EE CprE 491 – May 1819
sdmay19-41 Senior Design Team
Week 13 Report

November 7 - November 13
Faculty Advisors: Phillip Jones

Team Members:

Brian Bradford — *DSP Engineer and Meeting Facilitator*
Louis Hamilton — *FPGA Engineer and Meeting Scribe*
Jared Danner — *FPGA Engineer and Report Manager*
Nick Knuth — *FPGA Engineer*
Vishal Joel — *GUI Developer and FPGA Engineer*

Summary for Progress this Week

We met with our advisor and discussed making a list of plans for work to be completed over break and before the start of next semester. We got in contact with ETG and received a desktop to use as a server for senior design. We were able to successfully setup an Ubuntu server and begin installation of the necessary tools. We also completed setup of our GitLab repository and the necessary submodules for Migen, Litex, CASPER, and Pynq.

Past Week Accomplishments

- Fixed/Pending Issues:
    - Continuing to work w/ ETG to get dependant libraries install that are needed to run PetaLinux **Received desktop to use as server**
    - Still working with ETG to successfully install needed tools and get proper licenses.
- Documentation - All group members
    - Discussed reflection due at the end of the week.
- PYNQ Overlays -Louis
    - Created a custom overlay the PYNQ-Z1 board using Vivado. The Overlay flashes lights on the board when registers are set to specific values.
- Began to Implement PetaLinux and PYNQ tools on Ubuntu Server - Brian & Nick
    - Installed necessary Ubuntu version on server given to us by ETG
    - Worked through installation of PYNQ and PetaLinux
    - Forked PYNQ repo and began work on rewriting the ZCU104 branch into a ZCU106 and ZCU111 branches for our board
- Investigating GNU Radio tools for GUI development. - Joel
    - Read through & followed tutorials, as well as making a local Ubuntu installation for testing and installing GNU Radio (python) to run examples and determine if it is suitable enough for the GUI.
- Porting to migen - Jared

- ○ Began importing the Ultrascale+ RFSoC (ZCU111) to be compatible with Migen.
- ○ Registered with Xilinx to gain access to certain constraint and schematic files.
- ● Began porting current CASPER ethernet implementation - Nick and Brian
- ○ Read through current implementation

Pending Issues
Waiting for licenses for Vivado from ETG

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Brian Bradford	Ethernet, PetaLinux, Server, Documentation, Github Corrections	5.5	55.5
Louis Hamilton	Overlays for ZNYQZ1 Board / Research of overlays for ZCU106	4	47.5
Jared Danner	Porting the ZCU111 (RFSoC) to migen.	5.5	50.5
Nick Knuth	Ethernet, PetaLinux, Server, Documentation	5.5	50.5
Vishal Joel	Research on GNU radio for developing GUI.	5	49

Comments and Extended Discussion

Plans for Coming Week
Start work on porting existing branches of PYNQ and Migen to new branches for our ZCU106 and ZCU111 boards. Continue investigation into GNURadio. Continue working through creation of a PYNQ overlay using the PYNQ Z1 board. Try to enjoy Fall Break

Summary of Weekly Advisor Meeting
This past week we met with our advisor and discussed making a list of objectives for completion by the end of this semester/start of next semester, using GNURadio and further exploration of PYNQ

Minutes

- ● Spoke about the importance of at least doing something during break and setting

  objectives

- Spoke about using the Ubuntu server to run our tools

- Discussed current objectives for each member and what each of us is working on

- Dr. Jones stressed making sure we continue progress as the class winds down so that we don't fall behind.