School of Engineering

Embedded Electrical and Computer Engineering

MASTER ORAL DEFENSE

TITLE: ***Hardware Modeling and Implementation of Neural Network for Orientation Selectivity of Eye***

PRESENTER: **Michael Chan**

TIME & DATE: FRIDAY, APRIL 20 2012, 3:00 PM **LOCATION: SCI 110**

COMMITTEE CHAIR: **Dr. Hamid Mahmoodi**
COMMITTEE MEMBERS: **Dr. Hao Jiang, Dr. Christopher Moffatt**

ABSTRACT:

Developing hardware to mimic neural networks in the brain is becoming more realizable as technology advances and improves. In this research, we have developed a small neural network model based on Hubel and Wiesel's feed-forward network for detecting light orientation selectivity of the eye. The digital hardware prototype was developed on a DE2 FPGA board with camera and screen peripherals to simulate the eye and show its view. Integrate and firing neurons are used to build simple and complex cells to detect light edges at incoming angles of 0, 45, 90, and 135 degrees. The purpose of this research is to realize it as a smaller part of a larger project which is to develop different functions for a mini-brain.