

Preface

IWAMA – International Workshop of Advanced Manufacturing and Automation – began in 2010 as a joint seminar between SFI Norman (SINTEF and NTNU) and Shanghai Key Laboratory of Manufacturing Automation and Robotics (Shanghai University). In 2013 IWAMA expanded to include academic and industrial experts in the fields of advanced manufacturing and automation worldwide when the University of Manchester and Tongji University joined as co-organizers. 2014, many universities, such as Shanghai Second Polytechnic University, Xiamen University of Science and Technology, Stavanger University, China University of Mining and Technology, Shandong Agriculture University, Shanghai Jiao Tong University, Indian National Institute of Technology, join us as IWAMA family. As IWAMA becomes an annual event, we expect more universities and industry sponsors will join the international workshop as co-organizers.

Manufacturing and automation have assumed paramount importance and are vital factors for the economy of a nation and the quality of life. The field of manufacturing and automation is advancing at a rapid pace and new technologies are also emerging in the field. The challenges faced by today's engineers are forcing them to keep on top of the emerging trends through continuous research and development.

IWAMA aims at providing a common platform for academics, researchers, practicing professionals and experts from industries to interact, discuss trends and advances, and share ideas and perspectives in the areas of manufacturing and automation.

IWAMA 2014 takes place in Shanghai, China, 27-28th October 2014, organized by Norwegian University of Science and Technology and Shanghai University. The program is designed to improve manufacturing and automation technologies for the next generation through discussion of the most recent advances and future perspectives, and to engage the worldwide community in a collective effort to solve problems in manufacturing and automation.

Manufacturing research includes a focus on the transformation of present factories, towards re-usable, flexible, modular, intelligent, digital, virtual, affordable, easy-to-adapt, easy-to-operate, easy-to-maintain and highly reliable “smart factories”. Therefore, IWAMA 2014 has mainly covered 6 chapters in manufacturing engineering:

1. Mechanisms and Machine of Manufacturing Systems
2. Advanced Manufacturing Technologies
3. Measurements, Monitoring and Analysis of Manufacturing Systems
4. Mechatronics, Robotics and Control
5. Intelligent Manufacturing Systems
6. Production, Logistics and Supply Chain Management

All papers submitted to the workshop have been subjected to strict peer-review by at least 2 expert referees. Finally, 97 papers have been selected to be included in the proceedings after a revision process. We hope that the proceedings will not only give the readers a broad overview of the latest advances, and a summary of the event, but also provide researchers with a valuable reference in this field.

On behalf of the organization committee and the international scientific committee of IWAMA 2014, I would like to take this opportunity to express my appreciation for all the kind support, from the contributors of high-quality keynotes and papers, and all the participants. My thanks are extended to all the workshop organizers and paper reviewers, to SHU, NTNU and SFI Norman for the financial support, and to co-sponsors for their generous contribution. Thanks are also given to Quan Yu, Yi Wang, Lilan Liu, Jing Li for their hard editorial work of the proceedings and arrangement of the workshop. Thank also goes to Thomas Wohlbier from Trans Tech Publications Ltd. for producing the proceedings.



Kesheng Wang, Ph.D. Professor of NTNU

Chair of IWAMA 2014

Trondheim, Norway, 16th July, 2014

Organized and Sponsored by

NTNU (Norwegian University of Science and Technology, Norway);

SHU (Shanghai University, China);

SFI Norman (Center for Research-based Innovation – Norwegian Manufacture Future, Norway)

SSPU (Shanghai Second Polytechnic University, China)

UM (University of Manchester, UK)

Co-organized by

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XMUT (Xiamen University of Technology, China)

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SDAU (Shandong Agriculture University, China)

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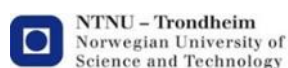
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About Editors

Prof. Kesheng Wang holds a Ph.D. in production engineering from the Norwegian University of Science and Technology (NTNU), Norway. Since 1993 he has been appointed Professor at the Department of Production and Quality Engineering, NTNU. He is a director of the Knowledge Discovery Laboratory (KDL) at NTNU at present. He is also an active researcher and serves as a technical adviser in SINTEF. He was elected member of the Norwegian Academy of Technological Sciences in 2006. He has published 18 books, 10 book chapters and over 220 technical peer-reviewed papers in international journals and conferences. Prof. Wang's current areas of interest are intelligent manufacturing systems, applied computational intelligence, data mining and knowledge discovery, swarm intelligence, condition-based maintenance and structured light systems for 3D measurements and RFID.

Prof. Jan Ola Strandhagen is a research director of the research center SFI NORMAN at SINTEF. He is also Professor at Department of Production and Quality Engineering, the Norwegian University of Science and Technology (NTNU). He holds a PhD in Production Engineering from NTNU (1994). His research has focused on production management and control, logistics, manufacturing economics and strategies. He has managed and performed R&D projects in close collaboration with a wide variety of Norwegian companies and participated as researcher and project manager in several European projects.

Prof. Dawei Tu received his bachelor's degree, master's degree and PhD from Zhejiang University in 1987, 1989 and 1993 respectively. Since 1993 he joined Shanghai University, and became a professor in 2000. Now he is the Dean of the School of Mechatronic Engineering and Automation. He is currently a consulting member of Degree Committee of China State Council for Mechanical Engineering, a member of Test Professional Committee of Chinese Society of Aeronautics and Astronautics, and the executive director of Precision Machinery Branch of China Instrument and Control Society. He has managed and performed more than thirty R&D projects from NSFC, government and industry. He has published or co-published 3 books, over 120 peer-reviewed papers in journals and conferences. His research interests include optoelectronic detecting, precision mechanics and instrumentation, 3D vision and vision-based robot servo-control.