EE/CprE/SE 492 BI-WEEKLY REPORT 2

1/27/2020 - 2/10/2020

Group number
sdmay20-40

Project title
IC Chipz

Client & Advisor
Dr. Henry Duwe

Team Members/Role
Andrew Kicklighter - Mobile Developer
Alexander Weakland - Wildcard Developer
Nicholas Dykhuizen - Integration Developer
Justin Elsbernd - Integration Developer
Joshua Heiser - Embedded Developer
Paul Kiel - Embedded Developer

Bi-Weekly Summary

Work continued on porting the embedded application from C to C++ and is finished. Opencv compiler settings have been installed, but no progress has been made on implementing opencv from the actual board. The mobile team looked into connecting to the board via SSL as previously discussed, but it was determined to require rewriting working code and unnecessarily set the team back, as well as in general perform worse. As a result, the team overall concluded that it was best to keep the connection as it previously was. The mobile team also ironed out bugs that were reported to the team over the Test Flight application and continued working on the scoring feature in the application. It was also determined that Alex is to switch teams and become a "wildcard" developer to help out whatever team needs help. The team came to a consensus that there was not much that could be done on the mobile team for Alex due to the development covering both iOS and Android at the same time due to the nature of Xamarin and Andrew having two years experience in working with Xamarin.The embedded team designed and wrote test scripts to test the vision algorithm on the current data set and then display the results in a graphical manner.

Past week accomplishments

- Converted application to C++ for opencv and darknet integration - Nick
- Added in opencv compiler settings and got demo application working - Nick
- Converting Scripts to C to eliminate system calls - Justin
- Determining how to implement darknet into code - Justin
- Wrote test scripts for vision algorithm- Paul and Josh
- Found flaws in data set, working to redesign dataset- Paul and Josh
- Looked into changing connection on application to SSL, determined that it would be a lot of backtracking and reverted - Andrew
- Fixed reported bugs from testflight on the application and released the updated app - Andrew
- Worked on designing the scoring function in the mobile application - Andrew
- Updated and wrote script for mislabeled images in the data set to improve accuracy and achieve correct results - Alex

Individual Contributions

Name	Individual Contributions	Hours this Report	Cumulative Hours
Andrew Kicklighter	- Looked into changing connection on application to SSL, determined that it would be a lot of backtracking and reverted - Fixed reported bugs from testflight on the application and released the updated app - Worked on designing the scoring function in the mobile application	13	19
Alexander Weakland	Updated mislabeled images in the data set to improve accuracy and achieve correct results	12	14
Nicholas Dykhuizen	- Converted application to C++ - Added in opencv compiler cmake settings	14	34
Justin Elsbernd	Converting Scripts to C to eliminate system calls	12	15

	● Determining how to implement darknet into code		
Joshua Heiser	● Wrote test scripts to scan vision algorithm results and report via confusion matrix, started on redesigning dataset.	15	18
Paul Kiel	● Designed test scripts to test vision algorithm on current data set and output results to JSON for evaluation. ● Helped write test scripts then turned test script results into easily absorbable data via graphical representation	15	18

Pending Issues
- Implement OpenCV into integration application
- Create scoring application mode
- Create training application mode

Plans for the upcoming weeks

The integration team plans on continuing to integrate opencv, with the addition of darknet, into the code base. The integration team plans on having a method to stream footage from the camera to a window by the end of the week. The mobile team plans to finish the scoring function on the application, Skeet Vision, so it can score a full game of skeet shooting by the next bi-weekly report and will continue to iron out bugs in the code as they pop up. CV/embedded plans to rework dataset, rerun algorithm tests and attempt to train a new model.

Summary of weekly advisor meeting

Professor Duwe was very happy with the progress made into vision algorithm testing. Dr. Duwe looked at the test results with the team and helped us conclude that there was an error in our data set and we needed to go back through and check some files. He also expressed his expectations for the coming weeks and his personal preference of timeline for getting certain features up and running.