Seminar Announcement

2pm, 14th Aug 2015, EEE Executive Seminar Rm

Co-organized by the Centre for Bio Devices and Signal Analysis (VALENS) and IEEE Circuits and Systems Singapore Chapter

Kernel Adaptive Filtering with Applications to Neural Decoding

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Abstract

Recently, a family of online kernel-learning algorithms, known as the kernel adaptive filtering (KAF) algorithms, becomes an emerging area of research. The KAF algorithms are developed in reproducing kernel Hilbert spaces (RKHS), by using the linear structure of this space to implement well-established linear adaptive algorithms and to obtain nonlinear filters in the original input space. When the kernel is radial (such as Gaussian kernel), they naturally build a growing RBF network, where the weights are directly related to the errors at each sample. In this talk, he will give a unifying framework of KAF and present some recent advances in addressing several open challenges. The talk will cover basics of kernel methods, KAF algorithms, and applications to neural decoding based on brain signals, such as spikes, EEG and fMRI. Experimental results will be presented, and future trends will be discussed.

Biography

Badong Chen received the B.S. and M.S. degrees in Control Theory and Engineering from Chongqing University, China, in 1997 and 2003, respectively, and the Ph.D. degree in Computer Science and Technology from Tsinghua University, China, in 2008. He was a Post-Doctoral Researcher with Tsinghua University from 2008 to 2010, and a Post-Doctoral Research Associate at the University of Florida Computational NeuroEngineering Laboratory (CNEL) during the period October, 2010 to September, 2012. He is currently a professor at the Institute of Artificial Intelligence and Robotics (IAIR), Xi'an Jiaotong University, China. During July – August 2015, he is visiting Nanyang Technological University, Singapore. His research interests are in signal processing, information theory, machine learning, and their applications in cognitive science and engineering. He has published 2 books, 3 chapters, and over 100 papers in various journals and conference proceedings. Dr. Chen is an IEEE senior member and an associate editor of *IEEE Transactions on Neural Networks and Learning Systems* and *Journal of The Franklin Institute,* and has been on the editorial boards of *Applied Mathematics* and *Entropy*.