



The
University
Of
Sheffield.

Automatic
Control and
Systems
Engineering

The Department of Automatic Control & Systems Engineering
is pleased to announce the following seminar:

Redundancy In Signal Expansions and Robustness to Additive Noise and Quantisation

Professor Zoran Cvetkovic

*Professor of Signal Processing, Department of Informatics
King's College London
UK*

Wednesday, 26 April 2017 at 14:00
LT02, Sir Henry Stephenson Building

Abstract

Linear expansions are a ubiquitous tool for extracting and processing information from data. The lack of temporal resolution of the well known Fourier expansions has motivated in the first half of the 20th century some early work of Haar and Gabor on signal expansions with respect to time-frequency localised atoms. However, it was not until the 1980s that such expansions were adequately understood when advances in information and communication technologies, along with developments in theoretical physics, and applied mathematics, have converged to give the unifying theory of wavelets. Limitations of orthogonal expansions of this kind have spurred a further research in the direction of redundant expansions, known as frames, which are the subject of this talk.

There is currently increasing interest in theory of frames among researchers in signal processing, information theory, and applied mathematics, as it underpins a broad range of applications and research efforts in other disciplines from A/D conversion and distributed source coding, through robust multi-carrier communications, to information representation in sensory systems of mammals and other aspects of neural information processing. It is even speculated that the next generation of computers will be based on principles of quantised frame expansions. We will review some applications of quantised frames, and touch upon relevant issues of source coding and non-harmonic Fourier analysis which have intrigued some of leading mathematicians and information theorists of the century.

Biography

Zoran Cvetkovic is Professor of Signal Processing at King's College London. He received his Dipl. Ing. and Mag. degrees from the University of Belgrade, Yugoslavia, the M.Phil. from Columbia University, and the Ph.D. in electrical engineering from the University of California, Berkeley. He held research positions at EPFL, Lausanne, Switzerland (1996), and at Harvard University (2002-04). Between 1997 and 2002 he was a member of the technical staff of AT&T Shannon Laboratory. His research interests are in the broad area of signal processing, ranging from theoretical aspects of signal analysis to applications in audio and speech technologies and biomedical engineering. From 2005 to 2008 he served as an Associate Editor of IEEE Transactions on Signal Processing.

*Light refreshments will be served following the seminar in the foyer of
the Sir Henry Stephenson Building*