

Introduction to Special Issue “Current Trends in Information and Communications Technology”

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In the context of the ever-expanding range of digital communication technologies, the opportunities, arising from developments in Information and Communication Technology (ICT), are extremely promising, both improving the competitiveness and innovation of the industry and meeting the demands of the society and economy.

The increased computing power, rapidly emerging and wide availability of the wireless technology have contributed to lowering the barriers to advances in science and technology, by making all data universally accessible and exchangeable, covering larger areas of information. Deploying new technologies aims to strengthen links between research and practice, theoretical and empirical work, in order to establish affordable, always-on and high-speed connectivity, but most importantly, to reshape the way individuals live, work and interact.

This special issue is mainly composed of the extended versions of selected papers at the 2nd Center of TeleInfrastructure—South-East Europe (CTIF SEE) Workshop: “ICT—the

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connecting path of Danube and Balkan regions to the entire Europe”, which took place on 11 September 2014, in the city of Bucharest, Romania (www.ctif.aau.dk).

Nevertheless, the issue also includes selected papers from academia, research and industry contributing to advances and ideas on this topic.

The first two papers of the special issue are the only ones with a unique ICT topic each. Hence, the first paper of the special issue, “Human Bond Communication”, is a revolutionary one as it proposes the need of inclusion of other three senses (olfactory, gustatory, and tactile) and an innovative approach of holistic communication for future communication networks. The second paper “Improved Gaussian Mixture Models for Adaptive Foreground Segmentation” presents enhanced image processing techniques.

The rest of papers can be grouped in three major ICT research areas.

The first set of papers is in the field of OFDM/MIMO systems/Cooperative/Wireless communication: “Efficient Beamforming by SLNR Maximization For Dual-Hop Relay Assisted MIMO Network”, “Maximized Channel Capacity Based Power Allocation technique for Multi Relay Hybrid Decode-Amplify-Forward Cooperative Network”, “A Novel Solution for OFDM Based Relay Systems”. Several aspects of RF spectrum management are analyzed in “Access to RF White Spaces in Romania: Present and Future”, “Optimization of Spectrum Usage and Coexistence Analysis of DVB-T and LTE-800 systems” and “Long-Term Spectrum Monitoring with Big Data Analysis and Machine Learning for Cloud-Based Radio Access Networks”. New results in the mobile and wireless access networks are presented in “Visions towards 5G: Technical Requirements and Potential Enablers”, “Self-Resource Allocation and Scheduling Challenges for Heterogeneous Networks Deployment”, “Extended Subcarrier Weighting for Sidelobe Suppression in OFDM based Cognitive Radio”, “Implication of LDPC technique in non-ideal multiuser communication system”, “New Optimal and Suboptimal Resource Allocation Techniques for Downlink Non-orthogonal Multiple Access (NOMA)” and “Utility-Based Optimal Precoding for SWIPT in MIMO Broadcasting Systems”.

The second ICT field, tackled by the present special issue, is the hot topic of traffic models and VANET networks. Thus, the following research papers were selected: “BIIR: A Beacon Information Independent VANET Routing Algorithm with Low Broadcast Overhead”, “Experimental Evaluation of Routing Schemes for Intermittently Connected Wireless Mobile Networks”, “Effective Communication in P2P Network by Introducing GOSIP—PHE Algorithms”.

The third ICT field that has an important weight in the present issue relates to sensors/wireless sensor network topics. The following papers were accepted: “An adaptive parameter setting scheme to enhance performance of self-organizing Bluetooth Low Energy networks”, “Malleability Resilient Concealed Data Aggregation in Wireless Sensor Networks”, “PF-ID-2PAKA: Pairing Free Identity-based Two-Party Authenticated Key Agreement Protocol for Wireless Sensor Networks”, “Secure and Efficient Mutual Adaptive User Authentication Scheme for Heterogeneous Wireless Sensor Networks Using Multimedia Client—Server Systems”, “A Risk-aware Reputation-based Trust Management in Wireless Sensor Networks”, “A Comparative Analysis of Intelligent Algorithms for Localization in Wireless Sensor Networks”.

Beside the mentioned papers that cover the ICT field, the issue contains three papers that disseminate relevant and innovative results from EU funded projects. These papers are mainly in the fields of IoT and M2M applications: “BETaaS: a platform for development and execution of Machine-to-Machine applications in the Internet of Things”, “eWALL—An intelligent caring home environment offering personalized context-aware applications

based on advanced sensing”, “Big Data Processing for Renewable Energy Telemetry using a Decentralized Cloud M2 M System”.

We believe that this special issue contributes to the various aspects of research in the ICT field and its future development, that it initiates a discussion on the related topics, motivates and inspires the readers and research community to continue their work and to publish the achieved results.

Finally, we would like to thank all the authors for their contributions, the reviewers for their valuable time and effort, the members of the editorial team of this journal for their constructive help and Professor Ramjee Prasad, Editor-in-Chief of “Personal Wireless Communications” for his support. We are fully aware that without the joint effort of all of us this issue could not have been prepared.