Chuck Anderson
Colorado State University

"Faster Reinforcement Learning After Pretraining Deep Networks to Predict State Dynamics"

Thursday, October 27, 2016
3-4pm
CIT 477, Lubrano Conference Room

The training of deep neural networks is often facilitated by pretraining the hidden layers in unsupervised ways, such as the auto-encoder framework, leading to state-of-the-art performance on large classification problems. Such unsupervised methods can also be used to pretrain deep networks used for reinforcement learning. However, this ignores additional information that exists in a reinforcement learning paradigm via the ongoing sequence of state, action, and new state tuples. In this talk, I will demonstrate how learning a predictive model of state dynamics can result in a pretrained hidden layer structure that reduces the time needed to solve reinforcement learning problems related to the control of dynamic systems.

Chuck Anderson is a Professor of Computer Science at Colorado State University, Fort Collins, CO. He is also a faculty member of CSU's School of Biomedical Engineering, Graduate Degree Program in Ecology, and Molecular, Cellular, and Integrative Neurosciences Program. In 1986 he completed his PhD at the University of Massachusetts, Amherst, advised by Dr. Andy Barto. For his dissertation, he was the first to implement the actor-critic algorithm with neural networks. His research continues to be focused on practical neural network algorithms for reinforcement learning. In addition, his research includes practical machine learning algorithms for brain-computer interfaces, and for prediction, classification, and control, in general. See http://www.cs.colostate.edu/~anderson for details.