Apr 14th, 12:00 AM - 12:00 AM

Agenda: MSVSCC 2022

Masha Sosonkina
Old Dominion University

Jessica Johnson
Old Dominion University

MSVSCC 2022

THE 15H ANNUAL

MODELING, SIMULATION & VISUALIZATION STUDENT CAPSTONE CONFERENCE

April 14, 2022

Education & Training

General Sciences & Engineering

Infrastructure Security & Military

Virtual Environments

Transportation, Business & Industry

Medical Simulation

AGENDA

WELCOME

Old Dominion University Department of Computational Modeling and Simulation Engineering (CMSE) and the Virginia Modeling, Analysis and Simulation Center (VMASC) welcome you to the 15th annual Modeling, Simulation & Visualization (MSV) Student Capstone Conference.

The Conference features student research and student projects that are central to MSV. Students present their research to an audience of fellow students, faculty, judges and other distinguished guests. For the students, these presentations afford them the opportunity to impart their innovative research to members of the MSV community from academic, industry and government backgrounds. The MSV Student Capstone conference offers 6 presentation tracks this year. Each track has two awards. The best paper and the best presentation. The overall winner of the conference will be honored with the Gene Newman award.

Also participating in the conference are faculty members who have volunteered their time to impart direct support to their students' research, facilitate the various conference tracks, serve as judges for each of the tracks, and provide overall assistance to the conference.

Appreciating the purpose of the conference and working in a cohesive, collaborative effort will no doubt result in a successful symposium for everyone involved.

Thank you for joining us!

Sincerely,

Dr. Masha Sosonkina
Capstone Conference Co-Chair
msosonki@odu.edu

Jessica Johnson
Capstone Conference Co-Chair
j17johnso@odu.edu

OLD DOMINION UNIVERSITY

ODU MODELING & SIMULATION ENGINEERING www.odu.edu/ece

VMASC OLD DOMINION UNIVERSITY

SCS

MSVSCC 2022 SCHEDULE

08:45 – 09:00 AM	OPENING REMARKS
09:00 – 12:30 PM	MORNING SESSIONS
12:30 – 01:30 PM	LUNCH BREAK
01:30 – 03:30 PM	AFTERNOON SESSIONS
04:30 – 05:30 PM	KEYNOTE & AWARDS CEREMONY

EXHIBIT HALL OPEN TIMES

09:30 - 12:00

12:30 - 4:30

OLD DOMINION UNIVERSITY

ODU MODELING & SIMULATION ENGINEERING www.odu.edu/ece

VMASC OLD DOMINION UNIVERSITY

SCS

THANK YOU FOR JOINING US

Modeling, Simulation & Visualization Student Capstone Conference 2022

KEYNOTE SPEAKER

Chief Technology Officer
SimVentions

Old Dominion University
1989 B.S. Computer Engineering

Paul Gustavson

Paul Gustavson has a passion for what he calls Full Spectrum Innovation, which is centered on personal, technical, and corporate growth. In 2000, he helped cofound SimVentions, Inc., a technology firm that delivers engineering solutions for today's military. SimVentions is frequently recognized as one of Virginia's Best Places to Work and was named by Inc. Magazine as one of "The 50 Best Places to Work in 2016". As the Chief Technology Officer (CTO), Paul leads in identifying and contributing to the company's capability and influencing the strategic vision. As a leader with an engineering background, he is also an active member of the simulation and virtual reality communities helping contribute to several of the standards in use today, including serving on the Executive Committee of the Simulation Interoperability Standards Organization (SISO).

Paul is the author of several books including: *Breaking Average, Leaders Press On, and Speech Blueprint*. As well as a contributing author of *Engineering Principles of Combat Modeling and Distributed Simulation* and *C++Builder 6 Developer's Guide.* He is also the co-host of the *Breaking Average Podcast*. Paul and his wife Barbara live in Virginia.

Keynote: Invent the Future

The Gene Newman Award
for
Excellence in M&S

Eugene G. Newman

In recognition of his efforts in advancing the M&S field in Hampton Roads, the Gene Newman Award for Excellence in Modeling and Simulation Research was established in 2006. It has been awarded annually since then to the best overall paper at the Modeling, Simulation and Visualization Student Capstone Conference. Newman's professional career included positions with Western Electric Co., Baxter Laboratories and more than 40 years of federal service, including 37 years in various engineering assignments with the Naval Sea Systems Command, the Naval Systems Engineering Center and the Naval Electronics Systems Engineering Center, as well as the Electronic Warfare, Communications Security and Fleet Communications Department, which he headed. In 1994, he helped establish and serve as the technical director for the Joint Training, Analysis and Simulation Center and the Deputy CIO of the U.S Joint Forces Command until his retirement in 2002.

