

Guest Editorial

Focused Section on Inaugural Edition of TMECH/AIM Emerging Topics

Chen, X.; Tan, X.; Berselli, G.; Chen, X.; Clayton, G.; Jeon, S.; Karimi, H. R.; Katsura, S.; Kober, J.; Vallery, H.

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Guest Editorial: Focused Section on Inaugural Edition of TMECH/AIM Emerging Topics

I. INTRODUCTION

SINCE the official registration of the word “Mechatronics” as a trademark by Yaskawa Electric Corporation in 1971, explosive growth has been observed in mechatronics research and product development activities. Nowadays, mechatronics and mechatronic design methodologies play increasingly important roles in computer, communication, control, and consumer-product (4C) technologies. As such, it is fair to agree that mechatronics technology has profoundly affected almost all aspects of human life, particularly, of engineering realities ranging from rehabilitation devices to ground and underwater robots, and from unmanned aerial vehicles to intelligent manufacturing facilities, constituting a rapidly progressing frontline. For the last two decades, IEEE/ASME TRANSACTIONS ON MECHATRONICS (TMECH) as the top-quality journal and IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM) as the flagship conference have contributed remarkably to the motivation and inspiration of a large number of researchers in mechatronics, which evolves into a vibrant research field today. The creation of the new avenue of TMECH/AIM concurrent submission marks another important milestone in both TMECH and AIM histories. For the first time, the archival TMECH publication is bridged together with the AIM presentation to provide an efficient gateway for researchers to report and discuss their novel and significant breakthroughs in emerging topics while allowing the mechatronics community to rapidly access the state of the art of the field. In the first implementation of the TMECH/AIM concurrent submission, all accepted papers are collectively published in this Focused Section on Inaugural Edition of TMECH/AIM Emerging Topics and also presented at IEEE/ASME AIM 2020.

II. HIGHLIGHT OF REVIEW PROCESS

It is not an exaggeration to claim that the inaugural TMECH/AIM concurrent submission received an overwhelming response from the mechatronics community. Indeed, a total of 171 submissions were received by the deadline of January 8, 2020, on a broad range of mechatronics topics. With such a large number of submissions, significant challenges were presented to the execution of the high-quality review process within the stringent timeline of less than four months as required. Eventually, two rounds of rigorous review processes were completed by a

dedicated editorial board consisting of 23 Guest Editors with the support of more than 300 peer reviewers, strictly following the quality standard of TMECH. All Guest Editors are experienced and well-established experts in mechatronics, who are serving currently or served in the editorial board of TMECH and/or other relevant reputable journals such as IEEE TRANSACTIONS ON ROBOTICS. A total of 41 papers were finally accepted for joint publication in this Focused Section and presentation at AIM 2020 held virtually in July 2020. The topics involved in these 41 papers represent broad facets of mechatronics: novel sensors and actuators; medical robotics and rehabilitation devices; soft robotics; bioinspired robotic designs; robotic tactile systems; growing robots; service robots; data-driven and learning methods in robotics; motion planning and control; control of underwater, ground, marine, aerial vehicles, and automotive systems as well.

It is extremely encouraging to see the enormous volunteering support for this TMECH/AIM concurrent submission initiative from the mechatronic community.

III. ACKNOWLEDGMENT

Many people have contributed to the success of the inaugural TMECH/AIM concurrent submission. The Lead Guest Editors wish to take this opportunity to extend the first sincere gratitude to all authors of the 171 submissions for their contributions and to the 23 Guest Editors as well as all peer reviewers for their invaluable time and efforts to ensure the quality of the review process. It is indeed a commendable and collective accomplishment achieved during such a difficult period of time with the worldwide outbreak of the COVID-19 pandemic. We wish to thank Prof. I.-M. Chen, the Editor-in-Chief of TMECH, for his strong leadership, vision, and timely support delivered throughout the process. We would also like to thank Prof. G. Chiu, the past Editor-in-Chief of TMECH, for his strong support and leadership at the early stage of the initiative. It is worth mentioning that the following members of the current editorial board of TMECH provided valuable help: Prof. G. Alici, Prof. S. Foong, Prof. H. Gao, Prof. F. Janabi-Sharifi, Prof. J. C. Koo, Prof. Y. Li, Prof. Z. Liu, Prof. J. Shan, Prof. J. She, Prof. Y. Shi, Prof. T. Singh, Prof. H. Wang, Prof. C. Xiong, Prof. C. Zhang, Prof. X. Zhang, and Prof. Q. Zou. Our thanks also go to Prof. J. Yi, the General Chair of AIM 2020, for his tremendous coordination and cooperative work in seamless transition from TMECH to AIM 2020, with the strong support and help from

Prof. H. Fujimoto and Prof. T. Shimono who led the Conference Editorial Board for AIM 2020 as the Chair and the Secretary. As we are here to celebrate the publication of this Focused Section on Inaugural Edition of TMECH/AIM Emerging Topics, our last but certainly not least thanks go to Prof. K.-M. Lee, the former Editor-in-Chief of TMECH, for initiating the concurrent submission idea and for promoting the idea persistently such that it eventually becomes a reality.

