**Connect Four on Xilinx FPGA with VGA Display and SNES Controllers**

University of Southern California – Viterbi School of Engineering

Martin Romo – B.S. Computer Engineering and Computer Science, 21’

Arthur Krut – B.S. Computer Engineering and Computer Science, 21’

Electrical Engineering 354 – Introduction to Digital Circuits

Spring 2019

*Abstract*

The purpose of this research is to build a functioning representation of the popular multiplayer children’s game Connect Four on a Xilinx Nexys 3 FPGA. The user interface component of the game will be supplied through two Super Nintendo controllers that have been augmented to operate with the FPGA. The graphical component can be viewed on a monitor being supplied a VGA signal from the FPGA. The main logic for the game is written in a state machine that is cognizant of the multiplayer nature of the game and takes advantage of combinational logic to check if a player has won the game given a certain sequence. Possible applications of this research include building libraries that simplify the process of interfacing between an FGPA and VGA monitor, as well as building other games that have simple graphical user interfaces.

*Introduction & Background*

*Design*

*Test Methodology*

*Conclusion & Future Work*