



THE SOCIETY FOR
MODELING & SIMULATION
INTERNATIONAL

SPRINGSIM

Spring Simulation Multi-Conference 2018

APRIL 15-18, 2018

The Grand & The Embassy Suites, Baltimore, Maryland



2018 SpringSim Sponsors



**Institute for Simulation
and Training**

UNIVERSITY OF CENTRAL FLORIDA

SCS and SpringSim'18

Thanks to the Following Sponsors

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Organization Committee

General Chair:

Gregory Zacharewicz

Vice-General Chair:

Andrea D'Ambrogio

Program Chair:

Umut Durak

Proceedings Co-Chairs: Jose Padilla and

Paul Antoine Bisgambiglia

Sponsorship Chair: Saikou Diallo

Awards Chair: Saurabh Mittal

Publicity Chair: Joachim Denil and Youssef Bouanan

Tutorial Chair: Deniz Cetinkaya and Marina Zapater

WIP Chair: Hamdi Kavak

Student M&S Demo Session: Salim Chemlal and Mohammad Moallemi

Welcome to SpringSim'18

Welcome from the SpringSim'18 Conference Chairs

On behalf of the Organizing Committee, it is our pleasure to welcome you to the 2018 Spring Simulation Multi-conference in Baltimore, Maryland. Baltimore is the second-largest seaport in the Mid-Atlantic and home to numerous Universities and Colleges. The conference is organized by the Society for Modeling and Simulation International (SCS), the World's first-born international M&S society, which, from its foundation in 1952, has effectively engaged our community and continues to play a significant role in advancing research and its contribution to practice. SpringSim'18 covers state-of-the-art developments in M&S methodology, technology, performances and application in disciplines as diverse as applied computing, industrial systems, communications and networking, medicine and service systems.

We have an exciting program to offer our attendees this year. This includes presentations of peer-reviewed original research papers, work in progress, student demo and posters, keynote speeches, featured speeches, and tutorials delivered by experts. This year's conference consists of the following eight symposia:

Agent-Directed Simulation Symposium (Chaired by Yu Zhang and Gregory Madey), Annual Simulation Symposium (Erika Frydenlund, Shafagh Shafer, and Hamdi Kavak), Communications and Networking Symposium (Abdolreza Abhari and Hala ElAarag), High Performance Computing Symposium (Layne Watson, Masha Sosonkina, Will Thacker and Josef Weinbub), Symposium on Modeling and Simulation in Medicine (Jerzy Rozenblit and Johannes Sametinger), Symposium on Theory of Modeling and Simulation (Fernando Barros and Xiaolin Hu), Model-driven Approaches for Simulation Engineering confirming its success for its 2nd year (Andrea D'Ambrogio and Umut Durak) and finally M&S and Complexity in Intelligent, Adaptive and Autonomous Systems Symposium appearing for its 3rd year (Saurabh Mittal, Jose L. Risco Martin, and Marco Luetzenberger)

We would like to thank the organizers of the symposia, their respective technical program committees and reviewers for their effort in putting together the program. As a Multi-conference, our success depends entirely on their contribution.

We have an exciting line-up of distinguished keynote speakers this year again; we would like to express our gratitude to Dr. Alan Liu and Dr. Jerzy Rozenblit for accepting our invitation to deliver keynote speeches. Dr. Alan Liu is the Director of the Virtual Medical Environments Laboratory at the Val G. Hemming Simulation Center, Uniformed Services University of the Health Sciences. His talk will highlight the design, construction, and use of the Wide Area Virtual Environment, a unique training resource capable of simulating a very wide range of medical scenarios for both military and civilian applications. Dr. Jerzy Rozenblit is a Distinguished Professor and a Raymond J. Oglethorpe Endowed Chair in the Electrical and Computer Engineering at The University of Arizona. His talk will highlight Enhancing Patients' Safety through Simulation Modeling, High Technology, and Human Skills.

This year we are continuing two initiatives launched in recent years: Featured Speakers and Student M&S Demo Session. The Featured Speakers series spotlights authors of invited papers in selected symposia. Featured Speaker is designed to emphasize state-of-the-art contributions

Welcome to SpringSim'18

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in chosen fields, as considered by the symposium Chairs. This year our Featured Speakers are Xudong Zhang, Lin Zhang and Chungman Seo. We thank our Featured Speakers for exposing new topics in Modeling and Simulation. The Demo Session is in its second year and led by Salim Chemlal and Mohammad Moallemi.

