One-Day Workshop

Recent Advances and Future Directions on Adaptation and Control

Location: Workspring 30 W Monroe, Suite 400 Chicago, IL 60603

Date: June 30th, 2015

Organizers: K. G. Vamvoudakis, S. Jagannathan

Website: http://www.ece.ucsb.edu/~kyriakos/rafdac.html

Sponsored by: Missouri University of Science and Technology

8:00-8:10--Welcome from the Organizers K. G. Vamvoudakis (UCSB), S. Jagannathan (MST) and from the ACC General Chair Richard Braatz (MIT)

Keynote (Chair: Bob Newcomb)

8:10-8:40 Frank Lewis (UT Arlington, Research Institute)--Recent Advances and New Directions in Integral Reinforcement Learning for Feedback Control

8:40-8:50 Comments by K. Narendra (Yale), D. Vrabie (UTRC), M. Sebek (Czech Technical University in Prague)

8:50-9:00 Break

Session on Adaptive Control, Learning and Future Directions (Co-Chairs: S. Jagannathan and K. G. Vamvoudakis)

9:00-9:20 K. Narendra (Yale)--Hierarchical Adaptive Control of Rapidly Time-Varying Systems

9:20-9:40 B. Newcomb (UMD)--The Stereographic Product of Positive-Real Functions is Positive-Real

9:40-10:00 D. Copp, J. P. Hespanha (UCSB)--Addressing Adaptation and Learning in the Context of MPC and MHE

Session on Adaptive Stabilization and Large-Scale Systems (Co-Chairs: Yorai Wardi, Panos Antsaklis)

10:00-10:20 W. M. Haddad (GaTech)--A Mechanistic Neural Field Theory of How Anesthesia Suppresses Consciousness: Synaptic Drive Dynamics, System Stability, Attractors, Partial Synchronization, and the Anesthetic Cascade

10:20-10:40 Y. Wardi, C. Seatzu (GaTech, U. of Cagliari)--Performance Regulation in Discrete Event Dynamic Systems

10:40-11:00 E. Garcia, P. J. Antsaklis (U. Notre Dame)--Adaptive Stabilization of Uncertain Systems with Model-Based Control and Event-triggered Feedback Updates
11:00-11:20  T. Parisini, M. Polycarpou (Imperial, U. of Cyprus)-Distributed Fault Diagnosis of Large-scale Interconnected Systems

Session on Reinforcement Learning for Feedback Control I  (Co-Chairs: W. Dixon and Z-P Jiang)


11:40-12:00  T. Bian, Z.-P. Jiang (NYU Poly)--Stochastic Adaptive Dynamic Programming for Robust Optimal Control Design

Lunch Break 12:00-12:30

Session on Reinforcement Learning for Feedback Control II  (Co-Chairs: D. Liu and K. G. Vamvoudakis)

12:30-12:50  D. Liu, H. Li (UIC)--Unsupervised Feature Learning for Policy Iteration based on Manifold Regularization

12:50-1:10  S. Jagannathan (MST)--Adaptive optimal regulation of a class of uncertain nonlinear systems using event sampled neural network approximators

1:10-1:30  K. G. Vamvoudakis (UCSB)--Model-Free Optimization-Based Algorithms with Applications to Network Security

Session on Cooperative Control (Co-Chairs: Stjepan Bogdan and Rafael Fierro)

1:30-1:50  D. Tolic, I. Palunko, A. Ivanovic, M. Car, S. Bogdan (U. of Zagreb)--Multi-Agent Control in Degraded Communication Environments

1:50-2:10  R. Harvey and Z. Qu (UCF)--Cooperative Control and Networked Operation of Passivity-Short Systems

2:10-2:30  J. Huang (The Chinese University of Hong Kong)--Certainty Equivalence, Separation Principle, and Cooperative Output Regulation of Multi-Agent Systems by Distributed Observer Approach

2:30-2:50  P. Cruz, R. Fierro, C. Abdallah (UNM)--Cooperative Learning for Robust Connectivity in Multi-robot Heterogeneous Networks

2:50-3:10  Z. Li (U. Virginia)--Discrete-time Coordinated Control of Wheeled Vehicles in the Presence of a Large Communication Delay

Break 3:10-3:30

Session on Applications of Adaptive Control and Game Theory (Co-Chairs: S. Commuri and R. Malhame)

3:30-3:50  A. C. Kizilkale R. P. Malhamé (École Polytechnique de Montréal)--Control of Aggregate Electric Water Heating Loads via Mean Field Games Based Methods

4:10-4:30  A. Mai, S. Commuri (The University of Oklahoma)--Intelligent Control of a Prosthetic Ankle using Gait Recognition

4:30-4:50  G. Herrmann (Bristol)--An Adaptive Algorithm for Robust, Finite time Control and Estimation – Examples in Theory and Practice

4:50 pm Closing Remarks and Adjourn