Guest lecture by Dr. Yan Wong

Laboratory for Biomedical Microtechnology
Department of Microsystems Engineering, IMTEK
Prof. Dr. Thomas Stieglitz
University of Freiburg

Georges-Koehler-Allee 102
79110 Freiburg, Germany

Phone: +49 761/203-7471
Fax: +49 761/203-7472
Email: stieglitz@imtek.de
url: http://www.imtek.de/bmt
Freiburg, June 15, 2016

Dear colleagues,

we would like to invite you to a presentation given by Yan Wong (PhD), University of Melbourne:

Tuesday, June 21st 2016, 4 pm st,
Room 101 02-016/018

Title: Development of a high-dimensional brain machine interface

Abstract: Over the last few decades neural prosthetics such as the cochlear implants and deep brain stimulators have greatly improved the lives of tens of thousands of patients. In recent years, there has been a push to translate this early success into new therapeutic devices to help those suffering from a broader range of sensory and motor deficits. One such device is the brain machine interface targeted towards upper limb amputees. Current state-of-the-art brain machine interface devices suffer limitations due to an inability to extract enough information from neural signals as well as instability in the neural signals under examination. In this talk I will outline work towards the utilization of movement synergies as well as the incorporation of the local field potential into decoding algorithms. I will present a novel test system that allows recording from multiple depths of the frontal motor cortices simultaneously with all the movements of the arm and hand. I will present results showing the successful decoding of high-dimensional upper limb movements both offline and online. Finally, I will show how these early successes can be improved with novel stent-based electrodes as well as translated into improvements for vision and cochlear implants.

Bio: Dr Yan Wong received his PhD for work towards the design and development of a vision prosthetic microchip and novel electrode organizations for current focusing from the University of New South Wales in 2009. For his postdoctoral work, he joined the Center for Neural Science at New York University studying the role of spike-LFP interactions in the Parietal cortex on movement planning, as well as developing a Brain Machine Interface for high-dimensional upper limb control. He is now a part of the Electrical and Electronic Engineering department at the University of Melbourne and National Vision Research Institute working on the development of neural prostheses and the understanding of neural circuit dynamics.