It encourages students to display their running simulations that they have authored in contributed papers. This year you will find topics such as M&S interface on a tablet device, to complicated M&S tools running on a distributed platform. Some of this year's demos are within the realm of healthcare, supply chain management, and dense crowd simulation.

We would like to thank our sponsors who have donated funds, software licenses and books and which has made it possible for us to recognize best papers in the conference, support for student travel, and provided an enhanced conference experience for our delegates. We sincerely thank the Virginia Modeling, Analysis & Simulation Center (VMASC), VMASC Industry Association, Mosimtec, and the University of Central Florida, The Institute for Simulation and training.

Our sincere gratitude goes to our Organization Committee. We would like to thank Jose Padilla and Paul Antoine Bisgambiglia (Proceedings Co-Chairs), Saikou Diallo (Sponsorship Chair), Saurabh Mittal (Awards Chair), Youssef Bouanan and Joachim Denil (Publicity Co-Chairs), Deniz Cetinkaya, and Marina Zapater (Tutorial Co-Chairs), Hamdi Kavak and Omer F. Keskin (WIP Co-Chairs) and Salim Chemlal and Mohammad Moallemi (Student M&S Demo Session Co-Chairs).

We would also like to thank SCS Executive Director, Oletha Darensburg for conference coordination activities, Carmen Ramirez for Website and Mike Chinni for his help with the proceedings and digital libraries.

Finally, as social events, attendees will tour the John Hopkins Simulation Center in order to appreciate the simulation activities in the Baltimore neighbourhood as well as a Cruise on the Bay by Watermark to learn about historical Baltimore, Maryland and enjoy the heart of the city of Baltimore.

Thank you for making SpringSim'18 a success through your participation. We look forward to your continued participation in SpringSim'19.

Gregory Zacharewicz
General Chair
University of Bordeaux,
France



Andrea D'Ambrogio
Vice-General Chair
University of Rome Tor Vergata,
Italy



Umut Durak
Program Chair
German Aerospace Center
(DLR)
Germany



SpringSim'18 Sponsors

The Virginia Modeling, Analysis and Simulation Center (VMASC)

The Virginia Modeling, Analysis and Simulation Center (VMASC) at Old Dominion University is a multi-disciplinary research center dedicated to solving real world problems through the application of modeling and simulation techniques and to developing new approaches to representing physical, social, and human systems in simulation. We are one of the world's leading research centers for computer modeling, simulation, and visualization.

VMASC Industry Association (VIA)

The VMASC Industry Association enjoys the partnership with ODU's VMASC to further the application of research and development and increase awareness of how modeling, simulation, analysis can be applied to some of our nation's most difficult challenges. This year we continued initiatives like scholarships, education support, sponsorships, and entrepreneurial contests, while expanding initiatives that increase the visibility of ODU MSVE and enhance collaborative R&D in modeling, simulation, and analysis. We also embarked on a robust strategic planning effort that is culminating in a strategy to enable the VMASC industry association to help ODU VMASC achieve its objectives while growing the local modeling and simulation industry.

Mosimtec

The Founders of MOSIMTEC met at The McDonough School of Business at Georgetown University. The team's background in engineering, technology, finance, and business lends itself well to support solutions providing company. We focus on just providing modeling & simulation services. This business model allows us to effectively partner with and complement clients, engineering firms, and management consultants. As an experienced team we are able to handle large projects building on techniques, tools and lessons learned from work done in various industries. The continuity of service we provide supports our clients today and into the future. We have key strategic alliances with software vendors, research institutions, and industry associations. We view these alliances as a key success factor in being able to provide our clients with best practice offerings and latest simulation solutions.

