# CS Masters' Thesis Defense

**Title:** *On Modeling Emergent Neocortical Complexity with Complex Adaptive Systems*
**Speaker:** Robert Rota
**Date:** Monday, November 7, 2011
**Time:** 11:00 a.m.
**Location:** GMCS 405
**Thesis advisor:** Dr Joseph Lewis

**Abstract:**

This thesis reviews current research on complex adaptive systems and algorithmic complexity in the scope of pattern identification and extrapolation. A model Java application with a rough mapping to human neocortical physiology is proposed and analyzed. Two objectives of the proposed algorithm are to maintain a fair effort mapping to the known biological structures of the human neocortex whilst limiting the influence of random input. Emphasis is placed on deterministic temporal and spatial events as casual influence to emergent complexity. The algorithm's architecture and outputs are compared to Douglas Hofstadter's parallel terraced scan and Jeff Hawkins' Hierarchical Temporal Memory algorithms, among others.