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ICT in Education, Research and Industrial Applications: Integration, Harmonization and Knowledge Transfer

Proceedings of the 13th International Conference,
ICTERI 2017

Kyiv, Ukraine
May, 2017

Ermolayev, V., Bassiliades, N., Fill, H.-G., Yakovyna, V., Mayr, H. C., Kharchenko, V., Peschanenko, V., Shyshkina, M., Nikitchenko, M., and Spivakovsky, A. (Eds.): ICT in Education, Research and Industrial Applications: Integration, Harmonization and Knowledge Transfer. Proc. 13th Int. Conf. ICTERI 2017, Kyiv, Ukraine, May 15-18, 2017, CEUR-WS.org, online

This volume represents the proceedings of the 13th International Conference on ICT in Education, Research, and Industrial Applications, held in Kyiv, Ukraine, in May 2017. It comprises 62 contributed papers that were carefully peer-reviewed and selected from 132 main conference and workshop submissions. The volume opens with the abstracts of the two keynote talks. The rest of the collection is organized in 2 parts. Part I contains the contributions to the main ICTERI conference tracks, structured in four topical sections: (1) Advances in ICT Research; (2) Information Systems: Technology and Applications; (3) Academia/Industry ICT Cooperation; and (4) ICT in Education. Part II comprises the contributions of the three workshops co-located with ICTERI 2017, namely: 3^d International Workshop on Theory of Reliability and Markov Modeling for Information Technologies (TheRMIT 2017); 1st International Workshop on Rigorous Methods in Software Engineering (RMSE 2017); 2nd International Workshop on Professional Retraining and Life-Long Learning using ICT: Person-oriented Approach (3L-Person).

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Preface

It is our pleasure to present you the proceedings of ICTERI 2017, the thirteenth edition of the International Conference on Information and Communication Technologies in Education, Research, and Industrial Applications: Integration, Harmonization, and Knowledge Transfer, held in Kyiv (Ukraine) on May 15-18, 2017. This year's edition focused on research advances, information systems technologies and applications, business/academic applications of Information and Communication Technologies. Emphasis was also placed on the role of ICT in Education. These aspects of ICT research, development, technology transfer, and use in real world cases are vibrant for both the academic and industrial communities.

The ICTERI 2017 Call for Papers as well as the main conference were structured into four tracks reflecting these research fields.

The conference program was complemented by two invited keynote talks, a PhD Symposium, poster and demo track, Ph.D. mentors panel, industrial IT Talks sub-event, and the contributions to three co-located workshops:

- The 3rd International Workshop on Theory of Reliability and Markov Modeling (TheRMIT 2016) addressing long-standing research and development aspects of reliability, security and safety modeling and assessment for modern IT systems
- The 1st International Workshop on Rigorous Methods in Software Engineering (RMSE 2017) focused on the aspects of formal techniques for specification and analysis of distributed software and cyber-physical systems, computer simulation
- The 2nd International Workshop on Professional Retraining and Life-Long Learning using ICT: Person-oriented Approach (3L-Person 2016) presenting new uses of information technology for life-long learning

The first keynote talk given by Dr. Aliaksandr Birukou from Springer Verlag GmbH presented the linked open data project using Springer Nature paper collections to make them openly available through the LOD portal. The second keynote talk was given by Prof. Yannis Dimitriadis from the University of Valladolid. This talk was about Technology Enhanced Learning. In particular, Prof. Dimitriadis focused on the ways to overcome the barriers of an effective and efficient classroom orchestration of innovative pedagogies.

The rationale behind the Ph.D. Symposium sub-event is to offer an expert environment for the presentation of the tractable ideas and early results of PhD projects or other research aiming at receiving a PhD. Young researchers joined the Symposium to take part in discussions and/or present their papers. They were offered a rare opportunity to exchange and discuss their research ideas with their peers, supervisors, and

senior scientists working in the fields within the scope of ICTERI 2017. The PhD Mentors Panel provided the opportunity for Ph.D. candidates to listen to and discuss the visionary ideas and promising topics for Ph.D. research offered by several renowned experts.

Poster and Demo track at ICTERI 2017 called for software demonstrations, interactive models, real-time visualizations, novel technology applications. The two selected demonstrations were presented as live action in a way to enable interaction with the audience.

Overall ICTERI 2017 attracted a substantial number of submissions – a total of 155 comprising the main conference, PhD symposium, posters and demos, and workshops. Out of the 56 paper submissions to the main conference we have accepted 24 high quality and most interesting papers to be presented at the main conference and published in our proceedings. The acceptance rate was therefore 43 percent. Our three workshops received overall 76 submissions, of which 38 were accepted by their organizers and, also, included in this volume. Thus, the acceptance rate for ICTERI 2017 workshops was on average 50 percent.

The conference would not have been possible without the support of many people. First of all, we would like to thank all the authors who submitted papers to ICTERI 2017 and thus demonstrated their interest in the research problems within our scope. We are very grateful to the members of our Program Committee for providing timely and thorough reviews and, also, for being cooperative in doing additional review work. We would like to thank the local organizers of the conference whose devotion and efficiency made this instance of ICTERI a very interesting and effective scientific forum.

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