SpringSim'18 Sponsors

University of Central Florida (UCF), The Institute for Simulation and Training (IST)

The Institute for Simulation and Training (IST) was established to conduct research and develop technology that advances the state of the art in affordable and effective human-centered simulation capabilities and training systems. Founded in 1982 as a research unit of the University of Central Florida (UCF) and reporting directly to the Vice President for Research and Commercialization, the Institute provides a wide range of research and information services for the modeling, simulation and training community. Recently, the University of Central Florida (UCF) administration approved the creation of the School of Modeling, Simulation, and Training (SMST), which will tie together research, technology development, and graduate studies within the Modeling and Simulation field. IST will be the research arm of the SMST.

Laboratories, work space, and administrative offices are distributed among IST's four Central Florida Research Park buildings, Partnership II, Partnership III, Partnership IV, and the Army Research Laboratory - Orlando, SFC Paul Ray Smith Center. The Institute is one of more than 150 public and private entities specializing in simulation and training and located along a coast-to-coast high tech corridor from Tampa to Daytona Beach—the largest concentration of this expertise in the world.

IST actively assists UCF in the development of simulation-related curricula. First in the nation with a master's degree in simulation systems, the university in collaboration with IST also offers a truly multidisciplinary PhD in Modeling and Simulation. The Institute annually employs more than 100 graduate and undergraduate students in a variety of research and support positions. For many outstanding graduates, work experience at IST becomes a launching pad to a career in the simulation industry. A significant number of existing professionals, both in government and industry, enroll in modeling and simulation graduate and certificate programs to continue their advanced education and hone their research skills. The Institute includes in its efforts development of research projects with potential commercial applications and adaptation of military technology to civilian markets. IST communicates the results of its research through seminars, conferences, publications, and workshops. In cooperation with UCF, the University of South Florida, and University of Florida, and with considerable participation from area industry and economic development organizations, IST promotes economic growth in the modeling and simulation industry throughout the Central Florida High Tech Corridor.

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KEYNOTES

Keynotes Information

Author: Alan Liu, Ph.D.

Location: The Mirror Room, The Grand, 5th Floor

Day/Time: Monday, 16 April 2018

ABSTRACT: Simulation has become an integral part of modern medical education and training. There is growing consensus within the medical community that simulation can provide a consistent and safe environment for learning dexterous and cognitive skills. Medical simulation resources can be broadly divided into three categories: Standardized patients, human patient simulators, and virtual reality. Standardized patients are individuals trained to present a consistent portrayal of a patient in a medical scenario. Human patient simulators are computerized mannequins capable of modeling and presenting human physiology to the learner. Virtual reality presents a computer-generated representation of a medical scenario that challenges learners in a manner intended to optimize learning.



The Val G. Hemming Simulation Center is a 30,000 sq. ft. medical simulation facility. It is part of the Uniformed Services University of the Health Sciences. The Center's mission is to research, develop and adapt simulation technology in support of the University's educational goals. The Center houses the Wide Area Virtual Environment. The WAVE is an 8,000 sq. ft. immersive virtual reality theater that combines virtual reality with theatrical effects, live actors, and part task trainers to deliver an unparalleled learning experience for small medical teams. Using the WAVE, the Center is one of the first medical simulation facilities in the world to combine all three categories of simulation into an integrated learning experience.

This talk will share our experience in building and operating this distinctive facility. Challenges both technical and procedural will be discussed. This talk will highlight the design, construction, and use of the Wide Area Virtual Environment, a unique training resource capable of simulating a very wide range of medical scenarios for both military and civilian applications.

SHORT BIO: Dr. Alan Liu is the Director of the Virtual Medical Environments Laboratory at the Val G. Hemming Simulation Center, Uniformed Services University of the Health Sciences. He is the principal architect of the Center's pericardiocentesis and diagnostic peritoneal lavage simulators. They are the world's first computer-based trainers for these procedures. These simulators were used in the nation's first Advanced Trauma Life Support (ATLS) course conducted without animals or cadavers. Dr. Liu was on the 2008 DoD Joint Analysis Team to address the use of live animals in medical education and training. He led the effort to develop the Center's 3D virtual reality haptic feedback system for surgical training. The system forms the basis of the Center's VR trainers for cricothyroidotomy and emergency craniotomy. Dr. Liu's current research focus is on the 8,000 sq. ft. Wide Area Virtual Environment (WAVE). The WAVE is the world's largest immersive virtual reality theater for medical team training.

