

SDMAY18-37 - System and app for managing general faculty/staff parking on ISU campus
Advisor: Ahmed E. Kamal

Donavan Brooks: Backend Lead
Derrick Lockwood: Team Lead
Joseph Krajcir: Quality Assurance
John Ingwersen: Mobile Master
Riley Snyder: Webmaster
Mason Schreck: Communications Lead

Weekly Summary:

This week was primarily focused on continuing the previous work on model training, and getting some work started on the mobile and web applications. Initial issues were added to git in order to organize the things that need to be done now that we are in a better position to start working our solution. Derrick has been working further on setting up an environment that will encapsulate our project in an easily deployable form. We also have decided we will test parts of our application off campus where we can get a network connection and power more easily.

Past Week Accomplishments:

Donavan Brooks: Worked with Derrick to help fix issues in our python setup environment as well as outlined some tasks for backend development. Was assigned ML model as an issue and began to look through examples on implementing it in tensorflow

Derrick Lockwood: Finished up basic collecting and loading of data into the detector. This includes Data downloading of images and removal of incorrect images, loading of images into collection and creating a dictionary that stores the images and labels associated with each image and the class names of each label. Worked on and finished detector saving of learned model to model location and is able to load the model from storage if it is there otherwise it creates it. Cleaned up taskboard and created issues for detector and pre-processor.

Joseph Krajcir: Successfully have a simple React Native application running on an Android device. Learned how to use React Native by following tutorial on React Native website.

John Ingwersen: Improved upon mobile template. Designed rough outline for how to handle birdseye of different parking lot layouts.

Riley Snyder: Successfully working with firebase on web. Found library to help cut up photos in pre-processing and started a branch to put all the stuff that will go onto our pre-processing units.

Mason Schreck: Wrote script to get Raspberry Pi serial number and update Firebase.

Pending Issues:

Donavan Brooks: creation of our Machine Learning model using Tensorflow

Derrick Lockwood: Post-processing training is going to take a while. Need more issues on the gitlab for iOS, Android, and Web.

Joseph Krajcir:

John Ingwersen: Keeping the different applications the same visually. (iOS, Android, Web)
Riley Snyder: Only able to split up images along x a
Mason Schreck:

Individual Contributions:

| Name | Individual Contributions | Hours This Week | Hours Cumulative |
|------------------|---|-----------------|------------------|
| Donavan Brooks | Began work on ML Model | 7 | 24 |
| Derrick Lockwood | | 9 | 35 |
| Joseph Krajcir | Created Android app using React Native | 4 | 18 |
| John Ingwersen | Mobile application creation | 3 | 18 |
| Riley Snyder | Learned how to pull from firebase, started pre-processing. | 4 | 21 |
| Mason Schreck | Learned how to interact with Firebase, began pre-processing | 3 | 17 |

Comments and extended discussion:

Plan for coming week:

Donavan Brooks: Finish ML Model V1

Derrick Lockwood: Help finish ML Model V1. Create Predictor including video collection for testing purposes. Start learning on post-processing machine for as many cycles as we can. Start on accuracy.

Joseph Krajcir: Continue exploring React Native functionality, such as using Maps and Menus.

John Ingwersen:

Riley Snyder: Get test photo of a parking lot and see how well we can cut up those photos.

Setup raspberry pi to test pre-processing on less powerful device.

Mason Schreck: Create cli for pre-processing to handle multiple threads, initial thread being used to obtain the serial number, report it to Firebase and make sure the connection to Firebase is persistent. Another thread will be used for the pre-processing functionality (like start processing an image).

Summary of weekly advisor meeting:

In our meeting we talked about new ideas for implementation. This included IP cameras and pre processing units. We have decided we may have to spend more money to get a single camera that has a battery that will last longer and have better wireless capabilities. We are also nearing completion on the model, and will need to start training it soon. Since setting up a camera on campus at this point seems like a lot of troubleshooting, we may test our application off campus at a location easier to monitor and get network connectivity and power.