Special Issue on Soft Detection for Wireless Transmission

Soft-input soft-output detectors are useful in the design of many wireless systems. Such detectors, when concatenated with a soft channel decoder, can significantly improve the quality of wireless transmission by performing joint, iterative data detection and channel decoding through the exchange of soft information. However, the exponential complexity of the optimal maximum a posterior probability detector rapidly becomes prohibitive. This motivates the design of suboptimal soft detectors whose complexities are scalable with system dimensions. Various signal processing algorithms have been developed for such detectors including those based on tree-search, trellis structure, and linear filtering. New challenges arise in next generation communication systems, targeted for higher data rates, greater spectral efficiencies and improved data integrity for mobile scenarios. One recent trend is to design soft detectors for time-varying channels to enable joint channel estimation, data detection, and decoding. Applications of such soft detectors have attracted interest for both terrestrial wireless channels and underwater acoustic channels. This special issue will explore recent advances in the design of soft detectors for wireless systems, with a focus on novel signal processing algorithms and methods. We invite authors to submit original research articles, as well as review articles through the following link: http://mc.manuscriptcentral.com/jstsp-ieee . Topics of interest include, but are not limited to:

Tree search based detection including sphere decoding and QRD-M algorithms	Trellis-based detection including reduced state sequence detection and per-survivor processing
Turbo list-sequential detection	Search algorithms based on metaheuristics
Turbo equalization techniques for time-varying channels	Joint channel estimation and data detection for both single carrier and multi-carrier systems
Statistical detection based on Markov Chain Monte Carlo and particle filtering	Detection based on message passing on graphical models
Low-complexity near-optimal detection for multiple-input multiple-output channels	Soft detection for underwater acoustic channels

Revised Schedule:
Submission deadline: **January 24, 2011**   Second Review completed: July 24, 2011
First Review completed: April 24, 2011   Final manuscript due: September 3, 2011
Revised manuscript due: May 24, 2011   Tentative publication date: Early 2012

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