Among many outstanding, meritorious and superior civilian service awards in his lifetime, Newman received the Department of Defense Medal for Distinguished Civilian Service in 2001 for his "extraordinary sense of purpose and leadership" in his role in Joint Forces Command, as well as a commendation from the president of the United States.

An engineer himself, Newman initiated the development of solid-state amplifiers and integral power supply traveling wave tubes, originated the concept of providing remote technical assistance to ships at sea using data link with computer analysis software, and initiated the concept of distributed interactive process development for activities with online data entry and real-time processing and retrieval.

CMSE & VMASC

The CMSE Department

The Computational, Modeling and Simulation Engineering (CMSE) Department is located at the Engineering and Computational Sciences Building on the Old Dominion University Norfolk Campus. In addition to the department and faculty offices, this facility also houses several instructional and research laboratories, a four-walled CAVE (Cave Automatic Virtual Environment), and a dome screen for immersive visualization. A significant resource to the department is the Virginia Modeling, Analysis and Simulation Center. Some of the center's facilities are used in the department's educational programs; in addition, VMASC researches teach courses and mentor students in the department's academic program.

VMASC

The Virginia Modeling, Analysis, and Simulation Center is a multidisciplinary applied research and enterprise facility of Old Dominion University, located in the Tri-Cities Center in Suffolk, Virginia. Staffed by over 100 faculty and project scientists, they provide modeling and simulation, analytic research, and technological support for partners across various industry, government, and community sectors; including, healthcare, cybersecurity, strategic defense, maritime, transportation and infrastructure, usability, and instructional design.

2022

MORNING SESSIONS

Medical Simulation

09:00 - 9:20	**Multimodality Breast MRI Segmentation Using NN-UNET for Preoperative Planning of Robotic Surgery Navigation** Motaz Alqaoud and Michel Audette
9:20 - 9:40	**Senior Subject Gait Analysis Using Self-Supervised Method** Haben Yhdego and Michel Audette
9:40- 10:00	**Medical Manikin Augmented Reality Simulation (M2ARS)** Pauline Delacruz, Jacob Gibson, Daniel Howard, Jaclyn Peacock, and Kendall Robbins

Infrastructure Security/Military Application

10:00 - 10:20	**Deapsecure Computational Training for Cybersecurity: Third Year Improvements and Impacts** Bahador Dodge, Jacob Strother, Rosby Asiamah, Karina Aracaute, Wirawan Purwanto, Masha Sosonkina, and Hongyi Wu
10:20 - 11:00	**Applications of Parallel Discrete Event Simulation** Erik Jensen
11:00- 11:20	**Putin and Putnam** Nathan Colvin

Virtual Environments

11:20 - 11:40	**Real Time External Labeling for Interactive Visualizations in Virtual Environments** Shan Liu and Yuzhong Shen
11:40 - 12:00	**Human-In-The-Loop Autonomous Vehicle Simulation** John di Battista, Christian Johnston, Valerie Randall, and Jackson Shanahan
12:00 - 12:20	**Implementing Virtual Reality Technology for Supporting Autonomous Vehicle-Pedestrian Behavioral and Interaction Research** Zizheng Yan

2022

AFTERNOON SESSIONS

Transportation, Business & Industry

1:30 - 1:50	**Risk-And_Resiliency-Intelligent Supply Chain (RRiSC)** Ahmad Bany Abdelnabi, Ahmed Abdelmagid, Ghaith Rabadi,Andres Sousa-Poza, and C. Ariel Pinto
1:50 - 2:10	**A Discussion of Supplier Selection Modeling Approaches** Sheida Etemadidavan and Andrew Collins

General Sciences & Engineering

2:10 - 2:30	**Synthesizing Maritime Interaction Scenarios for Testing Autonomy** Benjamin Hargis and Yiannis Papelis
2:30 - 2:50	**Is Explainability Always Necessary? Discussion on Explainable AI** Gayane Grigoryan and Andrew Collins

Education & Training

2:50 - 3:10	**Rapid Development of Advanced Virtual Labs for In-Person and Online Education** Yiyang Li, Pauline Delacruz, and Yuzhong Shen
3:10 - 3:30	**A Preliminary Comparative Study of Molecular Visualization of Software for Education** Ruoming Shen

OLD DOMINION UNIVERSITY

ODU MODELING & SIMULATION ENGINEERING www.odu.edu/ece

VMASC OLD DOMINION UNIVERSITY

SCS