EE / CprE / SE 491
Machine Learning Heterogeneous Computing
Week 5 Report

Time: Feb. 27 - Mar. 5
Client: JR Spidell
Faculty Advisor: Diane Rover

Team Members:

Sandro Panchame
Rudolph Nahra
Alek Comstock
Jeffery Kasper

Weekly Summary

This week, we had Sandro present on the structure of the work of the previous group (Jan) which we will be building on. Alek and Jeffery are still researching OpenAMP and will be attempting to run a basic program on the Kria board soon. Rudolph continued work on verification of the network with Marabou.

Past Week Accomplishments

Jeffery K: Found a lot of resources on the OpenAMP framework.
Sandro P: Went over the Jan files in detail. More information can be gleaned from them. Created a Presentation involving the files and the relationships to each other.
Alek C. I gained root access to Ubuntu virtual machine. I had some troubles selecting the correct containers and frameworks, but got help from Jeffery.
Rudolph: I set up a cloud server with jupyter notebook so we can actually run our machine learning models and analysis with sufficient memory in a reasonable time. I developed some criteria for us to test our neural networks with, and I saved our model so we can analyze it with Marabou. Attempted to analyze it but apparently this uses insane amounts of memory.

Pending Issues

Jeffery K: A board support package (BSP) is needed to start using OpenAMP and writing applications in the OpenAMP framework. This can be found online.
Sandro P: Issue with Specularity package. Figure out "remodnav" folders, of which there are two.
Alek C. Got denied docker socket while trying to install frameworks, will need to update docker permissions.
Rudolph: Marabou uses more memory than my cloud server has (24GB !!!!!!) and way too much memory for jupyter to handle. I need to increase the swap space and run it without jupyter.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Sandro Panchame	Looked at the files in the Jan folder. Created a presentation talking about them. More details could be discovered. Allocated 12GB, programs run smoother. Ran into an issue with the Specularity package.	6	21
Rudolph Nahra	Set up a cloud server with the team's jupyter notebook on it. Worked out some criteria to test whether model behavior is safe.Tried to run marabou on our model but don't have enough computing resources.	6	27
Alek Comstock	Installing IDE attempts, gained root access to Unbuntu	5	23
Jeffery Kasper	Researched the OpenAMP framework to better understand how to configure it and how to effectively use it.	6	27

Plans for Coming Week

Jeffery K: Researching more about the OpenAMP framework. Potentially building a small introduction program to get more comfortable with using the framework.

Sandro P: Look into Jan files a bit more, specifically into "remodnav." Determine what exactly is being done. Determine which "remodnav" is doing what. Find a way to analyze movement and display expected vs obtained data.

Rudolph: Continue verification analysis on the model. Play with the structure of the network to determine if it could be better.
Alek C.: I plan to reach out to Jeffery for more help. Once fully installed, I plan on tinkering with the IDE and hope to get Helloworld running. My stretch goal is to get lights blinking on the board.

Meeting Notes

The previous group had the model feeding into another (non-ML) program to use the positions of the pupil to classify the eye movements into one of the following: fixation, saccade, smooth

pursuit, noise. The error we actually care about is the error of this final classification, not necessarily the position.

We may need to play around with the parameters of the network, and also its structure. Similarly for the remodnav step, there are parameters we need to analyze.