Preface

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Biographical notes: Weicun Zhang is a Professor at the School of Automation and Electrical Engineering, University of Science and Technology Beijing. He obtained his PhD in Control Theory and Applications from the Tsinghua University, in 1993. His research interest covers adaptive control, multiple model adaptive control, intelligent control and cyber-physical systems.

Franco Cicirelli is a researcher at the ICAR-CNR, Italy, since 2015. He obtained his PhD in System Engineering and Computer Science at the University of Calabria, Italy. He was a Research Fellow at the University of Calabria, Italy, from 2006 to 2015. His research work mainly focuses on software engineering tools and methodologies for modelling, analysis and implementation of complex time-dependent systems. His research topics are agent-based systems, distributed simulation, parallel and distributed systems, real-time systems, workflow management systems, internet of things and cyber-physical systems.

Jing Na is a Professor at the Kunming University of Science and Technology, Kunming, China. His research interests include intelligent control, adaptive parameter estimation, nonlinear control and applications for robotics, vehicle systems and wave energy converters. He has co-authored one monograph and more than 100 international journal and conference papers. He is currently an Associate Editor of *Neurocomputing*. He was the recipient of an EU Marie Curie Fellowship, and 2017 Hsue-shen Tsien Paper Award.

Liangliang Sun received his PhD in Control Theory and Control Engineering from the Northeastern University, China. He is currently an Associate Professor of the Department of Information & Control Engineering. His research interests include intelligent manufacturing systems – planning, scheduling, coordination of design, and manufacturing. He is a member of the IEEE Robotics and Automation Society, a member of Technical Committer 8.3 'Modelling and Control of Environmental System' IFAC, a peer-reviewed expert of National Natural Science Foundation Committee of China, a reviewer of *International Journal of Production Research*, Optimal Control, and World Congress of the International Federation of Automatic Control.

As the development of computer science and technology and applied mathematics, an extremely extensive attention has been attracted for study of modelling and simulation (M&S) of complex systems in recent decades to investigate the collective behaviours in the parts of a complex system and the interaction of the system with its environment. The applications of M&S have transcended the boundaries of engineering, and they are recognised as a useful tool in analysing and decision supporting for various fields of engineering, social science, business, medical care, biology and environment. And also, M&S is an interesting and motivating field of study on its own right. The combination of traditional techniques of systems analysis with new trends involving more intelligent approaches of M&S in data analysis and online decision-making processes has demonstrated to be an important asset in any engineering task.

This special issue collected the papers from the 2018 International Symposium on Simulation and Process Modelling (ISSPM 2018), Shenyang, China, its aim is to provide a forum for scientists, researchers and practitioners to exchange their knowledge and experience in new developments of theory and methodology and the recent practical applications in M&S.

There are 12 articles accepted for this special issue, they are described as follows:

1 'Modelling and application of laparoscopic simulation system for panhysterectomy' presents a laparoscopic surgery simulation training system using human anatomy visual reproduction and force-feedback technology, and a variety of medical image data to establish a virtual environment with vision, hearing, speaking, dynamic, smell, feel and touch.

2 'Seamless development in Java of distributed real-time systems using actors' describes and defines a modern Java framework called theatre. It enables the modelling, analysis and implementation of distributed real-time systems based on the metaphor of actors.

3 'Research on NOx emission of coal-fired unit based on multi-model clustering ensemble' proposes an integrated model VMSC-LSSVM based on soft voting clustering ensemble to enhance the accuracy of the complex system as NOx emissions of utility boiler.

4 'Decision supporting for ship collision avoidance in restricted waters' proposes a decision support system to solve the problem of ship collision avoidance in restricted waters, with experimental verification results.

5 'Simulation modelling and analysis of balance mechanisms of innovation search in innovation network' proposes an agent-based model to investigate the dynamics characterising the interaction between balance mechanisms of innovation search and the innovation network.

6 'Modelling and simulation of intelligent collision avoidance based on ship domain' defines a collision risk index, and based on this index, some simulation and experimental results are presented to verify the usability of the proposed modelling methods in head-on, crossing and overtaking situations.

7 'Validating trustworthy service composition through VIPLE and pi-calculus' proposes a method in which non-functional attributes are incorporated into the logic rules of inference in terms of composition of the linear logic and pi-calculus.

8 'Two-sided M-Bayesian limits of credibility of reliability parameters in the case of zero-failure data and a case study' presents a method of two-sided M-Bayesian credible limit to solve the interval estimation problem of reliability parameters with exponential distribution and zero failure data.

9 'Modelling of ship collision avoidance behaviours based on AIS data' suggests a new knowledge-base of intelligent ship collision avoidance data, providing a novel method and theoretical guidance for future developments in ship collision avoidance methods.

10 'Fast fractal image retrieval algorithm based on HV partition' proposes an improved fast fractal image retrieval algorithm based on HV segmentation.

11 'Large-scale text classification with deeper and wider convolution neural network' proposes a shuffle convolution neural network (SCNN) to address the shallow learning problem by introducing wider inception cell and deeper residual connection.

12 'Real-time health status evaluation for electric power equipment based on cloud model' presents a real-time health status evaluation method for wind turbines employing the advantages of the cloud model in dealing with uncertain information of the monitoring data of wind turbines.