The Department of Computer Science and Engineering

University of Nevada, Reno

cordially invites you to a Master's colloquium

Applications in Neurorobitics

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science
with a major in Computer Engineering.

by

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Abstract:

The field of neurorobotics is still in its infancy; however, its intersecting motivations are not. On the one hand, theories of neuroscience that require immersion in the real-world can be embedded in mobile agents creating complex patterns of activity believed to be a requirement for understanding higher-order neural function. On the other, the cognitive capabilities of humans remain unparalleled by artificial agents. Emulating biology is one strategy for creating more capable artificial intelligence. Despite these strong motivations for creating neurorobotic entities technological hurdles still remain at all levels. This thesis presents two different contributions to the field of neurorobotics. The first is aimed at reducing the complexity of coupling spiking neural models with virtual agents. This is accomplished through a set of tools that act to abstract the neuroscience details from roboticists and the mechanical details away from the neuroscientists. The second contribution provides an example of how higher-level cognitive theories of speech processing can be integrated into the neurorobotics paradigm. Extracting the emotional content of a speaker, independent of what is being spoken, is a daily act for most people. The neural basis for this ability remains illusive, however cognitive models have been realized. This class of models can be integrated with the biologically realistic neural simulations in a complementary way to expand the capabilities of a neurorobotic system.

4:00 pm, Wednesday, April 25, 2012

Scrugham Engineering and Mines (SEM) room 201

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