Seminar series of
Enabling Advances in Technology (EAT) @ DIET

Seminar Announcement

May 7th, 2015 - DIET Dept. Room 206, 1:15 p.m.

Nonlinear Adaptive Filtering Based on a Class of Linear-in-the-Parameters Nonlinear Models

Speaker: Dr. Danilo Comminiello

Abstract: Online learning for nonlinear system modeling has always drawn a great interest due to a wide range of applications that can be found in this field. One of the most popular models for nonlinear system identification is the class of linear-in-the-parameters (LIP) nonlinear filters, which is characterized by a linear filtering of any nonlinear representation of the input signal. In this talk, we will focus on a class of LIP nonlinear adaptive filters based on *functional links*. In particular, we will introduce the nonlinear functional link adaptive filter (FLAF) model and its properties. A simple architecture based on the FLAF will be presented, involving two separate adaptations of linear and nonlinear elements, and its application to nonlinear acoustic echo cancellation will be discussed. Finally, we will describe how to build more complex nonlinear filtering architectures, based on the FLAF model, which involve the adaptive combination of filters and provide robust performance in adverse environment conditions.

Bio: Danilo Comminiello received the Telecommunications Engineering and Ph.D. degrees from "Sapienza" University of Rome, Italy, in 2008 and 2012, respectively. Since 2012, he is a postdoctoral research fellow with the Department of Information Engineering, Electronics and Telecommunications (DIET) of "Sapienza" University of Rome. His current research interests include signal processing and machine learning techniques, particularly focused on audio and speech intelligent systems. Dr. Comminiello is a recipient of the "Franco Ferrero award" for the years 2012 and 2013. He is an affiliate member of the IEEE Machine Learning for Signal Processing and of the IEEE Audio and Acoustic Signal Processing Technical Committees.