

EE / CprE / SE 491

Machine Learning Heterogeneous Computing

Week 2 Report

Time: Feb. 6 - Feb. 12
Client: JR Spidell
Faculty Advisor: Diane Rover

Team Members:

Sandro Panchame
Rudolph Nahra
Alek Comstock
Jeffery Kasper

Weekly Summary

We each had goals to download our IDEs and supporting software, and learn about the tools we will be using. We each had some challenges; Alek had trouble getting his virtual machine to work. After some fixes, there was some attempts to start installing some IDEs but it was failing to install. Alek's major focus was towards the powerpoint and learning about OpenAMP. (TODO each person adds their own summaries here...)

We received the boards for the project and have an assigned locker in the senior design lab where they are stored.

Past Week Accomplishments

Alek Comstock: made powerpoint to gather information about OpenAMP and to continuously update it, both for our own use and for future teams to use. I also tried to debug my virtual machine so I can hopefully program on it.

Rudolph Nahra: Installed dependencies for and ran image classification program from a previous group that our client had, sorted out issues with the development environment to ensure that everything will work properly in further development. Installed maraboupy, and read documentation about the Marabou framework, a tool used to analyze neural networks in various ways. For example, it can analyze the range of outputs that a neural network can produce. I started compiling notes on Marabou to share with the team.

Sandro Panchame: Had the virtual machine setup with Ubuntu 20.04. Installed jupyter notebook, maraboupy(incomplete), and many dependencies needed for the project.

Jeffery Kasper: Flashed PetaLinux onto SD cards in order to start updating the firmware on the Kria Som cards.

Pending Issues

Alek Comstock: I had some issues with Ubuntu and trying to install programs; it seemed to be that the installer was being used somewhere else, despite not installing anything. The Virtual machine seems to be slow and may need defragmentation. My workload for the week was bigger than anticipated, so I was not able to put as much time towards this as I hoped.

Rudolph Nahra: The image classification program from the previous group is sometimes crashing my jupyter notebook. I have isolated where it crashes but cannot figure out why this line is making it crash.

Sandro Panchame: Problem with maraboupy involving OpenBLAS. Will try contacting maintainers, and working with JR if I can't figure something out by the middle of the week.

Jeffery Kasper: Ubuntu not recognizing serial communication from the Kria Som board. I believe it is a driver issue. I will attempt to find the relevant drivers if that is unsuccessful I will try to connect using a windows environment.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Sandro Panchame	Had to troubleshoot some issues with Maraboupy. Solved one issue tied to the gfortran package, ran into an issue with OpenBLAS. Both are tied to Maraboupy. Installed packages tied to files in Jan.zip	3	6
Rudolph Nahra	Ran Image classification program from previous group. Installed marabou(py). Read documentation for and took notes on maraboupy to later construct a presentation for the rest of the group.	6	9
Alek Comstock	Research on openAMP and how it works, setting up initial environment still	2	5
Jeffery Kasper	Started installing PetaLinux onto the Kria boards.	6	9

Plans for Coming Week

Alek: get OpenAMP onto the VM and get a 'helloworld' of some sort running. Add any new info to the google slides to preserve information.

Sandro: Try and figure out the maraboupy situation, set something up with JR if I can't figure anything out by the middle of the week. Will try contacting the maintainers on maraboupy. Worst Case: Set up Ubuntu on an old tablet and go from there.

Rudolph: Resolve bug with image classification algorithm from previous group. Might be something wrong with my installation of scikit learn? Not sure. Then I need to learn more about how to use marabou to analyze the algorithm

Jeffery: Finish setting up PetaLinux and updating the firmware on the Kria Som boards.

Meeting Notes

- Each person worked on their own goals - install problems
- Alek: challenges - (use SCPcommand to install on board??? R5 - real time processors. A3 - general time processors.
- Try to get board to boot on and see something on the screen
- General flow of how the board and software will interact - Video feed coming at 16.6ms/frame, need to process each image in under that time. Each