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Editors

# Innovations and Advances in Computer, Information, Systems Sciences, and Engineering

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# Preface

This book includes the proceedings of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering (CISSE 2011). The proceedings are a set of rigorously reviewed world-class manuscripts presenting the state of international practice in Innovative Algorithms and Techniques in Automation, Industrial Electronics, and Telecommunications.

CISSE 2011 is a high-caliber research for research conferences that were conducted online. CISSE 2011 received 260 paper submissions and the final program included 107 accepted papers from more than 80 countries, representing the six continents. Each paper received at least two reviews, and authors were required to address review comments prior to presentation and publication.

Conducting CISSE 2011 online presented a number of unique advantages, as follows:

- All communications among the authors, reviewers, and conference organizing committee were done online, which permitted a short 6-week period from the paper submission deadline to the beginning of the conference.
- PowerPoint presentations, final paper manuscripts were available to registrants for 3 weeks prior to the start of the conference.
- The conference platform allowed live presentations by several presenters from different locations, with the audio, and PowerPoint transmitted to attendees throughout the Internet, even on dial-up connections. Attendees were able to ask both audio and written questions in a chat room format, and presenters could mark up their slides as they deemed fit.
- The live audio presentations were also recorded and distributed to participants along with the powerpoint presentations and paper manuscripts within the conference DVD.

The conference organizers and we are confident that you will find the papers included in this volume interesting and useful. We believe that technology will continue to infuse education thus enriching the educational experience of both students and teachers.

Bridgeport, CT, December 2011

Khaled Elleithy  
Tarek Sobh

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The technical co-sponsorship provided by the Institute of Electrical and Electronics Engineers (IEEE) and the University of Bridgeport is gratefully appreciated. We would like to express our thanks to Prof. Toshio Fukuda, Chair of the International Advisory Committee and the members of Technical Program Committees.

The excellent contributions of the authors made this world-class document possible. Each paper received two to four reviews. The reviewers worked tirelessly under a tight schedule and their important work is gratefully appreciated. In particular, we want to acknowledge the contributions of the following individuals: Ashraf Abdelwahed, Khalid Aboalayon, Munther Abualkibash, Tamer Abu-Khalil, Sumaya Abusaleh, Ahmad Abushakra, Mohannad Abuzneid, Naser Alajmi, Ibrahim Alkore Alshalabi, Muder Almi'ani, Anas Al-okaily, Aziz Alotaibi, Amer Al-Rahayfeh, Mohammad Rauji, Tariq Alshugran, Fahad Alswaina, Aladdin Alzubi, Mohamed Ben Haj Frej, Ying-ju Chen, Richard Colon, Khaled Elleithy, Ali El-Rashidi, Ahmed ElSayed, Mohammed Ali Eltaher, Eugene Gerety, Manan Joshi, Zakareya Lasefr, Youming Li, Ramadhan Mstafa, Ammar Odeh, Abdul Razaque, Andriy Shpylchyn, and Ajay Shrestha.

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Tarek Sobh

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