Keynotes Information

Title: Enhancing Patients' Safety through Simulation Modeling, High Technology, and Human Skills

Author: Jerzy W. Rozenblit, Ph.D.

Location: The Mirror Room, The Grand, 5th Floor

Day/Time: Tuesday, 17 April 2018

ABSTRACT: Healthcare is changing at a very rapid pace. So does its attendant complexity and ever-increasing reliance on high technology support. Simulation in healthcare, where sophisticated, technology-based methods are used in education of healthcare professionals and in treatment of patients, is becoming a recognized branch of knowledge and practice. Such methods require a new generation of engineers, scientists, systems designers, modelers, and physicians to integrate medical and technical domains. This talk will provide an overview of modeling and simulation technologies as applied to healthcare. A historical perspective will be given, followed by the discussion of how simulation helps in gaining professional competency and how it helps improve healthcare outcomes. Systems for support of medical training and clinical practice will be discussed from both engineering and clinical perspectives. Challenges and opportunities for further development of complex simulation-based medical trainers will be presented as well. Examples in the use of simulation and augmented reality to assist in minimally invasive surgical training will be presented. An illustrative design of a surgical training and assessment system that provides sensing and reasoning capabilities in laparoscopy education will also be shown along with the vision for future use of this technology as a surgical assistant system in the operating room.

SHORT BIO: Dr. Jerzy Rozenblit is a University Distinguished Professor and Raymond J. Oglethorpe Endowed Chair in the Electrical and Computer Engineering at The University of Arizona. He also holds a joint appointment in the Dept. of Surgery in the College of Medicine. During his tenure, he has established the Model Based Design Laboratory with major projects in design and analysis of complex, computer based systems, software engineering, and symbolic visualization, and computer guided, minimally invasive surgical training. The projects have been funded by the National Science Foundation, US Army, Siemens, Infineon Technologies, NASA and other entities. Currently, jointly with the Arizona Surgical Technology and Education Center, he is developing computer guided surgical training methods and systems. He has established the Life Critical Computing Systems Initiative intended to improve the reliability and safety of technology in life critical applications. He is a Fellow of the Society for Computer Simulation International.



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GENERAL INFO

SpringSim'18 Symposia

- **Agent-Directed Simulation (ADS)**
General Chair: Yu Zhang
General Co-Chair: Gregory Madey
- **Annual Simulation Symposium (ANSS)**
General Chair: Erika Frydenlund
General Co-Chair: Shafagh Shafer
Program Chair: Hamdi Kavak
- **Communications and Networking Symposium (CNS)**
General Chair: Abdolreza Abhari
General Chair: Hala ElAarag
- **Theory of Modeling and Simulation (TMS/DEVS)**
General Chair: Xiaolin Hu
General Co-Chair: Fernando Barros
- **High Performance Computing Symposium (HPC)**
General Chair: Layne Watson
General Co-Chair: Masha Sosonkina
Program Chair: William Thacker
Program Co-Chair: Josef Weinbub
- **Tutorials and Tools**
General Chair: Deniz Cetinkaya
General Co-Chair: Marina Zapater

SpringSim'18 Symposia

- **Modeling and Simulation of Complexity in Intelligent, Adaptive and Autonomous Systems (MSCIAAS)**
General Chair: Saurabh Mittal
General Co-Chair: Jose L. Risco Martin
- **Model-driven Approaches for Simulation Engineering (Mod4Sim)**
General Chair: Andrea D'Ambrogio
General Co-Chair: Umut Durak
Program Chair: Mamadou Seck
- **Modeling and Simulation in Medicine (MSM)**
General Chair: Jerzy Rozenblit
General Co-Chair: Johannes Sametinger
- **Work in Progress (WIP)**
General Chair: Hamdi Kavak
General Co-Chair: Omer F. Keskin
- **Student M&S Demo Session**
General Chair: Salim Chemlal
General Co-Chair: Mohammad Moallemi

General Information

Registration

Your registration for SCS's 2018 Spring Simulation Multi-conference (SpringSim'18) includes morning and afternoon breaks each day, the Monday evening reception and access to all sessions, tutorials and offsite events (unless otherwise noted).

