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## Editorial

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**Biographical notes:** Christos Douligeris is a Professor at the Department of Informatics, University of Piraeus, Greece. He has held positions with the Department of Electrical and Computer Engineering at the University of Miami. He was an associate member of the Hellenic Authority for Information and Communication Assurance and Privacy and the President and CEO of Hellenic Electronic Governance for Social Security SA. He has published extensively in the networking scientific literature and he has participated in many research and development projects.

Cleo Sgouropoulou is an Associate Professor at the Department of Informatics of the Technological Educational Institute of Athens. Her research interests lie in the fields of design, development and standardisation of learning technology and research information systems. She has led and participated in several related standardisation projects of the European Standardization Committee (CEN). She is the Head of the Delegation of the Hellenic Organization for Standardization to CEN, Vice-Chairing Technical Committee 353 'ICT for Learning, Education and Training' and coordinating activities regarding metadata standards for European Learner Mobility. She is active as coordinator and primary researcher in European Commission-funded projects.

Christos K. Georgiadis is an Associate Professor of e-Commerce Technology in the Department of Applied Informatics at the University of Macedonia, Thessaloniki, Greece. He received his BSc in Mathematics and PhD in Computer Science from the Aristotle University of Thessaloniki. He has also completed post-graduate studies in computer science at the University of Pisa.

His research interests include the areas of e-commerce and m-commerce technologies, e-security, web programming and web services supporting technologies. He has published more than 60 articles in international journals, edited volumes and international conferences and has received more than 500 citations. He is a senior member of the ACM and SIGEcom.

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This special issue on ‘Information and communication technologies research and applications in South East Europe’ was aimed as a platform for the dissemination of recent progress on innovative research in the region of South East Europe, relating to the multifaceted aspects of computer science and applications of ICT in real world problems from science, technology, business, commerce and education.

Two distinguished ICT conferences, directly related to the South East Europe research and innovation, have constituted the primary source of contribution to this issue, namely the 17th Pan-Hellenic Conference on Informatics (PCI 2013) and the 6th Balkan Conference on Informatics (BCI 2013), however, the call has targeted the broader research community.

PCI and BCI were organised by the Greek Computer Society, the Aristotle University of Thessaloniki, the University of Macedonia, the Technological Educational Institute of Thessaloniki, the South-East European Research Centre and the International Faculty of the University of Sheffield, CITY College.

PCI and BCI, initiated in 1984 and 2003 respectively, have traditionally provided effective channels of communication and collaboration among decision-makers (government, ministries and state agencies), established and young researchers (universities, research and development centres, start-up centres and incubators), practitioners (SME leaders and managers) and individuals concerned with the latest research, scientific development and practice on ICT, around current and emerging topics that are of relevance and significance for South East Europe competitiveness as well as for sustainable, robust, and equitable regional development.

More than 180 high quality papers describing original and unpublished results of conceptual, empirical, experimental, or theoretical work in all areas of computer science and technology have been submitted for consideration in PCI and BCI 2013. The main proceedings have been published by ACM in the International Conference Proceedings Series and selected papers have been invited for submission to this edition.

This special issue appears not only as a further outcome of the aforementioned conferences, but also at a moment in time when South East Europe is performing a shift to a broader and increasingly important ICT research and development entity, receiving international attention for its progress and outcomes.

It is with this in mind that this collection of papers has been selected for publication, providing insights into a number of ICT advancements in high-edge areas comprising security in infrastructureless wireless sensor networks (WSN), automatic algorithm mapping in hardware, low-power loop acceleration in processor back-end architectures and automated representations of asynchronous, text-based computer-mediated communication (CMC) in distance education contexts.

More specifically, the paper on ‘On intrusion detection in opportunistic networks’ by Samaras et al. provides an anomaly-based solution to address attacks in opportunistic networks. These networks go beyond the well-studied sensor and mobile ad hoc networks as they incorporate as set of seed nodes, candidate helpers and an extremely dynamic

operational environment. The proposed technique fits well with the various constraints encountered in opportunistic networks. The paper includes sufficient tutorial material as well as a thorough simulation study accompanied by implementation guidelines. This paper provides also very important conclusions regarding the applicability of various intrusion detection techniques in such environments as well as a set of ideas for future research.

The paper entitled ‘Source and IR-level optimisations in the HercuLeS high-level synthesis tool’ by Kavvadias and Masselos, presents optimisations in HercuLeS, an extensible high-level synthesis environment for automatically mapping algorithms to hardware, which is highly competitive to state-of-the-art commercial tools. Highlighted aspects include automatic IP integration including source- and intermediate-level optimising transformations. Furthermore, the authors present transformational patterns for loop and if-conversion optimisations and focus on constant multiplication and division by proposing a suitable scheme for their straightforward and decoupled utilisation in user applications.

The paper on ‘A functional unit network for rapid, low-power loop execution’ by Dimitriou and Tziouvaras proposes a processor back-end designed for rapid loop execution and low power dissipation; the proposed architecture consists of a network of functional unit nodes, in which instructions of the loop body are issued only once until loop completion. Therefore, both instruction-level and data-flow parallelism can be exploited. Power consumption is decreased by turning off the front end and all unused functional units. Experimental results for a series of benchmark loops indicate that for a network of  $N$  units and loop body size of  $N$  instructions, and an issue rate of  $k$  instructions per cycle, the proposed back end can provide acceleration by up to  $N/k$  compared to scalar or superscalar RISC execution.

In the field of distance education, Patriarcheas and Xenos study the complexity of text-based CMC in asynchronous fora. The authors present a methodological framework and a system development approach for the automated interpretation of discussion thread messages according to concrete modelling based in a formal language. The paper provides extensive experimentation material and discusses interesting results as a basis for further research to explore the effects of fora on the educational process in terms of causal explanation.

We would like to thank the authors and distinguished reviewers for their contribution to this special issue. We hope that the readership will find it stimulating, inspiring, and of real added value to their studies, work and research activities.