

## Special Issue: Highlights of CIE 2021

This special issue contains a selection of papers from the 41st American Society of Mechanical Engineers (ASME) Computers and Information in Engineering (CIE) Conference that was held virtually, August 17–19, 2021, in conjunction with the International Design Engineering Technical Conferences (IDETC). Selected papers were nominated by the four CIE technical committees, namely, Advanced Modeling and Simulation (AMS), Computer Aided Product and Process Development (CAPPD), Systems Engineering, Information and Knowledge Management (SEIKM), and Virtual Environments and Systems (VES), where:

- The AMS technical committee focuses on advances in modeling and simulation in engineering with emphasis on topics such as novel numerical techniques, inverse problems, computational multiphysics modeling, and uncertainty quantification.
- The CAPPD technical committee emphasizes fundamental research and computational tool development to support product and process realization. Research topics include geometric modeling, feature-based design, tolerance analysis, and product-service systems design, as well as emerging topics such as emotional engineering, human-in-the-loop modeling, and multimodal interfaces.
- The SEIKM technical committee promotes research on design informatics, ontology engineering, information discovery, agent-based systems, knowledge and function representation, systems engineering, model-based design, as well as knowledge capture, reuse, and management. In addition to these established areas, recent emphasis is on emerging topics including smart manufacturing informatics, machine learning, factory of the future, and cyber-physical systems.
- The VES technical committee focuses on research issues involved in developing hardware and software for virtual environments, i.e., computer-generated, immersive 3D worlds that facilitate the design of virtual products. VES topics include emerging areas such as tangible user interfaces, multimodal user interfaces, multisensoral techniques, haptics, and alternative, augmented, or combinatorial reality.

The selected papers embody many of the themes listed earlier and were chosen to be representative of some of the latest, most relevant research in Computers and Information in Engineering.

**Marina Carulli**  
Department of Mechanics,  
Polytechnic University of Milan,  
Piazza Leonardo da Vinci 32 20133 Milano,  
Milan, Lombardy, Italy

**Seung-Kyum Choi**  
George W. Woodruff School of  
Mechanical Engineering,  
Georgia Institute of Technology,  
813 Ferst Drive, MARC Rm. 260,  
Atlanta, GA 30332-0405

**Tsz Ho Kwok**  
Department of Mechanical,  
Industrial and Aerospace Engineering,  
Concordia University,  
1455 de Maisonneuve Blvd. W.,  
MIAE Dept Montreal,  
Quebec, H3G 1M8, Canada

**Yan Lu**  
Systems Integration Division,  
National Institute of Standards and Technology,  
100 Bureau Drive,  
Gaithersburg, MD 20899

**Mahesh Mani**  
Advanced Manufacturing Office,  
Department of Energy,  
1000 Independence Ave SW,  
Washington, DC 20585

**Paul Witherell**  
Systems Integration Division,  
National Institute of Standards and Technology,  
100 Bureau Drive,  
Gaithersburg, MD 20899