PROCEEDINGS OF
THE 2016 INTERNATIONAL CONFERENCE ON
FOUNDATIONS OF COMPUTER SCIENCE

FCS 2016

Editors

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WORLDCOMP'16
July 25-28, 2016
Las Vegas Nevada, USA
www.worldcomp.org

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This volume contains papers presented at The 2016 International Conference on Foundations of Computer Science (FCS'16). Their inclusion in this publication does not necessarily constitute endorsements by editors or by the publisher.

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ISBN: 1-60132-434-0
Printed in the United States of America

CSREA Press
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Foreword

It gives us great pleasure to introduce this collection of papers to be presented at the 2016 International Conference on Foundations of Computer Science (FCS'16), July 25-28, 2016, at Monte Carlo Resort, Las Vegas, USA.

An important mission of the World Congress in Computer Science, Computer Engineering, and Applied Computing (a federated congress to which this conference is affiliated with) includes *"Providing a unique platform for a diverse community of constituents composed of scholars, researchers, developers, educators, and practitioners. The Congress makes concerted effort to reach out to participants affiliated with diverse entities (such as: universities, institutions, corporations, government agencies, and research centers/labs) from all over the world. The congress also attempts to connect participants from institutions that have **teaching** as their main mission with those who are affiliated with institutions that have **research** as their main mission. The congress uses a quota system to achieve its institution and geography diversity objectives."* By any definition of diversity, this congress is among the most diverse scientific meeting in USA. We are proud to report that this federated congress has authors and participants from 74 different nations representing variety of personal and scientific experiences that arise from differences in culture and values. As can be seen (see below), the program committee of this conference as well as the program committee of all other tracks of the federated congress are as diverse as its authors and participants.

The program committee would like to thank all those who submitted papers for consideration. About 45% of the submissions were from outside the United States. Each submitted paper was peer-reviewed by two experts in the field for originality, significance, clarity, impact, and soundness. In cases of contradictory recommendations, a member of the conference program committee was charged to make the final decision; often, this involved seeking help from additional referees. In addition, papers whose authors included a member of the conference program committee were evaluated using the double-blinded review process. One exception to the above evaluation process was for papers that were submitted directly to chairs/organizers of pre-approved sessions/workshops; in these cases, the chairs/organizers were responsible for the evaluation of such submissions. The overall paper acceptance rate for regular papers was 27%; 10% of the remaining papers were accepted as poster papers (at the time of this writing, we had not yet received the acceptance rate for a couple of individual tracks.)

We are very grateful to the many colleagues who offered their services in organizing the conference. In particular, we would like to thank the members of Program Committee of FCS'16, members of the congress Steering Committee, and members of the committees of federated congress tracks that have topics within the scope of FCS. Many individuals listed below, will be requested after the conference to provide their expertise and services for selecting papers for publication (extended versions) in journal special issues as well as for publication in a set of research books (to be prepared for publishers including: Springer, Elsevier, BMC journals, and others).

- *Dr. Lena Khalid Ahmad (SERP'16); An Independent Researcher and Co-editor, Journal of Communications and Information Sciences (affiliated with Advanced Institute of Convergence IT)*
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- *Prof. Hahanov Vladimir (Congress Steering Committee); Vice Rector, and Dean of the Computer Engineering Faculty, Kharkov National University of Radio Electronics, Ukraine and Professor of Design Automation Department, Computer Engineering Faculty, Kharkov; IEEE Computer Society Golden Core Member; National University of Radio Electronics, Ukraine*

- *Prof. Shiuh-Jeng Wang (Congress Steering Committee); Director of Information Cryptology and Construction Laboratory (ICCL) and Director of Chinese Cryptology and Information Security Association (CCISA); Department of Information Management, Central Police University, Taoyuan, Taiwan; Guest Ed., IEEE Journal on Selected Areas in Communications.*
- *Prof. Jane You (Congress Steering Committee & Vice-Chair of IPCV'16); Associate Head, Department of Computing, The Hong Kong Polytechnic University, Kowloon, Hong Kong*

We would like to extend our appreciation to the referees, the members of the program committees of individual sessions, tracks, and workshops; their names do not appear in this document; they are listed on the web sites of individual tracks.

As Sponsors-at-large, partners, and/or organizers each of the followings (separated by semicolons) provided help for at least one track of the Congress: Computer Science Research, Education, and Applications Press (CSREA); US Chapter of World Academy of Science (http://www.worldcomp.org/) ; American Council on Science & Education & Federated Research Council (http://www.americancse.org/); HoIP, Health Without Boundaries, Healthcare over Internet Protocol, UK (http://www.hoip.eu); HoIP Telecom, UK (http://www.hoip-telecom.co.uk); and WABT, Human Health Medicine, UNESCO NGOs, Paris, France (http://www.thewabt.com/). In addition, a number of university faculty members and their staff (names appear on the cover of the set of proceedings), several publishers of computer science and computer engineering books and journals, chapters and/or task forces of computer science associations/organizations from 3 regions, and developers of high-performance machines and systems provided significant help in organizing the conference as well as providing some resources. We are grateful to them all.

We express our gratitude to keynote, invited, and individual conference/tracks and tutorial speakers - the list of speakers appears on the conference web site. We would also like to thank the followings: UCMSS (Universal Conference Management Systems & Support, California, USA) for managing all aspects of the conference; Dr. Tim Field of APC for coordinating and managing the printing of the proceedings; and the staff of Monte Carlo Resort (Convention department) in Las Vegas for the professional service they provided. Last but not least, we would like to thank the Co-Editors of FCS'16: Prof. Hamid R. Arabnia, Prof. George Jandieri, Ashu M. G. Solo, and Prof. Fernando G. Tinetti.

We present the proceedings of FCS'16.

Steering Committee, 2016
http://www.worldcomp.org/

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