2010/2011 Seminar Series

www.cs.unb.ca/seminarseries

Faculty of Computer Science UNB

EMG Pattern Recognition for the Control of Powered Upper Limb Prostheses: State-of-the-Art and Challenges for Clinical Use

By:

Dr. Kevin Englehart

Associate Director of the Institute of Biomedical Engineering, and Professor of Electrical and Computer Engineering, UNB

The use of the electromyogram (EMG) as a control source for powered upper limb prostheses has received considerable attention, as the idea of restoring function by bridging natural neural pathways is a compelling pursuit. EMG control is an important clinical option, offering amputees autonomy of control by contraction of residual muscles. The dexterity with which one may control a prosthesis has progressed very little however, especially when controlling multiple degrees-of-freedom. The use of pattern recognition to discriminate multiple degrees-of-freedom has shown great promise in the research literature, but it has yet to transition to a clinically viable option. This seminar will describe the pertinent issues and best practices in EMG pattern recognition, identify the major challenges in deploying robust control, and advocate research directions that may have impact in the near future.

Kevin Englehart is the Associate Director of the Institute of Biomedical Engineering, and Professor of Electrical and Computer Engineering at the University of New Brunswick, Canada. Dr. Englehart has more than 110 peer- reviewed publications, and has authored seven book chapters in biomedical signal processing. He is an Associate Editor of IEEE Transactions on Neural Systems and Rehabilitation. Dr. Englehart currently leads a team at the Institute of Biomedical Engineering that has developed a sophisticated control system for powered upper limb prostheses. Recent partnerships with the Rehabilitation Institute of Chicago and the Defense Advanced Research Projects Agency (DARPA) in the U.S. have resulted in dramatic advances in artificial limbs. The team at UNB is currently developing a highly dexterous, but affordable hand/control system that will undergo clinical

Wednesday, October 27th @ 3:30pm
Information Technology Centre C-317