in real time, we decided to train it with a dataset of interest. Our first step for this is to acquire a dataset containing images of interest like fences, terraces and ditches. We acquired around 700 images from Google and tried to get more images from the ImageNet dataset and Google's OpenImages dataset. After experimenting with Mobilenet SSD we found out that Mobilenet SSD requires mdb file. The mdb file contains annotation describing what the object of interest is. Additionally our advisor Dr. Zambreno suggested that we could potentially look into Imagenet Util to assist in manually labeling images. With this recommendation in mind, we used Imagenet util easily to make bounding boxes on the object of our interest. ImageNetUtil then automatically generates the xml file annotation for that image which can be used to train the Mobilenet SSD. Our group then decided to split the task of using Imagenet utils to make bounding boxes to speed up the process.

Pending Issues
Many of the images that we manually collected turned out to be unusable for our purposes. Additionally, we are currently unsure of how to access the image/label files from ImageNet and Google Open Images.

Plans for Upcoming Reporting Period
We plan to further investigate openly available image datasets that can supplement our manually collected one and research how to collect and use the image data from the openly available datasets.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
John	Researched openly available datasets including ImageNet and Google Open Images to see if they have any data that we can use. Set up ImageNet Util (Linux) to allow manual labeling of Images. Worked to see how to get all of this data into a format that can be used to train the neural net (.mdb).	5	55.5
Souparni	Looked into ways of successfully labeling	5	57

	images in the correct format (.mdb). Consulted Dr. Zambreno and made the decision to use ImageNet Util to automatically generate the xml file after labeling images.		
Fahmida	Set up ImageNet Utils (windows) locally. Attempted to download main FieldSAFE dataset but only completed half of the download before a server timeout occurred.	5	46.0
Ashley	Modified a python script to collect images of common farm boundaries including fences and ditches to assist in training the neural net. Did a preliminary scan to remove any obvious outliers including animated and unrelated images.	6	43.0
Eric	Watched Stanford CS 229 lectures on machine learning to better understand our project.	2	42.0
Bowen	Watched Sentdex's openCV and object detection tutorials and applied this in Python with videos. Spent time working with TensorFlow's object detection framework to better understand our project.	6	46.5