Proceedings of the 9th International Conference on Applied Operational Research

Editors
Yun-Zhu Lin
Kaveh Sheibani
Motohiro Hagiwara
Jyh-Haw Tang
Yit-Jin Chen

LECTURE NOTES IN MANAGEMENT SCIENCE

Volume 9, 2017

9th International Conference on Applied Operational Research, Proceedings
Chung Yuan Christian University
Taoyuan, Taiwan
18-20 December 2017

ISSN 2008-0050 (Print)
ISSN 1927-0097 (Online)

Copyright © ORLAB Analytics Inc. All rights reserved.

Preface

Operational Research is an important scientific discipline with many new theoretical developments and practical applications. The International Conference on Applied Operational Research (ICAOR) is an annual forum bringing together academics and practitioners from around the world to discuss the most recent developments in operational research and management science (OR/MS). The conference covers all aspects of our subject, but with a particular emphasis on applications. This year, the ninth event in our planned series of conferences – ICAOR 2017 takes place at Chung Yuan Christian University, in the city of Taoyuan, Taiwan.

The papers that appear in these proceedings were carefully and thoroughly refereed. Our sincere thanks go to the members of the scientific programme committee who gave a significant amount of their valuable time to this task. We are also very grateful to all those who have helped in organising the conference. We are sure that their contributions will add significantly to the success of the conference.

We very much hope that you will enjoy the conference programme and the planned social events. We wish you all a very pleasant stay in Taiwan and trust that you will find the conference to be of value and leave us having made many new friends.

December 2017

Yun-Zhu Lin
ICAOR 2017 Chair

Kaveh Sheibani
ICAOR General Chair

9th International Conference on Applied Operational Research (ICAOR 2017)

ICAOR General Chair

Kaveh Sheibani, ORLab Analytics, Canada

Program Chairs

Motohiro Hagiwara, Meiji University, Japan (Co-Chair)
Yun-Zhu Lin, Chung Yuan Christian University, Taiwan (Local Chair)
Jyh-Haw Tang, Chung Yuan Christian University, Taiwan (Local Co-Chair)

Scientific Program Committee

Jason Atkin, University of Nottingham, UK
Farshid Azadian, Embry-Riddle Aeronautical University, USA
Peter Dobias, Defence Research and Development Canada (DRDC), Canada
Tiny du Toit, North-West University, South Africa
Javier Faulin, Public University of Navarra, Spain
Yuvraj Gajpal, University of Manitoba, Canada
Motohiro Hagiwara, Meiji University, Japan (Co-Chair)
Patrick Hirsch, University of Natural Resources and Life Sciences, Austria
Wei-Chiang Hong, Oriental Institute of Technology, Taiwan
Angel Juan, Open University of Catalonia, Spain
Carrie Ka Yuk Lin, City University of Hong Kong, China
Nina Kajiji, University of Rhode Island, USA
Mumtaz Karatas, Turkish Naval Academy, Turkey
Gilbert Laporte, HEC Montréal, Canada
Yun-Zhu Lin, Chung Yuan Christian University, Taiwan (Chair)
Pongchanun Luangpaiboon, Thammasat University, Thailand
Carolina Machado, University of Minho, Portugal
Ines Marques, Instituto Superior Técnico, University of Lisbon, Portugal
Sandra Ngueveu, Laboratory for Analysis and Architecture of Systems, France
Massimo Paolucci, University of Genoa, Italy
Helena Ramalhinho, Universitat Pompeu Fabra, Spain
Cristina Rottondi, Dalle Molle Institute for Artificial Intelligence, Switzerland
Matteo Salani, Dalle Molle Institute for Artificial Intelligence, Switzerland
Punita Saxena, University of Delhi, India
Ratnesh Saxena, University of Delhi, India
Patrick Schittekat, SINTEF, Norway
Peter Scholz, HSBA Hamburg School of Business Administration, Germany
Kaveh Sheibani, ORLab Analytics, Canada
Stella Sofianopoulou, University of Piraeus, Greece
Jyh-Haw Tang, Chung Yuan Christian University, Taiwan (Co-Chair)
Greet Vanden Berghe, Katholieke Universiteit Leuven, Belgium
Ursula Walther, Berlin School of Economics and Law, Germany

Contents