

# Foreword

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**Our** „Infocommunications Journal” is published by the Scientific Association for Infocommunications (HTE), a Sister Society of IEEE.

Until the end of 2008, we published English issues twice a year, which were compiled mostly from the best research papers published in Hungarian during the preceding half a year period. As of January 2009, we are going to increase the number of English issues to four, with the objective to become a quarterly international journal. We publish original research papers in the aforementioned areas after rigorous peer reviewing process. In this first issue of the year, I would like to announce our International Advisory Committee that will support the Hungarian editorial team in maintaining the quality of published papers.

The scope of our journal spans a wide range of technical areas, covering the large variety of topics of interest of our Society, including the „classical” telecommunication topics, information technology related to telecommunications, media technologies and media communications, thus representing the process of convergence of telecommunications, digital broadcasting and information technology. Our scope also includes some inter-disciplinary areas such as economics, marketing, regulation and management aspects of infocommunications, as well as the society-related issues.

„Infocommunications Journal” is intended to become a recognized international publication forum for researchers not only from Hungary but also from neighboring countries, and in principle, from all over the world.

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## In this issue

This is the last issue in which we publish English versions of research papers, carefully selected from the preceding five Hungarian 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 from August through December 2008. The last paper was accepted from open call.

The paper by *Zoltán Czirkos and Gábor Hosszú* titled “P2P based intrusion detection” presents a novel security method. The software entities utilizing this method create a peer-to-peer application level network to share information about intrusion attempts detected. Data collected this way is then used to enhance the protection of all participants. The system is completely decentralized, thus it remains functional over an unstable network or when many peers are attacked at once. The stability of the overlay and the broadcast algorithms are both analyzed in this article.

Nowadays, nearly all car manufacturers can build a cruise control system (tempomat) in their cars. In some top-end cars also the distance of objects in front of the car is measured and the tempomat tries to maintain the following distance. In these adaptive cruise control systems, however, the detection range and field of view of the sensors are limited. *Balázs Mezny, Péter Laborczi and Géza Gordos* present in their paper "Ad-hoc adaptive cruise control algorithm" an adaptive cruise control system, which sets the speed of the vehicle according to messages distributed over an ad-hoc wireless network. Wireless communication eliminates the problems caused by bad visibility or being out of line of sight. The distributed messages contain the exact position, speed and direction of the sender vehicle.

The paper "Reliable Gossiping in Inter-Vehicle Communication" by *Miklós Máté and Roland Vida* also demonstrates the importance of intelligent transport control systems. Due to the increasing traffic density in urban areas, a computer-aided robust collision avoidance and traffic control system should be established, based on decentralized inter-vehicle communication. Vehicles group themselves into a special ad hoc network with high mobility and low link reliability and novel ad hoc routing solutions are needed for these special conditions. The scheme proposed in the paper is a location aided gossiping protocol, which concentrates the information spreading to areas where it is most likely to be useful.

*Andrea Farkasvölgyi, Ákos Németh and Lajos Nagy* deal with MIMO antenna systems that are essential for good performance of indoor wireless networks. The authors present simulation and measurement results for a 3x3 MIMO antenna system, with the aim of maximizing the MIMO channel capacity for indoor environment. The dependence of the channel capacity on the antenna position is analyzed by simulations. The effect of the frequency dependence of the antenna system for the channel capacity also examined in case of conjugate-matching and non-conjugate-matching.

In the paper "A Client-driven Mobility Frame System – Mobility Management from a New Point of View", the

authors, *Benedek Kovács and Péter Fülöp* introduce a new mobility management approach. The main idea is that not the network but the mobile node should manage the mobility for itself, the network nodes provide just basic services for mobile entities: connectivity and administration. A protocol called Client-based Mobility Frame System (CMFS) was constructed for this mobility environment. Examples of mobility management approaches such as the centralized and hierarchical or cellular-like ones are also defined and hints are given what kind of algorithms might be implemented upon the Client-based Mobility Frame System. After the theoretical analysis simulations show the applicability of the new protocol framework.

*Kristóf Aczél and István Vajk* in their paper "Note-based sound source separation of polyphonic recordings" address an important problem of the decomposition of a polyphonic musical piece to separate instrument tracks which has always been a challenge. Isolating the tracks is out of reach of today's technology. The paper proposes a novel method for the separation of monophonic musical recordings. The architecture of the proposed separation system is given. It uses samples of real instruments for regaining the missing data, thereby allowing for the separation and correction of recordings that cannot be retaken.

The paper titled "Home access network model specifications" by *Izabela Krbilová, Vladimír Hottmar and Bohumil Adamec* investigates a home network configuration consisting of residential gateway and a number of intelligent peripheral devices capable of autonomous activity. A queuing model is built by means of bulk service in a closed circuit which circulates constant number of requests. Performance and time characteristics of peripherals communicating with residential gateway are determined. The presented results illustrate mutual dependence of the number of network peripherals and time characteristics determining operation of the network.

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