JOURNAL OF TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY

Preface

This issue of the *Journal of Telecommunications and Information Technology* contains ten papers that cover diverse problems related to either information society, socio-economic impacts of telecommunication and Internet, to network control and security, or various issues addressed to design and application wireless communication networks and sensing systems.

The first paper is devoted to social penetration of Information and Communication Technologies (ICT). Jan Grzegorek and Andrzej P. Wierzbicki in the paper entitled *Multiple Criteria Evaluation and Ranking of Social Penetration of Information Society Technologies* consider and compare two approaches to the multiple criteria ranking of social penetration of ICT, i.e., the traditional one and so-called objective ranking. Another issue presented in this paper is the concept of dynamic ranking, a systematic presentation and prediction of the change of ranking in time.

Mariusz Kamola in the paper titled *Who is Asking and for What: WHOIS Traffic Analysis* presents the analysis of WHOIS requests for about one-year period. The focus is put on the popularity of requested names. The author claims that WHOIS traffic can be roughly classified into systematic scanning of domain names and individual low-volume activity, mostly targeting on very popular names.

The recent trends in the regulation of telecom services regarding the diffusion of broadband ones is discussed by Cristine Vianna Rauen in the paper *Competition and Diffusion of Telecommunication Services: The Multimedia Communication Services in Brazil*. The regulations established in such countries like Chile and Korea that force the competition in order to expand the access to new forms of broadband services are compared with the Brazilian scenario. The conclusion is that the regulation mechanisms should be reinforced in the Brazilian broadband market.

The next two papers are devoted to network design and flow control. Michał P. Karpowicz discusses the selected aspects related to the control and security of network systems. The paper entitled *On the Design of the TCP/AQM Traffic Flow Control Mechanisms* deals with the TCP/AQM system design and its influence on the performance of the network. Author presents the way the commonly applied TCP/AQM design procedures may give rise to mechanisms that are prone to attacks, discreetly moving the network traffic flow away from the desired operating point. Moreover, there is a short discussion concerning the countermeasures that can be taken to reduce these effects.

Najib A. Odhah *et al.*, in their paper *Low Complexity Greedy Power Allocation Algorithm for Proportional Resource Allocation in Multi-User OFDM Systems* start with the premise that Multi-User Orthogonal Frequency Division Multiplexing (MU-OFDM) is an efficient technique for achieving high downlink capacity in high-speed communication systems. The novel proportional rate-adaptive resource allocation algorithm, Greedy Power Allocation (GPA), for MU-OFDM is proposed and described. The simulation results presented in this paper confirm that the GPA algorithm performs better than the competitive solution described in the literature.

The profitability of application of simulation methods for topological models to analyze and design of information systems is discussed in the paper *UML Simulation of a Topology Configuration Model*. Zbigniew Zieliński, Andrzej Stasiak and Włodzimierz Dąbrowski claim that using the UML extensions and the UAL language allows not only to build a topological model for a software, but also to perform efficient simulations of topological models. The presented discussion is confirmed through simulation and practical examples.

The next two papers deal with various application of sensors. Wojciech Szynkiewicz in the paper titled *Skill-based Bimanual Manipulation Planning* addresses the issues associated with robot systems equipped with diverse sensors, such as vision, force/torque or tactile sensors. The focus is put on the specification and utilization of manipulation skills to facilitate programming of bimanual manipulation tasks. Manipulation skills constitute an interface between low level constraint-based task specification and high level symbolic task planning. Rubik's cube solving problem is presented as an example of a 3D manipulation task using the two-arm robot system.

Igor Goncharenko, Marian Marciniak, Alexei Konojko and Vitaly Reabtsev in their paper *Optimizing the Structure of Vector Bend and Strain Sensor on the Base of Three-Core Microstructured Fiber* present an optical sensor designed to measure a direction, values and localization of bends and stresses in building structures. The technology and the architecture of the sensor is described. Furthermore, the optimization of the sensitive element parameters depending on the application is proposed and discussed.

The following two papers are devoted to the wireless sensor networking. Anna Felkner in the paper *How the Role-Based Trust Management Can Be Applied to Wireless Sensor Networks* addresses the problem with assuring security in the wireless sensor networks. The Author focuses on the important component of all the security systems – trust management. The application of common Role based Trust management languages (RT) to network formed by wireless sensors is proposed and discussed. These languages are used to implement security policies and credentials in decentralized, distributed access control systems.

The last paper deals with the application of wireless sensor networks to an environmental monitoring, and the education activities related to wireless technologies and applications. Sandro Radicella, Ryszard Strużak and Marco Zennaro in the paper *Educating on Wireless Solutions for Environmental Monitoring* provide the information about the International School "Sustainable Wireless ICT Solutions for Environmental Monitoring" that was organized by the International Center for Theoretical Physics (ICTP) in a collaboration with a few other entities. This school is aimed at exposing young scientists from around the world to the newest wireless solutions for environmental monitoring. The Authors start with the general information about educational activities. Furthermore, they present the program of the school and the conference.

We wish our Readers an interesting reading time.

Ewa Niewiadomska-Szynkiewicz
Guest Editor