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Preface

In recent years, we have been witnessing an information revolution caused by an explosion of the Internet and associated applications. This effect, firstly confined to computers connected to wired networks has been later magnified by an introduction of wireless data networks and incorporation of the Internet into the domain of mobile telephony. Because of the resulting volume of the Internet related traffic in all telecommunication areas, the research efforts in both telecommunications and the associated signal processing started to be more and more linked to the Internet. That connection is either in terms of an underlying technologies enabling performance improvements or development of new applications, or in the use of the Internet protocol (IP) for better utilization of telecommunication resources.

The coupling of the Internet related research with the telecommunications and signal processing has influenced a group of researchers in Australia to organize the 1st Workshop on the Internet, Telecommunications and Signal Processing, held in Wollongong on 9–11 December 2002 (the 2nd Workshop on the Internet, Telecommunications and Signal Processing will be held in conjunction with the 7th International Symposium on DSP and Communication Systems in Coolangatta, Gold Coast, on 8–11 December 2003). This special issue on the Internet, Telecommunications and Signal Processing contains 12 selected and revised papers from that workshop.

The first paper *Applications of Hadamard matrices* by Evangelaras, Koukouvinos, and Seberry deals with the theory of Hadamard matrices, which play a very important role in several areas of modern telecommunications like error-control coding or code division multiple access (CDMA) systems. That paper is followed by two papers *Design of filterbank transceivers for dispersive channels with arbitrary-length impulse response* by Mertins, and *Blind frequency offset estimation for overlap PCC-OFDM systems in presence of phase noise* by Shentu and Armstrong, investigating very important issues of designing physical channels for the future wireless networks. The next two papers *LPAR: an adaptive routing strategy for MANETs* by Abolhasan, Wysocki and Dutkiewicz, and *Performance analysis of reactive shortest path and multi-path routing mechanism with load balance* by Pham and Perreau, are concerned with routing protocols for mobile ad hoc networks (MANETs).

The sixth paper of the issue *Linear quadratic power control for CDMA systems* by Anderson, Perreau, and White introduces a novel approach to solve one of the bottlenecks of CDMA systems, which is the power control. It is followed by Jayasuriya's paper *Queuing models for cellular networks with generalised Erlang service distributions*, which proposes a simplified model of cellular networks. This model can be used to calculate blocking probabilities for handover and new users.

The next group of three papers: *Adaptive handover control in IP-based mobility networks* by Park and Dadej, *A concept of differentiated services architecture supporting military oriented quality of service* by Kwiatkowski, and *Bandwidth broker extension for optimal resource management* by Sohail and Jha, deal with applications of IP, mobile IP, and quality of service (QoS) issues in the IP based networks.

The final two papers of the issue *Manipulation of compressed data using MPEG-7 low level audio descriptors* by Lukasiak, Stirling, Perrow and Harders, and *Fully spatial and SNR scalable, SPIHT-based image coding for transmission over heterogeneous networks* by Danyali and Mertins are concerned with applications of signal processing for multimedia communications over the Internet.

The guest editor would like to thank here all the authors for their contributions and the reviewers for their hard work in preparing their submissions, reviewing, and revising the papers on time.

Tadeusz Antoni Wysocki
Guest Editor