EE / CPRE / SE 491 - sdmay20-38
iFPGA - Intermittent Intelligent FPGA Platform
Week7 Report

1/13/20 - 1/30/20
Client: Henry Duwe
Faculty Advisor: Henry Duwe

Team Members:

Jake Tener - Team member, SW focus
Jake Meiss - Team member, HW focus
Andrew Vogler - Team member
Zixuan Guo - Team member
Justin Sung - Team member

Weekly Summary

- The goal of this week was to establish communications between the MSP430 and the IGLOO nano via SPI protocol. Flash a program on both to be able to transfer data and access the RAM on the NANO.
- Another goal was to research and create our own FFT hardware to be placed on the NANO.
- Solidify the hardware components to be bought for the PCB.
- Convert the Librosa Python to a C implementation to be flashed on the MSP
- Build a matrix multiplication system as an accelerator on the FPGA

Past Week Accomplishments

- FPGA - Zixuan Guo
  - Use systolic array as the algorithm to build the matrix multiplication.
  - Figured out how to read from SRAM in sequence(Use counter logic component).

- PCB Design - Jake Meiss
  - Finalization of the parts list for PCB implementation
  - Learn Eagle software and begin creating the schematic
  - Design schematic symbols and package footprints for the main integrated circuits being used

- SW - Jake Tener, Justin Sung, Andrew Vogler
  - Fundamental understanding of how to convert python scripts/libraries into C++ programs to be compatible with MSP
  - Creation of testing programs that will analyze .wav files

○ Getting specific port mappings between MSP430 and Igloo Nano as well as code examples

Pending Issues

- We do not have a full hardware diagram flow which will stall Jake Meiss probably in the next few weeks.
- C library being used may not work as we think. That may or may not be a problem. TBD.
- We need to switch the approach method in VHDL to achieve matrix function.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Jake Tener	SW	20	20
Jake Meiss	PCB Design	20	20
Andrew Vogler	PCB Design	20	20
Zixuan Guo	FPGA	20	20
Justin Sung	SW	20	20

Plans for Coming Week

- Gather further information regarding the SPI protocol.
  - Get code from Rohit regarding MSP430 and test it
  - Find more information on Igloo Nano SPI protocol
- Multiply-And-Accumulate
  - Continue progress
- Electrical Design
  - Finish up choosing external components
- Software
  - Finish C program that will generate MFCC coefficients for a .wav file