
EE/CprE/SE 491 WEEKLY REPORT 1

9/29/2019-10/05/2019

Group number

sdmay20-40

Project title

IC Chipz

Client & Advisor

Dr. Henry Duwe

Team Members/Role

Andrew Kicklighter - Mobile Developer

Alexander Weakland - Mobile Developer

Nicholas Dykhuizen - Machine Vision Developer

Justin Elsbernd - Machine Vision Developer

Joshua Heiser - Embedded Developer

Paul Kiel - Embedded Developer

Weekly Summary

The major goal for this week was to obtain hardware from the faculty advisor, Dr. Duwe, and begin working with and understanding how the current hardware platform works.

Additionally, the team wanted to build out a machine vision pipeline diagram and then verify the design diagram with the client, Dr. Duwe. Both of these major tasks were completed, the team was successfully able to utilize the hardware's camera and the design document was validated with the client.

Dr. Duwe also requested that the team begin investigating the previous team's work with the mobile application and data labeling. The team is able to salvage the old data collected, but the old mobile application is not going to be able to be salvaged.

Past week accomplishments

- Past Team Mobile Application Review - Andrew & Alex
 - Took the previous team's mobile application and ran it on an android and iOS device
 - Took the previous team's mobile application and ported it to a new Xamarin project.
 - Looked at and understood the previous team's mobile application code, since it was poorly documented.
 - Decided to start the mobile application from scratch and only utilize portions of the previous team's code.
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- Nvidia Jetson board and Camera hookup - Paul & Josh
 - Able to successfully install the camera drivers on the Nvidia Jetson board
 - Read through camera documentation, reviewed developer website.
 - Found drivers and software and read the documentation for them
 - Attempted to first update firmware on the board, wasn't working so instead...
 - Installed firmware drivers for camera and added binary files to board library.
 - Installed build in viewing application and tested camera, tested lense for usefulness and played with different resolutions and frame rates.
 - Wrote scripts that checked the training & test sets. None of the images were exact matches, but videos filmed of the shots were not separated between the sets.
 - Set up SSH & Remote Desktop connectivity so that we can work with the board remotely
- Research different data transfer mechanisms - Nick & Justin
 - Looked at both bluetooth and wifi for connecting the Nvidia Jetson board with a mobile device
 - Decided on using 802.1n Based Peer to Peer Wi-Fi because of the large amount of video feed and data that may need to be transferred between the devices.

Individual Contributions

Name	Individual Contributions	Hours this Week	Cumulative Hours
Andrew Kicklighter	Past Team Mobile Application Review	7	7
Alexander Weakland	Past Team Mobile Application Review	7	7
Nicholas Dykhuizen	Research different data transfer mechanisms	7	7
Justin Elsbernd	Research different data transfer mechanisms	7	7
Joshua Heiser	Nvidia Jetson board and Camera hookup	7	9
Paul Kiel	Nvidia Jetson board and Camera hookup	7	9

Pending Issues

None at the moment

Plans for the upcoming week

- Pipeline - Josh & Paul
 - Connect the camera/Nvidia Jetson board to the data pipelines
 - Read through camera documentation, reviewed developer website.
 - Found drivers and software and read the documentation for them
 - Attempted to first update firmware on the board, this did not work
 - Instead installed firmware drivers for camera and added binary files to board library.
 - Installed build in viewing application and tested camera, tested lense for usefulness and played with different resolutions and frame rates.
- Create Base Mobile Application - Andrew & Alex
 - Get a base layout of the mobile application up so that it can be run on either iOS/Android.
 - Ensure that the mobile application can be compiled and ran
 - Look into relevant code from the past team's mobile application that will be useful for the new iteration
- Peer to Peer Wifi Connectivity - Nick

- Implement peer to peer wifi connectivity between the mobile device and the embedded Nvidia Jetson board
- Review Data Transfer Rates - Nick & Justin
 - Review data transfer rates from the on board camera to the mobile device

Summary of weekly advisor meeting

Dr. Duwe wanted the group to divide up into smaller groups, so the team divided up into three groups of two people. With these smaller teams established, Dr. Duwe began giving each team more focused goals and duties.