Artificial Intelligence (AI) is concerned with the development of innovative computing systems based on new models that simulate or emulate different aspects of natural intelligence. Such models can exhibit characteristics typically attributed to human intelligence like reasoning, perception, planning, learning, pattern recognition, problem-solving, rationality, and decision making, as well as more general characteristics of intelligence, like autonomy, proactivity, adaptability or sociability. Examples of AI models are knowledge-based systems, intelligent agents and multi-agent systems. AI can be an appealing computational tool for the modeling and simulation of systems for which it is difficult or even impossible to develop detailed physical or engineering simulation models using standard mathematical methods. AI-based models can be very useful for simulating natural and intentional systems as found for example, but not only, in different fields like social, economic and life sciences.

The call for papers of this special issue highlights the particular aspects of AI-based Modeling and Simulation (M&S) and its applications. The focus is on emphasizing the features and advantages of AI-based models for capturing phenomena difficult to represent using standard methods and models derived from physics and engineering. In particular such AI-based models are based on AI problem solving methods including heuristic searching, knowledge representation, inference and machine learning. This special issue is interested in contributions focused on the application of these AI-based M&S methods and tools for solving problems from different fields like social, economic and life sciences, as well as from physics and engineering.

We encourage submissions from members of both M&S and AI communities. Papers should address issues including, but not limited to:

- Novel aspects and paradigms of AI-based M&S tools
- Real world M&S case studies with AI-based methods
- Enhancing and complementing M&S using AI-based methods, languages and technologies
- Intelligent and multi-agent approaches for the M&S of complex systems and behaviors
- AI-based methods for the development of simulation models
- Applications of AI-based M&S methods and tools in interdisciplinary fields
- M&S of specific intelligence features and characteristics

Guest Editors
Gabriel A. Wainer, Carleton University, Canada
Tülay Yıldırım, Yıldız Technical University, Turkey

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Authors are asked to submit high-quality original work that has neither appeared in nor is under consideration by other journals. All submissions will be peer-reviewed following standard
journal practices. Manuscripts based on previously published conference papers must be extended substantially to include at least 50 percent new material. Manuscripts should be written in the active voice, should be no longer than 6,000 words (counting each standard figure and table as 250 words), and should follow the style and presentation guidelines of CiSE (see http://www.computer.org/web/peer-review/magazines for details).

Please submit your article using the online manuscript submission service at https://mc.manuscriptcentral.com/cs-ieee. When uploading your article, select the appropriate special-issue title under the category "Manuscript Type." Also include complete contact information for all authors. If you have any questions about submitting your article, contact the peer review coordinator at cise@computer.org.

GABRIEL A. WAINER, SMSCS, SMIEEE, received the M.Sc. (1993) at the University of Buenos Aires, Argentina, and the Ph.D. (1998, with highest honors) at the Université d’Aix-Marseille III, France. In July 2000 he joined the Department of Systems and Computer Engineering at Carleton University (Ottawa, ON, Canada), where he is now Full Professor and Associate Chair (Graduate Studies). He has held visiting positions at the University of Arizona; LSIS (CNRS), Université Paul Cézanne, University of Nice, INRIA Sophia-Antipolis (France); UCM, UPC (Spain) and others. He is the author of three books and over 310 research articles; he edited four other books, and helped organizing numerous conferences, including being one of the founders of TMS/DEVS, SIMUTools and SimAUD. Prof. Wainer was the Vice-President Conferences, and was a Vice-President Publications and is a member of the Board of Directors of the SCS. Prof. Wainer is the Special Issues Editor of SIMULATION, member of the Editorial Board of IEEE Computing in Science and Engineering, Wireless Networks (Elsevier), and Journal of Defense Modeling and Simulation (SCS). He is the head of the Advanced Real-Time Simulation lab, located at Carleton University's Centre for advanced Simulation and Visualization (V-Sim). He has been the recipient of various awards, including the IBM Eclipse Innovation Award, SCS Leadership Award, and various Best Paper awards. He has been awarded the First Bernard P. Zeigler DEVS Modeling and Simulation Award, the SCS Outstanding Professional Award (2011) and Carleton University’s Mentorship Award (2013), the SCS Distinguished Professional Award (2013) and Carleton University's Research Achievement Award (2005 and 2014).

Tülay YILDIRIM, received the B.S. and M.S. degrees in Electronics and Communication Engineering from Yildiz Technical University (YTU), Istanbul, Turkey, in 1990 and 1992, respectively, and the Ph.D. degree in electrical and electronics engineering from the University of Liverpool, U.K., in 1997. Currently, she is a Full Professor with YTU. Her current research interests include analog and digital integrated circuit design, hardware implementations of neural networks, medical electronics, biometrics and artificial intelligence.

Email: tulay@yildiz.edu.tr