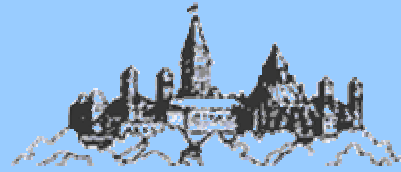




IEEE

**Ottawa
Section**



Next Generation of Artificial Limbs

Dr. Kevin Englehart

Associate Director, Institute of Biomedical Engineering

Professor of Electrical and Computer Engineering, University of New Brunswick

Artificial limbs have provided cosmetic and functional replacements for those with deficiencies due to congenital defect or traumatic injury for many years. The first electrically powered prostheses became available in the 1950's, which was a significant advance in usability. A further advance in functionality came in the 1960's, when the first control system using signals from remaining muscles was developed. This form of control, using the myoelectric signal, provides a user with a self-contained, autonomous means of controlling a powered prosthesis. This seminar will describe the evolution of myoelectric control to its current state of the art.

Current research in the field involves advanced signal processing and pattern recognition techniques; the impact of these technologies will be discussed. This work will be set in the context of major new initiatives in the field, including breakthroughs in medical science, signal processing, and robotics. It is now possible to transfer nerves to new muscles, and record directly from the peripheral nerves and the motor cortex. This has engendered the possibility of new human machine interfaces for prosthetic control. The first clinical trials of this work will be discussed.

April 10, 2008

admission is free

14:00 – 15:30 pm

Mackenzie Building 4359

Carleton University

Light refreshment will be served



Dr. 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. He has been a faculty member at UNB since 1998.

Dr. Englehart currently leads a team at the Institute of Biomedical Engineering that have developed a sophisticated control system for powered upper limb prostheses. Recent partnerships with the Defense Advanced Research Projects Agency (DARPA) in the U.S. will result in dramatic advances in artificial limbs, and clinical trials that will make these limbs available to users in the near future.

Dr. Englehart has been a consultant with many industrial and government partnerships, which have involved stress monitoring in helicopters, tracking sonar signatures, and speech recognition. In 2005, Dr. Englehart led a team in the development of a speech biometrics product for Diaphonics, Inc. (Halifax, N.S.). This product will enable identification of individuals by their voice, for financial and law enforcement applications.

Dr. Englehart has more than eighty-five peer-reviewed publications, and has authored five book chapters in biomedical signal processing. In 2001, he shared (with Bernie Hudgins) a Canadian Information Productivity Award for an advanced prosthetic control system developed at UNB. Dr. Englehart currently serves as a grant selection committee member in Canada (NSERC), the United States (National Institutes of Health) and Hong Kong (HK Grants Council).



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