sdmay19-08: IC Chip: Automated Clay Target Scoring System
Biweekly Report
3/16/19 - 3/31/19
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:
    - Updated Scoreboard UI from Client feedback
    - Researched local DB for data storage
    - Research passing data through app life cycle
- Hardware:
    - Steve RMA'd his Jetson due to power failures
    - Documented issues with needing more memory and sent an email to Dr. Duwe laying out our options.
- Machine Learning Model:
    - Modified the Darknet source to increase the frequency of saving the weights to avoid loss of work due to constant power failures.

Pending Issues:

- The model was set up to train over spring break but unexpectedly lost power about two days in. Unfortunately, Steve (me) modify the source code and only had it save every 100 epochs for the first 1000 and then every 10000 after that. The Jetson crashed at epoch ~8000 before the weights could be saved. Fortunately, it was configured to take a snapshot that I could restore from.
- Had to RMA Steve's personal Jetson to resolve the issue of it losing power.
- Problem installing the ecam130_cutx camera on the jetson.

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Eva Kuntz	**Worked with Keith to find an alternate for the DB storage of a session; Started work on final poster**	**10**	**166**

	and report; Started on the stop/start recording button; SPRING BREAK.		
Cole Huinker	I attempted to get the 13MP camera and it's drivers installed on the Jetson board.	14	153
Steven Sleder	Re-started training at a checkpoint, RMA'd my Jetson, modified source to save the weights more often. Looked at increasing memory on the Jetson with an m.2 drive, SATA SSD, USB 3.0 flash drive (or external HDD), or SD card and send an email to Dr. Duwe about out options outlining the pluses and minuses to each	15	178
Michael Ruden	Into the integration of the camera and Jetson	2	138
Philip Hand	Designed battery protection circuits	16	135
Keith Snider	Scrapped attempts at saving data. Moved to a local DB to save data in between sessions and aide in future features. SPRING BREAK	14	158

Plans for the Upcoming Weeks:

- Eva Kuntz – Collaborate with Keith on the architecture of application for future features; continue work on final report and poster projects.
- Cole Huinker – Get the 13MP camera installed. Pipe video stream to darknet.
- Steven Sleder – Evaluate the partially trained model to see if it is at least learning (better than 50-50 split on labelling for live and dead targets) and get a fully-trained model
- Michael Ruden – Camera integration
- Philip Hand – Continue to design a complete battery proposal with all necessary protections
- Keith Snider – Implement DB and plan architecture of future features db allows us to accommodate.