
Editorial

Paulo Jorge da Silva Bartolo

Department of Mechanical, Aerospace and Civil Engineering,
The University of Manchester,
Oxford Road, Manchester M13 9PL, UK
Email: paulojorge.dasilvabartolo@manchester.ac.uk

Shaden Jaradat

Research Strategy and Innovation Division,
Faculty of Science and Engineering,
The University of Manchester,
Oxford Road, Manchester M13 9PL, UK
Email: shaden.jaradat@manchester.ac.uk

Biographical notes: Paulo Jorge da Silva Bartolo is Head of the Manufacturing Group and Innovative Manufacturing Theme at the Department of Mechanical, Aerospace and Civil Engineering, The University of Manchester. He is the University's Industry 4.0 Lead. He authored more than 600 manuscripts, co-edited 18 books and holds 14 patents, is the Founding Editor of the *Virtual and Physical Prototyping Journal* (Taylor & Francis) and Editor-in-Chief of the *Biomufacturing Reviews* (Springer). He has been engaged in around 90 research projects funded by UKRI, Bill and Melinda Gates Foundation, the Royal Society, the Portuguese Foundation for Science and Technology, the Portuguese Agency for Innovation, the European Commission, and Industry. Paulo chairs the Scientific Technical Committee on Electro-Physical and Chemical Processes at the International Academy of Production Engineering, and advises several national and international funding agencies.

Shaden Jaradat obtained his BA and MSci in Natural Sciences from the University of Cambridge in 2002 and a PhD in Physics from The University of Manchester in 2006 on the topic of Synchrotron Studies of Liquid Crystals. He worked as a Research Associate in the Nonlinear Dynamics and Liquid Crystals Group and the Biological Physics Group between 2007 and 2012. He then moved to the University's International Development Division where he facilitated and managed a number of overseas collaborations and strategic relations. In 2018, he joined the Research Strategy Coordination Team in the Faculty of Science and Engineering and has since been tasked with supporting the development of the University's Industry 4.0 Strategy as well as coordinating some of the University's strategic proposals around Circular Economy.

This special issue of the *International Journal of Mechatronics and Manufacturing Systems (IJMMS)* includes five selected extended research papers from the Industry 4.0 Academia Conference, organised by The University of Manchester and held in Manchester on 28th February and 1st March 2018.

In this special issue, various cross-sectoral aspects related to Industry 4.0 technologies and paradigms are modelled, examined, reviewed or showcased. It begins with a review paper on interoperability as a central element of the factory of the future.

Demonstrating the wide-ranging impact of Industry 4.0, the two papers that follow present a bolt-nut pair approach that is low-cost, flexible and automated compared to conventional systems, and an interesting study combining behavioural modelling with close examination of a mix of industries to outline a VR/AR based framework for maintenance training.

Industry 4.0 fuels the need for innovative business models and, with them, the need to integrate the drivers and objectives of these models with the tactical use of core Industry 4.0 technologies. This aspect is aptly demonstrated in the next paper.

Moreover, Industry 4.0 is in many ways a conduit for empowering small and medium enterprises (SMEs), provided they overcome the challenges of their adoption. Using Discrete Event Modelling applied to a real-life case study, the final paper in the special issue demonstrates the value of different Industry 4.0 options and trends.

The Editors Prof. Paulo Bartolo and Dr. Shaden Jaradat are grateful for Inderscience publishers' team for their professional support throughout the preparation of this special issue. The editors would like to thank the authors and the referees for their effort, time and patience.