

Foreword

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Our journal is continuing with the practice of publishing English issues regularly, at present twice a year, in July and in January. As before, most of the content is edited from 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.

Marcell Perényi, Péter Soproni and Tibor Cinkler consider dynamically changing multicast trees in two-layer, grooming-capable optical networks. The continuous changes in the tree members (users) causes a degradation of the tree. Therefore, a huge amount of network resources can be spared by periodically repeated reconfigurations. In this paper, the benefits of reconfiguration are investigated for different multi-cast routing algorithms and reconfiguration periods.

The paper by *László H. Németh and Róbert Szabó* deals with incentives framework for voluntary autonomous cooperation in distributed networks. Today's communication networks are becoming dynamic and have a high degree of autonomy, and they often behave in a selfish way. To eliminate selfish behaviour from the network, a distributed framework has to be defined, that incites network nodes to communicate and cooperate. The paper describes a novel framework to solve this problem.

Vulnerabilities of hardware security modules at Application Programming Interfaces (API) level represent a serious threat, thus, discovering and patching security holes in APIs are important. In the paper by *Levente Buttyán and Ta Vinh Thong*, the authors argue and demonstrate that the application of formal verification methods is a promising approach for API analysis. In particular, an API verification method is proposed which is based on process algebra. The proposed method seems to be extremely well-suited for API analysis.

Tactile sensors are commonly used in industrial, medical or virtual-reality applications. *Gábor Vásarhelyi et al* present a novel tactile sensing array that processes all three components (normal and shear) of the tactile information at every sensory element (taxel, tactile pixel). The processing technology of the integrated micro-sensors is described along with the information coding behaviour of its elastic cover. The paper concludes with a robotic application example, where the three-component force measurements play a fundamental role.

The paper by *Ferenc Riesz et al* presents original research in the field of Makyoh topography, a method based on an ancient principle. The method's application is the qualitative and quantitative study of semiconductor wafers and other mirror-like surfaces.

The paper by *Ágoston Németh et al* presents one of the largest facilities of the solar cell research and development in Hungary – the Solar Cell Innovation Center. The R&D equipment is an integrated vacuum system designed and built for the preparation of thin film Copper Indium Gallium diSelenide (CIGS) solar cell layer structures. The paper reviews the layout of the solar cell structure and the equipment for its preparation, introduces the main materials science issues raising in the CIGS system and presenting challenges for the research.

Sándor Molnár and Géza Szabó present in their paper a comprehensive scaling analysis of the traffic of the four most popular Massively Multiplayer On-line Role Playing Games is presented. The examined MMORPG-games are World of Warcraft, Guild Wars, Eve Online and Star Wars Galaxies. Both server and client generated traffic are analyzed in detail. The study reveals the basic statistical properties of the investigated games focusing on the correlation and scaling behavior.

The aim of the paper by *István Tétényi et al* is to elaborate on Electronic Number Mapping (ENUM) technology. An ENUM measuring method is introduced, and several determining parameters are identified and it is shown how these parameters influence the performance of ENUM. Finally, the Hungarian voice communication profile is compared with the measured ENUM performance in order to have sizing guidelines for ENUM related services.

Attila Kertész in his paper examines and compares different research directions followed by researchers in the field of Grid Resource Management, in order to establish Grid Interoperability. The author proposes a meta-brokering approach, which means a higher level resource management by enabling communication among existing Grid Brokers and utilizing them.

Péter Dóbbé, Richárd Kápolnai and Imre Szeberényi present a toolkit called Saleve for developing parallel Grid applications, which helps the migration of existing parameter study applications into grid environment. Programs linked against the Saleve library can be integrated into grids using different middleware systems, so the application developer need not deal with the technical details of the middleware.

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