

ICIS 2010

Proceedings

**2010 IEEE International Conference
on Intelligent Computing and
Intelligent Systems**

October 29-31, 2010, Xiamen, China

Edited by:

Wen Chen (Shanghai Jiaotong University, China)
Shaozi Li (Xiamen University, China)



Proceedings

2010 IEEE International Conference on Intelligent Computing and Intelligent Systems

Copyright and Reprint Permission: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Operations Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331. All rights reserved. Copyright ©2010 by the Institute of Electrical and Electronics Engineers

Print Version

IEEE Catalog Number: CFP1057H-PRT

ISBN: 978-1-4244-6583-5

Publisher: Institute of Electrical and Electronics Engineers, Inc.
Printed in Beijing, China

2010 IEEE International Conference on Intelligent Computing and Intelligent Systems

October 29-31, 2010, Xiamen , China

Sponsors:



IEEE Beijing Section, China



Xiamen University, China

Co-Sponsors:



Fujian Association for Artificial Intelligence, China



Shanghai Jiaotong University, China



Iwate Prefectural University, Japan

Committees

General Conference Chairs

Prof. Mengqi Zhou, IEEE Beijing Section, China

Prof. Wen Chen, Shanghai Jiaotong University, China

General Conference Co-chairs

Prof. Changle Zhou, Xiamen University, China

Prof. Xiaotie Deng, City University of Hong Kong, China

Prof. Kenzoh Itoh, Iwate Prefectural University, Japan

Technical Program Committee Chairs

Prof. Shaozi Li, Xiamen University, China

Prof. Yinglin Wang, Shanghai Jiaotong University, China

Prof. Ying Dai, Iwate Prefectural University, Japan

Prof. Kehe Wu, North China Electric Power University, China

Prof. Hanzi Wang, Xiamen University, China

Publication Chair

Prof. Mengqi Zhou, IEEE Beijing Section, China

Technical Program Committee Members

Basabi Chakraborty, Iwate Prefectural University, Japan

Changjing Lu, Sanming University, China

Changqin Huang, Sun Yat-Sen University, China

Chang Su, Xiamen University, China

Davide Ciucci, Free University of Bozen-Bolzano, Italy

Donglin Cao, Xiamen University, China

Duoqian Miao, Tongji University, China

Gaoping Wang, Henan University of Technology, China

Georg Peters, Germany

Germano Resconi, Catholic University Brescia, Italy

Gongde Guo, Fujian Normal University, China

Goutam Chakraborty, Iwate Prefectural University, Japan

Guolong Chen, Fuzhou University, China

Haitao Pu, Shandong University of Science and Technology, China

Feng Liu, University of Wisconsin, Madison, USA

Isabella Maschio, Polytechnic University of Milan, Italy

Javier Montero, Spain

Jun Hakura, Iwate Prefectural University, Japan

Jiangjian Xiao, Sarnoff Corporation, USA

Jian Wang, CIMS Research Center, Tongji University, China

Jianwei Ma, Henan University of Science and Technology, China

Jiejie Zhu, MIT, USA

Jing Teng, North China Electric Power, China

Junsong Zhang, Xiamen University, China

Kai Qin, University of Waterloo, Canada

Koji Mabuchi, Iwate Prefectural University, Japan

Minghui Shi, Xiamen University, China

Min Jiang, Xiamen University, China
Ping Jiang, University of Bradford, UK
Qingxiong Yang, UIUC, USA
Qingyang Hong, Xiamen University, China
Shaozi Li, Xiamen University, China
Shuili Chen, Jimei University, China
Steve Ho, University of Hertfordshire, UK
Tianrui Li, Southwest Jiaotong University, China
Wei Pan, Xiamen University, China
Weiming Shen, National Research Council, Canada
Wentao Li, Swinburne University of Technology, Australia
Wenzhong Guo, Fuzhou University, China
Yan Liu, Swansea University, UK
Yanping Lu, Xiamen University, China
Yi Liu, Tsinghua University, China
Yidong Chen, Xiamen University, China
Yin Feng, Xiamen University, China
Ying Dai, Iwate Prefectural University, Japan
Yinglong ma, North China Electric Power, China
Yongmei Li, Jimei University, China
Yue Wang, Institute for Infocomm Research, Singapore
Yun Cheng, Hunan Institute of Humanities, Science and Technology, China
Yunqi Lei, Xiamen University, China
Zhixin Chen, Beijing University of Civil Engineering and Architecture, China
Zhongpan Qiu, Xiamen University, China
Zhou Su, Waseda University, Japan

Preface

Welcome to 2010 IEEE International Conference on Intelligent Computing and Intelligent Systems (ICIS 2010)! Welcome to Xiamen, China! We believe that the solid conference program and the amazing city of Xiamen will offer you irresistible attraction.

This year's ICIS 2010 is co-sponsored by IEEE Beijing Section, Xiamen University, Fujian Association for Artificial Intelligence, Shanghai Jiaotong University, Iwate Prefectural University. Much work went into preparing a program of high quality.

At this very moment, we would like to thank the program committees and the organizing staffs for their hard work. We would like to especially thank Xiamen University for hosting this conference. We would like to deliver our appreciation to the keynote speakers for their great contribution to this conference.

The scope of this conference is to gather researchers from different areas and disciplines to present results and participate in discussions under the common theme of intelligent systems and computing. These interactions will facilitate a better understanding of the diversity of the different approaches as well as of their similarities. In addition it will open the way for applying approaches that have been successful in one area to problem solving in different areas and applications.

We wish each of you successful deliberations, stimulating discussions, new friendships and all enjoyment that Xiamen can offer. While this is a truly remarkable Conference, there is more yet to come. We look forward to seeing all of you in Xiamen.

October 10, 2010

Mengqi Zhou, IEEE Beijing Section, China
Wen Chen, Shanghai Jiaotong University, China