- **Registration Hours (The Grand, Colonade Lobby 3rd Floor)**

- ◇ **Sunday, April 15, 2018** 1600 -1800
- ◇ **Monday, April 16, 2018** 0700-1700
- ◇ **Tuesday, April 17, 2018** 0700-1700
- ◇ **Wednesday, April 18, 2018** 0730-1100

Please note that the Registration Desk will be closed for lunch Mon-Tues from 1200-1330

- **Breakfast (Embassy Suites Hotel, 2nd Floor)**

- ◇ **Sunday, April 15, 2018** 0730-1030
- ◇ **Monday and Tuesday** April 16 and 17th, 2018 0600-0900

- **Coffee Breaks (The Grand, Colonade Lobby, 3rd Floor)**

- ◇ **Monday, April 16, 2018** 1000-1030 | 1500-1530
- ◇ **Tuesday, April 17, 2018** 1000 -1030 | 1500-1530

- **Plenary Session and Keynotes (The Grand, The Mirror Room, 5th Floor)**

- ◇ **Monday** 0830-1000 - SCS Keynote: Dr. Alan Liu
- ◇ **Tuesday** 0830-1000 - SCS Keynote: Dr. Jerzy Rozenblit
- ◇ (See Keynote pages for more information on the speakers)

General Information

Conference Meetings & Events

- • **Sunday:**
 - SCS Board Meeting (0900); The Grand, Board Room, 2nd Floor
*SCS Board Members
 - Tutorials (0930—1800), The Grand, Tuscan Room, 3rd Floor
 - Demo Session (1330—1700), The Grand, Concordia Room, 3rd Floor
 - Publications Meeting and Dinner (1630-1800), The Grand, Composite Room, 3rd Floor
- • **Monday:**
 - Plenary Session and Keynote Address: (The Grand, The Mirror Room, 5th Floor), (0830-1000)
 - Fellows Lunch (1200-1330); (The Grand, The Oriental Room, 4th Floor) *By Invitation Only
 - Social (1730-1900); (The Grand, The Oriental Room, 4th Floor)
*All conference attendees invited
- • **Tuesday**
 - Plenary Session and Keynote Address: (The Grand, The Mirror Room, 5th Floor) (0830-1000)
 - Spring 2019 Organization Planning Meeting with Symposia Chairs (1230-1330); (The Grand, The Oriental Room, 4th Floor)
*By Invitation Only
- • **Wednesday**
 - The John Hopkins Simulation Center and Watermark Tour, Embassy Suites Hotel Lobby (0930-1500)

General Information

Best Paper Award

The Overall Best Paper Award for SpringSim'18 will be presented at Monday's Plenary Session.

Posters

The posters will be on display throughout the week to be viewed near the break area.

Demo Session

The purpose of the M&S Demo Session is to engage students in simulation development, implementing M&S theories in the simulation application. The simulation environment can be as simple as a desktop M&S application or remote M&S interface on a tablet device, to as complicated as M&S tool running on a distributed platform. The demo will include execution of at least a single simulation scenario on desktop or mobile platform and displaying the results of the simulation. Use of open-source tools and libraries can be incorporated into the system, however, the use of commercial simulation tools is not allowed in the demo. Allotted time for each demo is 15mins with 5mins of Q&A.

Monday Reception

There will be a Welcome Reception in The Oriental Room at The Grand, open to all SpringSim'18 attendees, on Monday, April 16, 2018, from 1730-1900. Hors d'oeuvres served.

Wednesday Tours

Attendees who have signed up will meet at the Embassy Suites Hotel Lobby to be shuttled to the John Hopkins Simulation Center for a half hour tour then will be shuttled to Baltimore Bay for historical tour of the Baltimore, Maryland area. After the Boat tour, attendees will be shuttled back to the Embassy Suites by around 2pm.

