

Foreword

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Our journal is continuing with the practice of publishing English issues regularly, currently twice a year, in July and in January. The present issue contains English versions of reviewed research papers, carefully selected from the preceding five Hungarian issues. In general, we also consider papers from open call, therefore the editors would like to encourage prospective authors to submit their results specifically for the English issues. Being a selection, the papers' topics span a wide range of issues of current interest as the reader can see from the short summaries below. We present the papers in the order of their original publication times in the respective Hungarian issues in February through June 2008.

László Toka and Attila Vidács in their paper "Managing users in a peer-to-peer storage system", deal with incentives for peers so that they contribute to the service quality. Two different approaches are suggested: either each peer's use of the service be limited to his/her contribution level (symmetric schemes), or that storage space be bought from and sold to peers by a system operator that seeks to maximize profit. Using a non-cooperative game model to take into account user selfishness, these mechanisms are studied with respect to the social welfare performance measure and necessary and sufficient conditions are given for one scheme to socially outperform the other.

László Muka and Gábor Lencse developed a so-called meta-methodology (MM) for efficient simulation of infocommunication systems and related processes. The goal of this development is to support the use of the most efficient method in any phase of the simulation process. The authors identify factors that influence the simulation problem contexts and make them dynamic, then formulate the requirements on the MM determined by the dynamic simulation problem contexts taking into account the issue of efficiency and also that the simulation method itself is a hard-system method. On this basis the methodology set of MM is defined as a set of hard- and soft-system methods appropriate for different simulation problem contexts.

Lóránt Farkas, Lajos Nagy and Andrea Farkasvölgyi in their paper "Wave Propagation Channel Simulation by Satellite-to-Indoor Radio Link" investigate the propagation characteristics of the satellite-to-indoor propagation channel. First they examine how the polarization state of a complex harmonic field can be described, and

then the results of the first simulations of the polarization state are presented. A modified 3D ray-launching tool is utilized for the coverage prediction. The dependence of the indoor wave on the elevation angle of the satellite and the wideband characteristics of the channel are analyzed: the delay spread characteristics and Doppler spread, caused by satellite movement. The applicability of MIMO systems in satellite communications are also dealt with.

An international group of authors led by Csaba Ferencz of Lóránd Eötvös University of Sciences, Budapest, Hungary that also includes researchers from Lviv, Ukraine and Troick, Russia reports on an interesting space investigation project. Their SAS2 ULF-VLF electromagnetic wave analyzer system successfully operated on board of the Compass-2 satellite launched in 2006. The measuring systems and instruments worked well and the authors found some interesting phenomena in the observed ULF-VLF electromagnetic database detected by SAS-K2: whistler-doublets (observed earlier in 1989, by the first version of SAS on board of IK-24) and "spiky" whistlers. Further signals, propagated in ducted whistler mode between two inhomogeneous surfaces were successfully identified first time during this mission.

Bálint Tóth and Géza Németh describe the first application of the Hidden-Markov-Model based text-to-speech synthesis method to the Hungarian language. The HMM synthesis has numerous favorable features: it can produce high quality speech from a small database, theoretically it allows to change characteristics and style of the speaker and emotion expression may be trained with the system as well.

György Szaszák and Klára Vicsi in their paper "Using Prosody for the Improvement of Automatic Speech Recognition" describe sentence, phrase and word boundary detection based on prosodic features, implemented in a HMM-based prosodic segmentation tool. Integrated into a speech recognizer, an N-best rescoring is performed based on the output of the prosodic segmenter, which determines the prosodic structure of the utterance. In an ultrasonography task, 3.82% speech recognition error reduction was obtained using a simplified bigram language model.

István Pintér presents a novel speech enhancement method which is based on the concepts of reconstructed phase-space and dimension embedding. The proposed

algorithm separates the speech from noise using a non-linear transformation in a transformed domain. Recent results in case of uncorrelated, additive noise are presented in this paper.

Szilárd Zsigmond, Marcell Perényi and Tibor Cinkler in their paper "OSNR Based Routing in WDM Optical Networks" propose new physical impairments based routing and wavelength assignment (ICBR) methods where the control plane has influence on the signal power of the Wavelength Division Multiplexed (WDM) channels in metro-optical networks. They give the exact integer linear programming (ILP) formulation of the method. The proposed algorithm can be used in existing WDM optical networks where the nodes support signal power tuning and it outperforms the traditional existing schemes.

The paper by *Áron Szabó and Szilárd Zsigmond* "Determining the Optimal Signal Power Based on Physical Effects in CWDM Optical Networks" presents an analytical model and calculation results for the signal quality degradation in a 8-channel and 18-channel, 2.5 Gbps coarse wavelength-division-multiplexing (CWDM) system. Based on the proposed model and performed analysis the optimal value of the signal power at the transmitter point is given. Modeling of chromatic dispersion and Raman-scattering, the two main constraints of CWDM optical networks is also presented in detail.

This issue will be published a short time before a major technical event, the *Networks 2008* conference will be held in Budapest. This conference is one of the most significant events in telecommunication planning worldwide, has a long tradition since the idea of organizing this kind of event was born within the International Telecommunication Union, then CCITT, in the late

seventies, and Budapest is the only city so far that hosts it second time. We hope that our readers will enjoy the history of the Networks conference-series by *Prof. György Lajtha*, one of the founding members of the organizing committee.

Finally, we included short descriptions of two large-scale European Community research projects.

ISIS was a "Network of Excellence" project supported by the FP6 Programme of the European Union. The project acronym stands for "Infrastructures for broadband access in wireless/photonic and Integration of Strength in Europe". *ISIS* integrated the research activities of 19 organisations from 12 different countries and aimed at strengthening European scientific and technological excellence in low cost optical solutions for broadband access, and the process of merging of wireless and photonic technologies.

MUSE (Multi Service Access Everywhere) was also a European IST FP6 "Integrated Project" during 2004-2007 recognized the leading role of the Ethernet-based technologies in the access networks in serving the growth of the number of subscribers and the magnitude of access services. The project aimed at developing new and unified solutions which are able to serve tens of thousands of users under favorable, low costs. To carry out this task, several large European telecommunication companies including Alcatel-Lucent, Ericsson, Siemens, Deutsche Telekom, British Telecom, France Telecom and Poland Telecom as well as leading research organizations took part in the project.

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