Finally, as a new publication avenue, the Focused Section on TMECH/AIM Emerging Topics opens the door for effective and timely dissemination of novel research results and technology breakthroughs, which we strongly believe will greatly benefit the mechatronics community. It is then our true hope that this initiative would continue to gain momentum and evolve into an attractive niche for both TMECH and AIM in the future.

X. CHEN, *Lead Guest Editor*
Department of Electrical and
Computer Engineering
University of Windsor
Windsor, ON N9B 3P4, Canada
xchen@uwindsor.ca

X. TAN, *Lead Guest Editor*
Department of Electrical and
Computer Engineering
Michigan State University
East Lansing, MI 48824 USA
xbtan@msu.edu

G. BERSELLI, *Guest Editor*
Department of Mechanical, Energy,
Management and Transportation
Engineering
University of Genoa
Genoa 16145, Italy
giovanni.berSELLI@unige.it

X. CHEN, *Guest Editor*
Department of Electronic
Information Systems
Shibaura Institute of Technology
Saitama 337-8570, Japan
chen@sic.shibaura-it.ac.jp

G. CLAYTON, *Guest Editor*
Department of Mechanical Engineering
Villanova University
Villanova, PA 19085 USA
garrett.clayton@villanova.edu

S. JEON, *Guest Editor*
Department of Mechanical and
Mechatronics Engineering
University of Waterloo
Waterloo, ON N2L 3G1, Canada
soojeon@uwaterloo.ca

H. R. KARIMI, *Guest Editor*
Department of Mechanical Engineering
Politecnico di Milano
Milan 20156, Italy
hamidreza.karimi@polimi.it

S. KATSURA, *Guest Editor*
Department of System Design
Engineering
Keio University
Yokohama 223-8522, Japan
katsura@sd.keio.ac.jp

J. KOBER, *Guest Editor*
Cognitive Robotics Department,
Faculty of Mechanical, Maritime and
Materials Engineering
Delft University of Technology
Delft 2628 CD, The Netherlands
j.kober@tudelft.nl

C.-C. LAN, *Guest Editor*
Department of Mechanical Engineering
National Cheng Kung University
Tainan 701, Taiwan
cclan@mail.ncku.edu.tw

A. LEONESSA, *Guest Editor*
Department of Mechanical Engineering
Virginia Tech
Blacksburg, VA 24061 USA
leonessa@vt.edu

Z. LI, *Guest Editor*
Department of Automation
University of Science and
Technology of China
Hefei 230026, China
zjli@ieee.org

G. LIU, *Guest Editor*
Department of Aerospace Engineering
Ryerson University
Toronto, ON M5B 2K3, Canada
gjliu@ryerson.ca

D. OETOMO, *Guest Editor*
Department of Mechanical Engineering
The University of Melbourne
Parkville, VIC 3010, Australia
doetomo@unimelb.edu.au

K. OLDHAM, *Guest Editor*
Department of Mechanical Engineering
University of Michigan
Ann Arbor, MI 48109 USA
oldham@umich.edu

Y.-J. PAN, *Guest Editor*
Department of Mechanical Engineering
Dalhousie University
Halifax, NS B3H 4R2, Canada
yajun.pan@dal.ca

T. SHIMONO, *Guest Editor*
Faculty of Engineering
Yokohama National University
Yokohama 240-8501, Japan
shimono-tomoyuki-hc@ynu.ac.jp

Z. SUN, *Guest Editor*
Department of Mechanical Engineering
University of Minnesota
Minneapolis, MN 55455 USA
zsun@umn.edu

M. TAVAKOLI, *Guest Editor*
Department of Electrical and
Computer Engineering
University of Alberta
Edmonton, AB T6G 1H9, Canada
mahdi.tavakoli@ualberta.ca

J. UEDA, *Guest Editor*
G. W. W. School of Mechanical Engineering
Georgia Institute of Technology
Atlanta, GA 30332 USA
jun.ueda@me.gatech.edu

H. VALLERY, *Guest Editor*
Department of Bio-Mechanical Engineering
Faculty of Mechanical, Maritime
and Materials Engineering
Delft University of Technology
Delft 2628 CD, The Netherlands and
Department of Rehabilitation Medicine
Erasmus University
Rotterdam 3000 CA, The Netherlands
h.vallery@tudelft.nl

Q. XU, *Guest Editor*
Department of Electromechanical
Engineering
University of Macau
Macau 999078, China
qsxu@um.edu.mo

J. YI, *Guest Editor*
Department of Mechanical and
Aerospace Engineering
Rutgers, The State University
of New Jersey
Piscataway, NJ 08854-8058 USA
jgyi@rutgers.edu

L. ZHANG, *Guest Editor*
Department of Mechanical and
Automation Engineering
The Chinese University of Hong Kong
Hong Kong, China
lizhang@cuhk.edu.hk

L. ZUO, *Guest Editor*
Department of Mechanical Engineering
Virginia Tech
Blacksburg, VA 24061 USA
leizuo@vt.edu