

Signal Processing Mini-Symposium

October 16, 2018, 13:30 – 16:30, Snijderszaal, EWI, TU Delft



13:30 – 14:30

Prof. Hagit Messer

School of Electrical Engineering, Tel Aviv University, Israel

**Capitalizing on the Cellular Technology
Opportunities and Challenges for Near Ground Weather Monitoring**

The use of existing measurements from wireless communication or navigation systems for opportunistic sensing of the environment is an emerging field, which has a great potential. In particular, measurements of the attenuation of the signals in wireless backhaul cellular communication networks, first introduced by us on 2006, have been proven to be a valuable, accessible resource for high-resolution space-time rainfall information. However, further advancement toward implementation and commercial use is heavily dependent on multidisciplinary collaborations. In this talk I will review the topic and the open challenges and I will present research results, demonstrating how most advanced tools of statistical signal processing are applied, taking advantage on the amount and the diversity of the available measurements for optimally detecting, estimating and classifying precipitation, as well as other-than-rain phenomena.



14:30 – 15:30

Prof. K.V.S. Hari

Dept. of ECE, Indian Institute of Science, Bangalore

Spatial Modulation Techniques in Wireless Systems

Spatial Modulation (SM) is a recently developed low-complexity Multiple-Input Multiple-Output (MIMO) wireless communication scheme, where only one radio-frequency chain is allowed. In SM, the information bitstream is divided into blocks. In each such block, part of the bits are used to select a symbol whereas the other bits are used to select a transmit antenna. In this talk we will present the key ideas of SM and present recent results related to mutual information, antenna selection techniques and low-complexity receivers for SM systems.



15:30 – 16:30

Dr. Andrea Simonetto

IBM Research Ireland, Dublin, Ireland

Time-Varying Optimization: Algorithms and Engineering Applications

Continuously varying optimization programs have appeared as a natural extension of time-invariant ones when the cost function, the constraints, or both, depend on a time parameter and change continuously in time. This setting captures relevant control, signal processing, and machine learning problems. In this talk, I will review current state-of-the-art algorithms in time-varying optimization, with a special emphasis in computational complexity, distributed implementation, and convergence (rate) analysis. I then present some relevant engineering applications for these algorithms in power grids, transportation systems, and video streaming and discuss how they perform.



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