CALL FOR PAPERS

ANNSIM'24
Annual Modeling and Simulation Conference 2024

MAY 20 - MAY 23, 2024
American University, Washington D.C., USA

The 2024 Annual Modeling and Simulation Conference (ANNSIM'24) is the annual flagship conference sponsored by The Society for Modeling and Simulation International (SCS), which covers state-of-the-art developments in Modeling & Simulation (M&S). ANNSIM'24 invites original contributions to the theory, methodology, and practice of modeling and simulation in any scientific or engineering discipline. The following is the Call for Paper for one specific track. All tracks are listed at https://scs.org/annsim/

Track on Health and Medicine
Chairs: Özgür M. Araz, University of Nebraska — Lincoln, USA & Srini Venkatramanan, University of Virginia, USA

Modeling and simulation techniques have been widely adopted across various domains such as healthcare, clinical medicine, and population health. In healthcare settings, simulations have been useful to represent medical processes at a large scale (e.g., emergency rooms, hospitals) to identify bottlenecks in patient treatment and improve efficiencies. Computer-based medical simulations are useful for synthesizing the response of tissues to therapy while trading off between response fidelity and computational efficiency. High-fidelity clinical simulation and disease progression modeling can be used to provide insights for experienced clinicians to optimize across treatment options. Finally population health modeling and simulation tools have been useful for guiding real-time epidemic response while also understanding the impact of various policies on different aspects of community health. These may range from individual level agent-based models to aggregate simulations including system dynamics models. Such methods could also be used to address healthcare-associated infections (HAIs) which impact both public health and healthcare operations.

Multiple recent advances in computational modeling are yet to be fully exploited in health and medicine. High-performance computing (HPC) intensive simulation tools are needed for studying multiscale dynamics such as co-evolving epidemics and health impacts of extreme weather events on the population. Application of deep learning techniques for complementing such simulations through surrogate modeling is an active research area. For clinical simulations, the use of Virtual Reality (VR) and haptics to enhance real-time interactivity is promising for skill acquisition and training. Interactive platforms for exploring simulated outcomes in the healthcare and medical simulations could improve uptake among clinicians and health system administrators. Efficient integration of domain knowledge and complex data calibration in the case of biomedical simulations is needed to improve fidelity of tissue response to therapy. Finally, coupling such simulations with medical imaging techniques to improve diagnosis capabilities would be greatly beneficial.

This track encourages submissions on simulation aspects of health and medicine that include, but are not limited to, the following:

- Simulation for healthcare systems and medical processes
- Predictive models and simulations for disease progression
- Surgery and therapy simulation
- Biomedical simulations for tissue response
- Epidemic modeling and simulations across scales
- Health impact simulations for extreme weather events
- Deep learning models and surrogate simulations
- Interactive simulation and summarization tools
- Virtual reality enabled simulations for healthcare training
- Calibration of complex simulations with real world data

Important dates

Paper Submission
Jan 14th, 2024

Acceptance Notification
March 1st, 2024

Camera-ready Submission
March 20th, 2024

Conference Program
April 3rd, 2024

SUBMISSIONS
Original, high-quality **technical papers** are solicited for peer review, presentation, and subsequent publication in the conference proceedings if accepted. Technical papers are max 12 pages long with single column format. **Tutorials** and **Ph.D. Colloquium** submissions are 2 pages long. Please visit the Author Kit page to use the templates and review detailed guidance on the content: https://scs.org/authorskit.

ORGANIZING COMMITTEE
General chair: Philippe Giabbanelli (Miami U., USA). Vice General Chair: Istvan David (McMaster U., Canada). Program Chair: Cristina Ruiz-Martin (Carleton U., Canada). Proceedings co-chairs: Román Cárdenas (Universidad Politécnica de Madrid, Spain) & Bentley Oakes (Polytechnique Montreal, Canada). For any question, please contact the general chair at giabbapj@miamioh.edu