JOURNAL OF TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY

Preface

The scope of interests of modern telecommunications is ranging from issues of transmission, in both wireless and wired, mostly optical systems, through networking architectures with protocol issues associated with the exchange of information between end systems and networking components, including protection of communications against an unauthorized access, and on the problems of network services and applications ending. In all these areas, we are able to identify a number of current hot topics attracting researchers and practitioners.

The current issue of *Journal of Telecommunications and Information Technology* covers almost all these essential subjects.

Bartosz Czaplewski, Mariusz Dzwonkowski, and Roman Rykaczewski in *Digital Fingerprinting Based on Quaternion Encryption Scheme for Gray-Tone Images* present their research results in the area of digital fingerprinting of images. In particular, they propose a new scheme that is based on quaternion encryption in the Cipher Block Chaining mode. Although the algorithm presented in this paper was originally designed for gray-tone images, it can be also adapted for color images. In order to validate the proposed approach, in the latter part of the paper the authors performed the computer-based simulations, as well as included a detailed analysis of obtained results.

In *Robust Audio Watermarks in Frequency Domain*, Przemysław Dymarski and Robert Markiewicz present the audio watermarking scheme using log-spectrum, dirty paper codes, and LDPC for watermark embedding. According to information from this paper, the considered technique may be used to create the 40 b/s digital communication channel, as well as it may be utilized, e.g. for the purpose of hiding a digital signature when providing the copyright protection. Evaluation section is included in the latter part of the paper to verify the robustness of the watermarks against audio signal compression, resampling and transmitting through an acoustic channel.

The next paper by Fryderyk M. Dyc, Paweł Mazurek, and Jarosław P. Turkiewicz entitled *Utilization of the SOA Deep Saturation and Power Averaging Effect to Counteract Intra-Channel Crosstalk in DWDM System* presents an approach to reduce the signal distortions in semiconductor optical amplifiers. In particular, the authors show how to reduce in deep SOA saturation regime the negative influence of the nonlinear effects, namely cross-gain modulation and the patterning effect by means of numerical simulations.

Robert Cybulski and Krzysztof Perlicki in *Design of WDM Transmission System for Medical Data Exchange* present the design issues of a WDM transmission system utilizing Alien Wavelength channels for the purpose of medical data exchange. The system is proposed to provide a number of services for medical cases diagnostics, utilizing the transmission of photo or video data generated by diagnostic devices, as well as text data including e.g., medical case analysis and patient data. In particular, the main objective of the paper is to describe the structure of such a transmission system, outline the difference between configurable and non-configurable XFP end devices for Alien Wavelength channels, as well as to provide the respective comparison with the common techniques based on transponder cards.

In *Radio Channels Modeling for Adaptive Antennas Applications – Analysis of Elevation, Azimuth and Delay Spread*, Roman Łapszow and Józef Modelski show their research results in the area of urban environment channel modeling. In particular, they include measurements results, referring to delay spread, elevation and azimuth spread, performed for 2.2 GHz band with test environment based on existing 3G sites. The latter part of the paper is to describe the respective implementation of adaptive antenna.

The next paper – *Enhancing Security of Advanced Metering Infrastructure by Introducing Threshold Attendance Protocol* by Artur Makutunowicz and Jerzy Konorski focuses on smart grid systems. In particular, the authors analyze the Threshold Attendance Protocol that acts in a reverted security paradigm with the objective to provide the network load at a predictable level at any time. In the proposed solution, TAP is embedded in the Advanced Metering Infrastructure environment, and real-life simulation parameters are used to validate the solution.

Tadeus Uhl, Janusz Klink, and Paweł Bardowski in *New Metric for World Wide Web Service Quality* focus on evaluation of WWW service. Apart from outlining the well-known measurement methods, they introduce a new quality metric that is based on important network parameters affecting the assessment of the WWW service, including Web page opening time and download data transfer rate. Analysis presented in the latter part of the paper shows that when using the proposed method, adequate and repeatable results can be obtained.

The paper entitled *Music Recommendation System* by Piotr Hoffmann, Andrzej Kaczmarek, Paweł Spaleniak, and Bożena Kostek includes a description of the authors' music recommendation system with special focus on optimization issues of feature vector content. The respective experiments, performed based on a dedicated database that includes excerpts of music files assigned to 22 different categories, show the effectiveness of the proposed system.

Piotr Przystup, Adam Bujnowski, Jacek Rumiński, and Jerzy Wtorek in *A Detector of Sleep Disorders for Using at Home* investigate the obstructive sleep apnea – a disorder that often requires all-night examination by a medical staff in a specialized clinic. They propose a solution allowing for moving the examination procedure to patients' home with automatic analysis algorithms involved. Due to a low cost of deployment, the proposed device is expected to be available for a large group of patients. In particular, it allows for all-night recordings of important biosignals, including: three channels ECG, thoracic impedance (respiration), as well as snoring sounds and larynx vibrations.

In *Cassiopeia – Towards a Distributed and Composable Crawling Platform*, Leszek Siwik, Robert Marcjan, and Kamil Włodarczyk present a detailed description of the Cassiopeia framework of designing and implementing crawling systems/Internet robots, focusing on almost all consecutive phases of its deployment, i.e., the idea, design, crucial architectural elements, proof-of-concept, implementation, as well as experimental assessment of results.

Finally, Krzysztof Cichoń *et al.* in *Mobility-Aware, Correlation-Based Node Grouping and Selection for Cooperative Spectrum Sensing* introduce their solution to the cooperative spectrum sensing scheme problem defined for mobile cognitive networks. In particular, they propose a correlation-based, mobility-aware node selection algorithm and show its efficiency in the latter part of the paper.

We would like to take this opportunity to thank all the authors and reviewers for their effort in preparation of this issue. We also hope that readers will find its contents valuable.

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Guest Editors