

sdmay19-08: IC Chip: Automated Clay Target Scoring System

Biweekly Report

2/14/19 - 2/28/19

Client: Dr. Henry Duwe

Faculty Advisor: Dr. Henry Duwe

Team Members:

Eva Kuntz – Software Architect Lead; Report and Communication Manager

Cole Huinker – Software Architect, Data Analysis, Computer Vision

Steven Sleder – OpenCV and Machine Learning Lead; Data Analytics Lead

Michael Ruden – Hardware Architect Lead; Prototype Manager

Keith Snider – Software Architect; Webmaster

Philip Hand – Hardware/Power

Past Week Accomplishments:

- Mobile Application:
 - Finalized scorecard logic.
 - Updated the button labels in mobile app.
 - Experimented with sockets for communication between mobile app and ground station.
- Hardware:
 - Camera module and Jetson have been ordered. Awaiting for arrival to begin testing.
- Machine Learning Model:
 - Without enough data to split into a training and testing set I went ahead and simply evaluated the performance of the model on just the training set with mAP. The model achieves ~75% accuracy on the training set. Unfortunately this is rather low but still is better than random which shows that the model is learning.

Pending Issues:

- Incomplete Dataset
- Incomplete implementation of mAP for use with Darkne

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Eva Kuntz	Implemented ability for user to view a video on mobile application; Helped Keith select proper tablet; Testing mobile application usability.	18	138
Cole Huinker	Started developing a flash REST api to pull classified data.	14	124
Steven Sleder	Finished training the model and evaluated the accuracy on a limited set. Had quite a few issues with the output being formatted wrong to get	14	126

	mAP working. Had to dig through the source to fix that. Discussed with Dr. Duwe on whether or not to purchase a Jetson TX2 or Xavier		
Michael Ruden	Completed station 2 data labeling and station 4 data labeling. Camera and Jetson modules ordered.	14	120
Philip Hand	Helped finished up data labeling for both station 2 and station 4	15	110
Keith Snider	Completed Scoreboard UI. Updated models to help support Scoreboard	15	123

Plans for the Upcoming Weeks:

- Eva Kuntz – Continue work with usability testing; begin writing user manual for mobile application; prepare for presentation; finetune video player based on client’s feedback.
 - Cole Huinker – Have python server setup to that other devices can make calls to the api and classified data gets pulled.
 - Steven Sleder – Tune hyperparameters for better performance and clean everyone’s data labeling as they complete it. Image the new Jetson TX2.
 - Michael Ruden – Work on the integration of camera module and Jetson. Help with battery solutions.
 - Philip Hand – Helped Finish up station station 2 and station 4 data labeling
 - Keith Snider – Saving session data through App Lifecycle
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