Blind Source Separation by Independent Component Analysis

**Friday, 2/17/17 | 12-1pm | West Hall, W105**

Speaker: Dr. Ivica Kopriva
Senior Scientist, Ruder Boskovic Institute
Zagreb, Croatia

**Abstract:** Blind source separation (BSS) is now well established field of research with a number of reported applications across science and engineering. The most often used approach to solve the basic static linear BSS problem is based on methods of independent component analysis (ICA). The talk will define BSS problem and criteria for upon which ICA methods solve the BSS problem. An easy to follow example will be used to demonstrate the concept including its limitations. At the end, several application of ICA-based approach to BSS will be demonstrated on fMRI-based human brain mapping sparse coding with applications on inpainting and denoising of salt and pepper noise.

**Biography:** Ivica Kopriva received PhD degree from the Faculty of the Electrical Engineering and Computing, University of Zagreb in 1998. He has been senior research scientist with the ECE Department, The George Washington University, Washington, DC, USA, 2001-2005. Since 2006, he is a senior scientist at the Rudjer Bošković Institute, Zagreb, Croatia. His research is focused on theory and applications of blind source separation to inverse problems in medical imaging, spectroscopy and variable selection. He has co-authored over 40 papers in internationally recognized journals and research monograph: *Kernel Based Algorithms for Mining Huge Data Sets: Supervised, Semi-supervised and Unsupervised Learning* (Springer-Verlag, 2006). He has received 2009 state award for science of the Republic of Croatia, and seven awards of the director of Rudjer Bošković Institute for publications in prestigious journals in signal and image processing and chemometrics. Dr. Kopriva has been visiting scientist of the Brain Science Institute, RIKEN, Saitama, Japan in October 2011, and visiting professor of the University of South Toulon du Var, La Garde, France, in April 2012. He holds four US patents. Dr. Kopriva is senior member of the IEEE and senior member of the Optical Society of America.