ISARC 2014

Proceedings of the 31st International Symposium on Automation and Robotics in Construction and Mining

9-11 July 2014
Sydney, NSW, Australia

Edited by:
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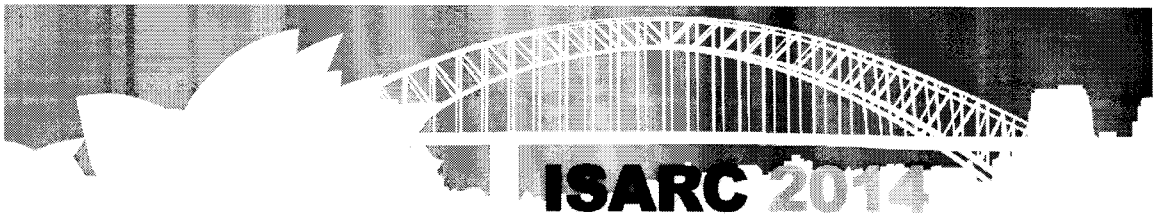
International Association for
Automation and Robotics in Construction



Sydney • Australia

AUTOMATION, CONSTRUCTION AND ENVIRONMENT

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FOREWORD - MESSAGE FROM THE CHAIR

Welcome to the 31st International Symposium on Automation and Robotics in Construction and Mining (ISARC2014) in Sydney, Australia from July 9th to 11th, at the Aerial Function Centre, the University of Technology, Sydney (UTS). It is our great honour and pleasure to welcome you to ISARC2014.

The ISARC series have been organised by members of the International Association for Automation and Robotics in Construction (IAARC) to address the needs and concerns of a global community in all fields of construction, including civil and building engineering, machine automation, robotics applications to construction, mining automation, infrastructure networks, construction and environmental sustainability, Information Technology innovations, planning, logistics, etc. IAARC welcomes participation from other industrial sectors and governments.

This year's ISARC theme is Automation, Construction and Environment. Apart from addressing latest advances in automation and robotic technologies for construction, building and mining, ISARC2014 has a specific focus on efficiency, productivity, quality, and reliability attributes of the construction/mining automation process and its interactions with the environment.

ISARC2014 has received a total of 230 submissions from 33 countries, all of which have been peer-reviewed by international experts, Track Chairs and the Program Committee. With 136 papers being included for presentations, the ISARC2014 has an acceptance rate less than 60%. The Technical Program features five Keynotes, including a Tucker-Hasegawa speech, 5 invited papers, 30 parallel sessions, a workshop and 2 Lab tours.

We would like to take this opportunity to gratefully acknowledge ISARC2014 sponsors, namely, The New South Wales Government under its Research Attraction and Acceleration Program, The Australasian Joint Research Centre on Building Information Modelling at Curtin University, The Institute for Infrastructure Engineering at The University of Western Sydney, The Faculty of Design Architecture & Building, Faculty of Engineering & IT at UTS, and IAARC.

We would like to extend our great gratitude to all the contributors who submitted abstracts and papers to ISARC2014. Your excellent work ensures the quality and impact of this symposium! Many thanks also go to all members of the Organising Committee, IAARC Board of Directors, Program Committee, Track Chairs, reviewers, volunteers and everyone who contributed in one way or another to ISARC2014. Your continued efforts are the foundation of the success for this symposium; it has been truly a great pleasure to work with all of you!

In addition to the Technical Program, ISARC2014 has a number of social programs, including Welcome Reception, Farewell Lunch, and Gala Dinner accompanied by a special concert, led by Guest Performers from The Australian National University and Bridgewater State University, USA, on the interrelation of science and technology with nature to illustrate the symposium theme via music.

We do hope that ISARC2014 provides substantial opportunities for collegial networking and friendship development. This is the first time the symposium takes place in the Southern hemisphere, and particularly, at UTS, located in the heart of the spectacular Sydney, which has been ranked among the top cities over the world to live in and to visit.

We wish you a rewarding symposium and a pleasant time here in Sydney, Australia!

Quang Ha
General Chair, ISARC2014
Sydney, Winter 2014

TRACKS AND TRACK CHAIRS

Track **Automation and Control**
Chairs Jianchun Li (University of Technology, Sydney, Australia)
Ngai-Ming Kwok (University of New South Wales, Australia)

Track **Building and Architecture**
Chair Ioannis Brilakis (Cambridge University, UK)

Track **Construction Management**
Chairs Seokho Chi (Seoul National University, Korea Republic)
Manwoo Park (Myongji University, Korea Republic)

Track **Energy and Environment**
Chair Alessandro Carbonari (Università Politecnica delle Marche, Italy)

Track **IT Applications**
Chairs Ali Akbarnezhad (University of New South Wales, Australia)
Peter Brady (University of Technology, Sydney, Australia)

Track **Mining, Built Infrastructure and Human Factors**
Chairs Tim Horberry (The University of Queensland, Australia)
Burcu Akinci (Carnegie Mellon University, USA)
Tri (Anthony) Tran (Nanyang Technological University, Singapore)

Track **Robotics and Mechatronics**
Chair Hung La (University of Nevada, USA)

Track **Sensing and Communication**
Chair Xuesong (Johnson) Shen (University of New South Wales, Australia)

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