EE / CprE / SE 491
Machine Learning Heterogeneous Computing
Week 3 Report

Time: Feb. 13 - Feb. 19
Client: JR Spidell
Faculty Advisor: Diane Rover

Team Members:

Sandro Panchame
Rudolph Nahra
Alek Comstock
Jeffery Kasper

Weekly Summary

We spent time troubleshooting issues with the Kria board. Possible solutions have been discussed but have yet to be implemented. Jeffery presented the basics of the Kria board. The people working with Marabou (Rudolph and Sandro) spent time troubleshooting and analyzing code from a previous senior design team given to us by our client, and reading about Marabou and how to use it.

Past Week Accomplishments

Jeffery: Discovered possible solutions for the issues we are seeing with the Kria SOM KV260 boards. Brainstormed ideas on updating firmware.
Alek: got a laptop to be able to work on the Xilinx board more effectively. I needed to be able to access my programming for testing on the board; the board is kept on campus and the programming software I need can only be installed on non-ISU computers, and I only had a desktop.
Sandro: Worked through the issue tied to Maraboupy, it was related to the files being located in the shared folder of the guest OS and host OS. Tried testing the sample code tied to Maraboupy. Need to install another package.
Rudolph: Resolved issues running code from a previous senior design team. Now running training and inference of a neural network for image recognition. Continued reading and playing around with the marabou framework for neural network verification, and am taking notes and assembling a presentation to give to other team members.

Pending Issues

Jeffery: Kria SOM KV260 firmware needs to be updated. BOOT.bin will need to be modified to make the OS boot on the old firmware. After firmware has been updated BOOT.bin will need to be changed back to the original version.
Sandro: Jupyter notebook keeps crashing, will need to allocate more RAM to the Guest OS. Will need to figure out issues with a python package.
Rudolph: None
Alek: will need to finish configuring my laptop to continue with last week's previous goals.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Sandro Panchame	Got Maraboupy built from source. Issue tied to the files location(shared folder). Ran into issues with a python package.	6	12
Rudolph Nahra	Got previous groups code fully running. Assembling presentation on Maraboupy.	6	15
Alek Comstock	Got a laptop to better work with board kept at TLA; reinstalled necessary programs	6	11
Jeffery Kasper	Attempting to get Kria SOM KV260 board to boot PetaLinux.	6	15

Plans for Coming Week

Jeffery Kasper - Attempting to get Kria SOM KV260 board to boot PetaLinux. Implementing possible solutions that have been discussed.
Alek C. - get openAMP installed and compile on PC. Stretch goal is to get it to work on board itself.
Rudolph - Assemble a presentation on marabou(py), present to the rest of the group and client.
Sandro - figure out the package issue, work on some slides for the Jan files. Try to run the Jan files without the kernel in jupyter notebook dying.

Meeting Notes
- Jeffery openAMP presentation (see attached image below), visualizer for how board will work

- Alek is leader for next meeting
- Updated milestones
    - Message passing process/algorithm (RPU to APU and APU to RPU)
        - Presentation on information
    - Maribou introduction and examples presentation
    - jan.zip introduction and explanation presentation
    - Get Kria working (boot from SD card)

Document for Xilinx board: DDR mem. Controller splits up memory into 4 1GB segments.
Will need to set up communication between APU MPCore and RPU - how will we do it?

Figure 2: **K26 SOM Block Diagram**