August 30, 2017

Project I

MicroBlaze Microcontroller System (MCS)

The MicroBlaze MCS core is a highly integrated processor intended for controller applications. A standard set of peripherals is included, providing basic functionality like interrupt controller, UART (if resired), timers and general purpose input and outputs. Through an easy-to-use graphical interface user can configure MicroBlaze MCS for optimum performance in the smallest possible footprint.

A MicroBlaze MCS is implemented in programmed into the programmable logic (PL) fabric of the FPGA through the Vivado interface where the user pick the speed of the microntroller, memory size, UART (if desired), general purpose outputs (GPO), general purpose inputs (GPI), and interrupts (if desired).

The objective of this assigment is to experiment with an Arty Xilinx evaluation board (which you can find in the DSP/Controls Lab) like the one shown in Figure 1. You can start by searching the internet for “MicroBlaze MCS”. However a good site site to visit the personal website of Dr. Duckworth from Worcester Polytechnic Institute, where he describes the implementation of a MicroBlaze MCS on a Xilinx board.

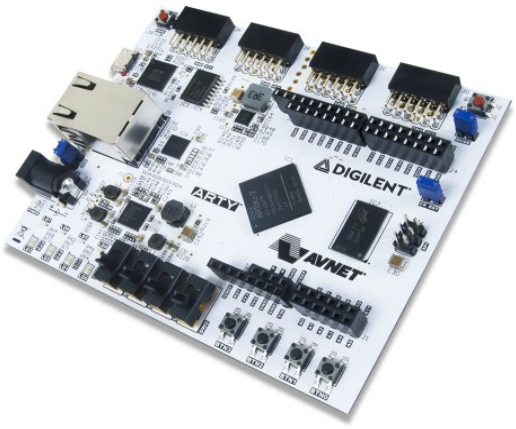

Figure 2. Arty Xilinx Board

Deliverables:
* Demonstrate the implementation of a MicroBlaze MCS on an Arty board. A simple demonstration would be to read the value of one switch, and display the value on an LED.
* Write a 2-3 page report describing in your own words, the procedure you followed to implement the microcontroller. Document problems you encountered, and how you solved them. Your report should be in the IEEE standard format.