Upcoming SCS Events

2018 Symposium on Simulation for Architecture and Urban Design (SIMAUD '18)

June 4-7, 2018, TU Delft, Delft, The Netherlands

The 9th annual **Symposium on Simulation for Architecture and Urban Design (SimAUD)** tackles the interdisciplinary aspects of the development and use of simulations to measure, predict, assess, comprehend and manage the performances of buildings and cities, in regard to their technical and non-technical requirements. SimAUD offers the opportunity to present innovative simulation methods and techniques and to discuss their roles in urban planning, architecture, engineering, construction, and management. (Location)

2018 Summer Simulation Multi-Conference (SummerSim '18)

July 9-12, 2018, University of Bordeaux, Bordeaux, France

The Summer Simulation Multi-Conference 2018 (SummerSim'18) is a combination of the Summer Computer Simulation Conference (SCSC) and the International Symposium on Performance Evaluation of Computer and Telecommunications Systems (SPECTS) along with ICBGM (Bond Graph) (Check name) SummerSim is SCS's premier international conference in cooperation with ACM SIGSIM. The conference focuses on modeling and simulation, tools, theory, methodologies and applications and provides a forum for the latest R&D results in academia and industry. This year's focus is on the pervasive role of simulation tools, methodologies and technologies for enabling a more informed and effective online decision making. We encourage you to take this opportunity to experience the tutorials, tracks, and workshops that will be available.

Please visit www.scs.org for more information about the above events.

