

Call for Contributions

1. Submission URL: <https://scs.org/annsim/>

Please select Track Preference as **Modeling and Simulation in Medicine (MSM)**

2. Note: For 2022, all events will be held in a hybrid mode: on site or virtual choices. We hope for an abatement of the viral pandemic, but we will adapt to prevailing Covid-19 conditions.

Special track

Modeling and Simulation in Medicine (MSM)

Chair

Michel A. Audette, Old Dominion University - Norfolk, USA maudette@odu.edu

Co-Chairs

Jerzy W. Rozenblit, Minsik Hong, University of Arizona, Tucson, AZ, USA
jerzyr@arizona.edu, mshong@email.arizona.edu

Annual Modeling and Simulation Conference (ANNSIM)

<https://scs.org/annsim/>

July 18 - 21, 2022 San Diego State University, San Diego, Ca, USA

Medical and healthcare simulation span a variety of areas where medicine converges with Modeling and Simulation (M&S). Computer-based medical simulation emphasizes the application of computers to synthesizing the response of tissues to therapy, which represents a trade-off between fidelity to real tissue response and computational efficiency. High-fidelity medical/surgical simulation is typically used to provide experienced clinicians, including surgeons, with insight on how to optimize treatment of the patient, while high-efficiency simulation emphasizes real-time interactivity for haptics, typically used in conjunction with Virtual Reality (VR) visualization for skill acquisition and training. In both cases, a computer visualization of the anatomy is needed, however in the interactive case based on VR, this visualization must be also responsive in real-time, which presupposes highly efficient therapy models (e.g., cutting models) as well as relatively sparse anatomical models and collision models, where the latter determines where the therapy takes place, in conjunction with the pose of the haptic device. A related research area is the segmentation of medical images that map intensities to tissues and discretization (meshing) that converts tissues to elements. Another intensively researched area is the application of digital deep learning (deep neural networks- DNNs) to the synthesis of a neural computation within a medical context, such as to approximate a diagnosis or a tissue response to therapy, while exploiting the ability of the solution to learn.

Healthcare simulation is used to denote two areas that complement the above-described medical simulation. On the one hand, it is used to designate mannequin-based training systems and part-trainers, whose physical implementation is intended to develop proprioceptive understanding of therapies. On the other, this term also represents medical processes at a large scale, such as emergency rooms, and hospitals, to formulate an understanding of bottlenecks in patient treatment and improve efficiencies.

This track is particularly open to contributions in the following areas, though not exclusively:

- Simulation for healthcare systems
- Simulation of medical processes
- Simulation for care learning
- Simulation for elderly
- Sensing-based patient simulation
- Haptics-driven interactive simulation
- Predictive simulation

- Simulation training methods
- Age-based healthcare simulation
- Patient surgery simulation
- Therapy simulation
- Simulation patient safety
- Simulation of emergency situations
- Calibration of healthcare simulation tools
- Integrating simulation tools
- Interactive simulation tools
- Deep neural networks for computer-assisted medicine

Submission Guidelines

General Technical Papers: Original, high-quality technical papers are solicited for review, possible presentation and subsequent publication in the conference proceedings. Papers are max 12 pages long with single column format (see author's kit at <https://scs.org/authorskit>).

Posters & Live Demonstrations: Submissions for Posters and Demos consist of a 2-page extended abstract paper. All abstracts should describe the research motivation, M&S relevance of the problems being addressed, proposed methodology, and results of completed research.

Important Datelines

Paper Submission: March 14, 2022 (extended)

Tutorial Proposal Submission: March 14, 2022 (extended)

Author Notification: April 25, 2022 (extended)

Camera-Ready Paper Submission: May 16, 2022 (extended)

Paper Submission

Please select Track Preference as **MSM**

Registration

- Each accepted paper needs at least one full registration, before the camera-ready manuscript can be included in the proceedings.
- Registration fees are available at scs.org/anmsim .

Venue Address

San Diego State University
 Conrad Prebys Aztec Student Union
 6075 Aztec Cir Dr.
 San Diego, CA 92182
 Ph: +1 (619) 594-6555

Contact

Chair: Michel A. Audette, maudette@odu.edu