



# Thesis Defense

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Computer Science Master's Program

## **“The Effect of Watts-Strogatz and Barabási-Albert graphs on Memory Formation”**

By **Ethan Wolfe**

### **Abstract:**

Understanding higher level cognitive processes is a central problem in neuroscience. The Neuroidal model provides a useful framework for posing these problems in a computer science context. There has been significant recent work trying to understand memory capacity in the Neuroidal model but this work was done assuming that the network of neurons was an Erdos-Renyi random graph. However the network of neurons in the brain has been shown to exhibit small-world properties, which are not present in Erdos-Renyi graphs. In this research we explore replacing Erdos-Renyi graphs with Watts-Strogatz and Barabasi-Albert graphs in order to more accurately model the biological reality. We aim to investigate the implications for memory capacity and interference within the Neuroidal model.

**Date: Tuesday, June 11<sup>th</sup>, 2024**

**Time: 2:00 PM – 4:00 PM**

**Location: 14-232b**

**Zoom: <https://calpoly.zoom.us/j/8991248917>**

**Committee: Dr. Rwebangira, Dr. Ventura, and Dr. Frishberg**

