sdmay19-08: IC Chip: Automated Clay Target Scoring System
Biweekly Report
3/1/19 - 3/15/19
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:
    - Finish Scoreboard UI MVP
    - Found tablet to run app on
    - Added video viewer for shot reviewing
- Hardware:
    - The Jeston and the Camera module have been delivered.
- Machine Learning Model:
    - Wrote small scripts to split the labeled images into training (¾) and testing (¼) sets
    - Discussed how to integrate the model with the backed API to be called by the phone app to serve up scores and videos
    - Finally received the completed set of labeled data
    - Set up networking to remote into the Jetson over spring break to check status

Pending Issues:

- Saving the session state will be more labor intensive than originally thought. Using a particular DB solution may require a redesign of the mobile application. Keith and Eva will continue to discuss the feasibility of using a DB solution, along with researching other possible solutions.

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Eva Kuntz	**Discussed saving session state with Keith; researched different DB solutions and access to mobile device memory; continued to develop mobile testing suite.**	**16**	**154**

Cole Huinker	More work done on the web server for the Jetson Board. I added a feature to pull image data and bounding box data.	**15**	**139**
Steven Sleder	Sanitized everyone's data, wrote some small scripts for splitting up the data, met with Cole on how to integrate the model with the application backend, and played with image rotation to supplement our training set. Imaged the new Jetson for the team and built AlexeyAB's Darknet implementation on it and delivered it to the lab. Found out that the board will not boot with the camera installed. Accidentally broke the system partition on my personal Jetson so I had to re-image. Found out that the system did not have enough memory to hold the training data and found out that a capacitor was perfectly in the way to block adding a SATA HDD, instead ran out and bought a 32 GB USB 3.0, and mounted that in Ubuntu. I then finally loaded all of the sanitized labeled data onto the board, opened up a way to check on it over break, and started training.	**37**	**163**
Michael Ruden	Worked on the integration of the camera module and Jetson.	**14**	**134**
Philip Hand	Began researching a battery powered jetson board and requirements	**14**	**119**
Keith Snider	Updated Scoreboard UI to add features requested by client. Researched/attempted saving app data through life cycles.	**21**	**144**

Plans for the Upcoming Weeks:

- Eva Kuntz – Continue helping Keith with saving app data through life cycles.
- Cole Huinker – Finish up the python server setup so that other devices can make calls to the api and classified data gets pulled. Start the installation process of camera.
- Steven Sleder – Evaluate the first model trained on the full dataset. Play with wrapping AlexeyAB's Darknet implementation with either C++ or Python to make a usable application.
- Michael Ruden – Continue work on the Jestons and camera module integration. Possible look into housing options for the system.
- Philip Hand – Design battery protections for jetson board
- Keith Snider – Finish saving app data through life cycles