

SPRINGSIM'20

2020 Spring Simulation Conference

AIMS AND SCOPE

Real-world applications have been always the driving force for the development of Modeling and Simulation (M&S) theories. For over 50 years, the **Annual Simulation Symposium (ANSS) Track** has been a forum to exchange ideas, results, and methods related to real-world theories and applications of M&S for Simulationists in industry, government, and academia. The purpose of this track is to highlight and advance rigorous experimental, computational practices of M&S devoted to the study of real-world problems. Research on all topics concerning the practice of M&S theories are welcome. Authors are invited to present research of all kinds, including case studies and applications. Recommended topics in the track include, but are not limited to, the following with application to real-world problems:

- Advances in the field of M&S for implementation purposes
- Application of modeling formalisms into real-world applications
- Rigorous comparisons across M&S techniques
- New applications of M&S
- Novel uses of M&S in real world applications
- Application of M&S to co-design, hardware-in-the-loop, co-simulation
- M&S tools: performance analysis, scalability

SUB-TRACKS

Complex, Intelligent, Adaptive and Autonomous Systems (CIAAS)

Heterogeneous systems are the norm today. A system deployed in a net centric environment eventually becomes a part of a system of systems (SoS). This SoS also incorporates adaptive and autonomous elements (such as systems that have different levels of autonomy and situated behavior). This makes design, analysis and testing for the system-at-hand a complex endeavor. Testing in isolation is not the same as a real-system operation, since the system's behavior is also determined by the input, which evolves from the environment. This exact factor is difficult to predict, due to an ever-increasing level of autonomy. Advanced Modeling and Simulation (M&S) frameworks are required to facilitate SoS design, development, testing, and integration. In more particular, these frameworks must provide methods to deal with intelligent, emergent, and adaptive behavior as well as autonomy. The subject of emergent behavior and M&S of emergent behaviors takes the center stage in such systems as it is unknown how a system responds in the face of emergent behavior arising out of interactions with other complex systems. Intelligent behavior is also defined as an emergent property in some complex systems. Consequently, systems that respond and adapt to such behaviors may be called intelligent systems as well. Topics of interest include, but are not limited to:

- Methodologies, tools, and architectures for adaptive control systems
- Knowledge engineering, generation and management in CIAAS
- Weak and Strong emergent behavior, Emergent Engineering
- Complex adaptive systems engineering
- Self-* (organization, explanation, configuration) capability and collaborative behavior in CIAAS
- Live, Virtual and Constructive (LVC) environments
- Modeling, engineering, testing and verification of complex behavior
- Complexity in model engineering of complex SoS
- Metrics for Complexity design and evaluation
- Verification, validation and accreditation of Complexity in SoS