sdmay19-08: IC Chip: Automated Clay Target Scoring System
Biweekly Report
1/14/19 - 1/25/19
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

BiWeekly Summary:

Past Week Accomplishments:

- Split the team into two, more specific groups to ensure meetings are more focused:
  - Hardware/Machine Learning Model: Steven, Cole, Mike, and Philip.
  - Mobile App/Testing: Keith, Eva, and Cole
- Mobile Application:
  - Demod first version of working mobile application to client.
  - Received feedback on mobile application development progress:
    - Lock screen sideways.
    - Include larger buttons for older user's eyes.
    - Fix scoresheet to resemble skeet shooting score sheet (grids and column titles).
    - Discussed ability of app to run in background without killing the session.
- Hardware:
  - Camera Selection is almost complete.
  - On-board computer has been narrowed down to either a Jetson TX1 or Jetson TX2
  - Power for system is still unknown whether it would be battery or plug in power.
    - If battery power, determine the amount of power drawn by system.
- Machine Learning Model:
  - Data labelling is almost complete
  - Sanitizing dataset of all empty pictures
  - Wrote a script to gather all tuples of image and text file to prevent unnecessary weight updates
  - Wrote a script to rename and randomize the dataset for better splitting into training and testing
  - Located a mAP implementation for bounding box similarity to give performance metrics on the output data

Pending Issues:

- The Linux box blew up, we will need a replacement

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Eva Kuntz	**Finished video splitting and data labeling for machine learning model; Worked with Keith to create manageable list of Mobile App issues in GitLab; Experimented with video rendering in Xamarin.**	**20**	**100**
Cole Huinker	**Finishing bounding boxes for data labeling. Starting looking into flask to implement a RESTful API to send classifier data .**	**18**	**95**
Steven Sleder	**Finished data labelling, started validating other members' data, located Python3 mAP implementation, started sanitizing the dataset, restarted training on the new dataset**	**20**	**105**
Michael Ruden	**Data labeling (Station 4); Camera system research and selection;**	**18**	**91**
Philip Hand	**Continuation of Labeling Data for training; Researched and began proposal for battery powered clay targeting system**	**16**	**76**
Keith Snider	**Moved the application to Fragments and Activities. Added Scoring and order logic**	**20**	**87**

Plans for the Upcoming Weeks:

- Eva Kuntz – Mobile Application:
  - Continue development work on ability for user to add new shooters and edit session.
  - Continue experimenting with building a video player with the Xamarin framework.
  - Continue development work on mobile app (see GitLab issues).
- Cole Huinker – Mobile app and ground station board communication
  - Develop RESTful API to send data from the classifier to the mobile app
- Steven Sleder – Get performance metrics from the trained model in MatPlotLib
- Michael Ruden – Finalized camera system
- Philip Hand – Finalizing battery powered proposal and continuing to label data. Help out in other hardware related areas.
- Keith Snider – Continue working on Scoring and scoreboard view.