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.