Tutorials Information

Session Chair : Deniz Cetinkaya

Date: Sunday, April 15, 2018

Location: The Grand, The Tuscan Room, 3rd Floor

1. Title : Introduction to Classic DEVS

TIME : 09:30—11:00

SPEAKERS : Yentl Van Tendeloo and Hans Vangheluwe

2 . Title : Modeling and Simulation Based Approaches in Aeronautical Informatics

TIME : 11:15—12:00

SPEAKER : Umut Durak

3 . Title : Practical Classic DEVS Modelling and Simulation

TIME : 13:00—14:30

SPEAKERS : Yentl Van Tendeloo and Hans Vangheluwe

4 . Title : An Introduction to Statecharts Modelling and Simulation

TIME : 14:45—16:15

SPEAKERS : Simon Van Mierlo and Hans Vangheluwe

5 . Title : Co-simulation of Continuous Systems: A Tutorial

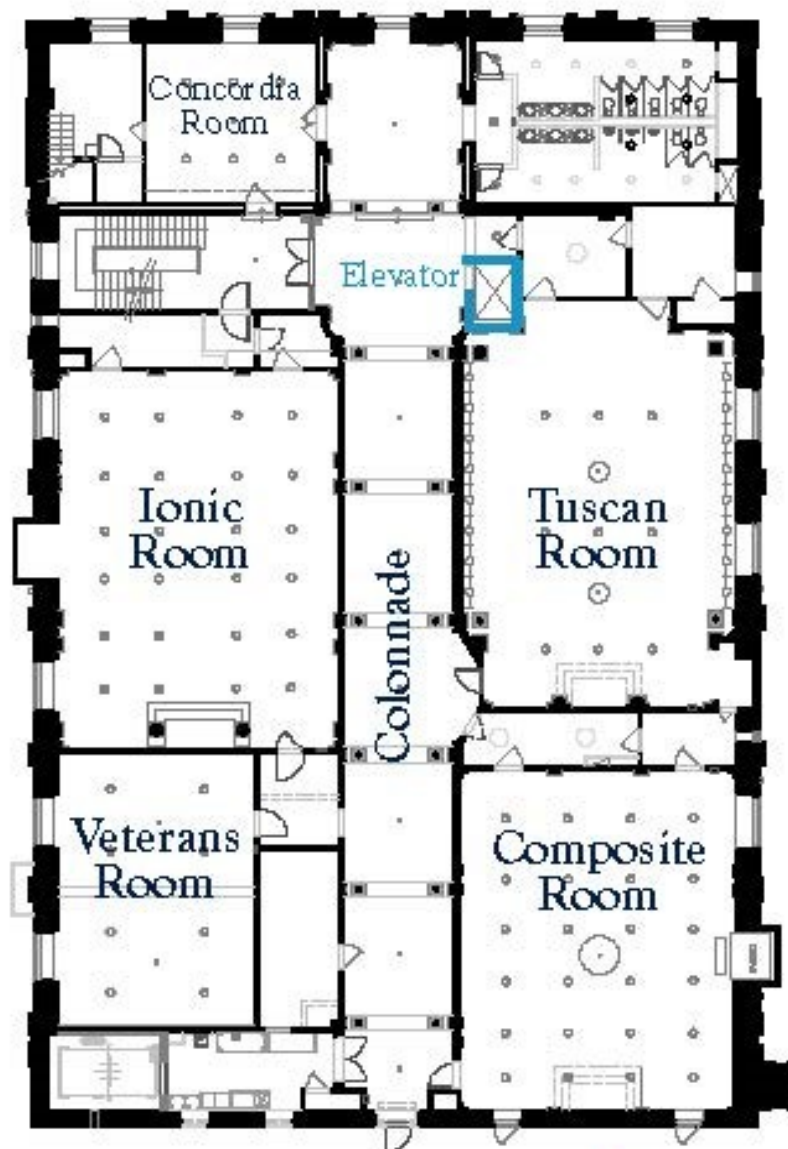
TIME : 16:30—18:00

SPEAKERS : Cláudio Gomes, Casper Thule, Joachim Denil, and Hans Vangheluwe

MAPS

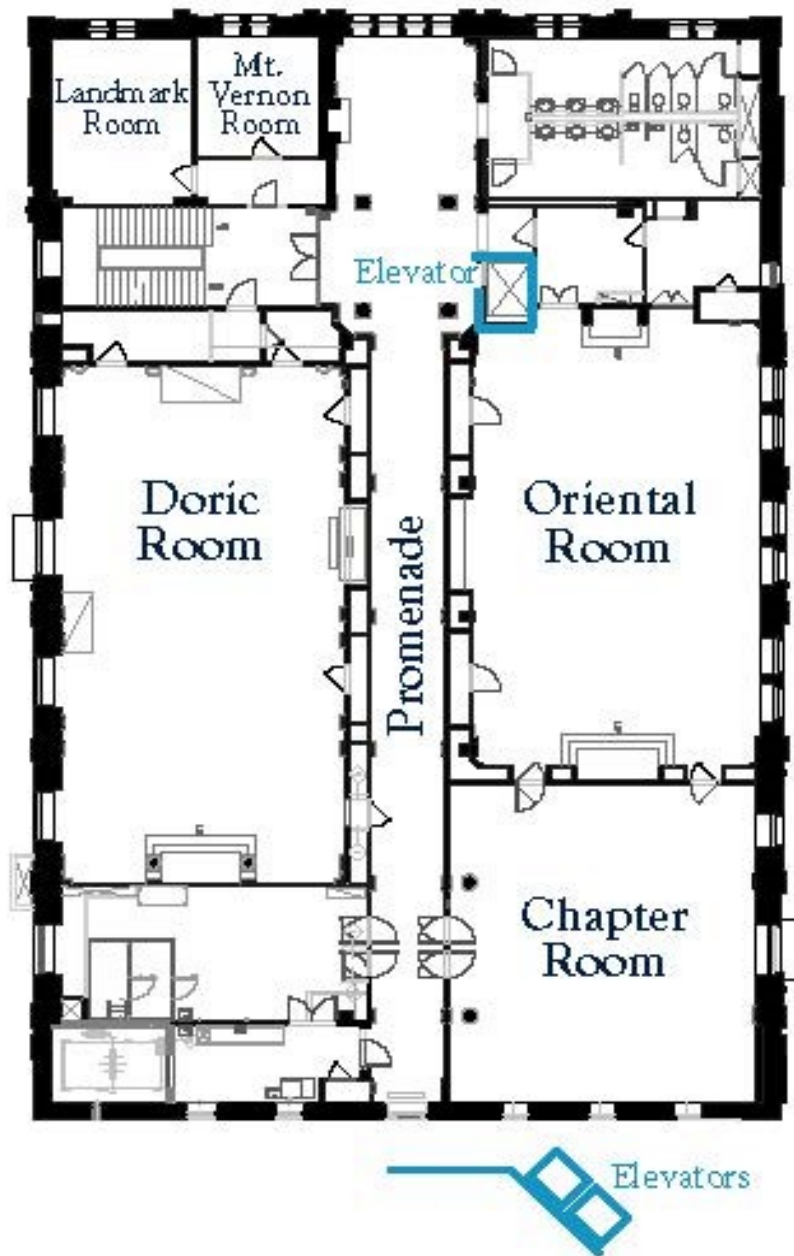
The Grand

Third Floor



The Grand

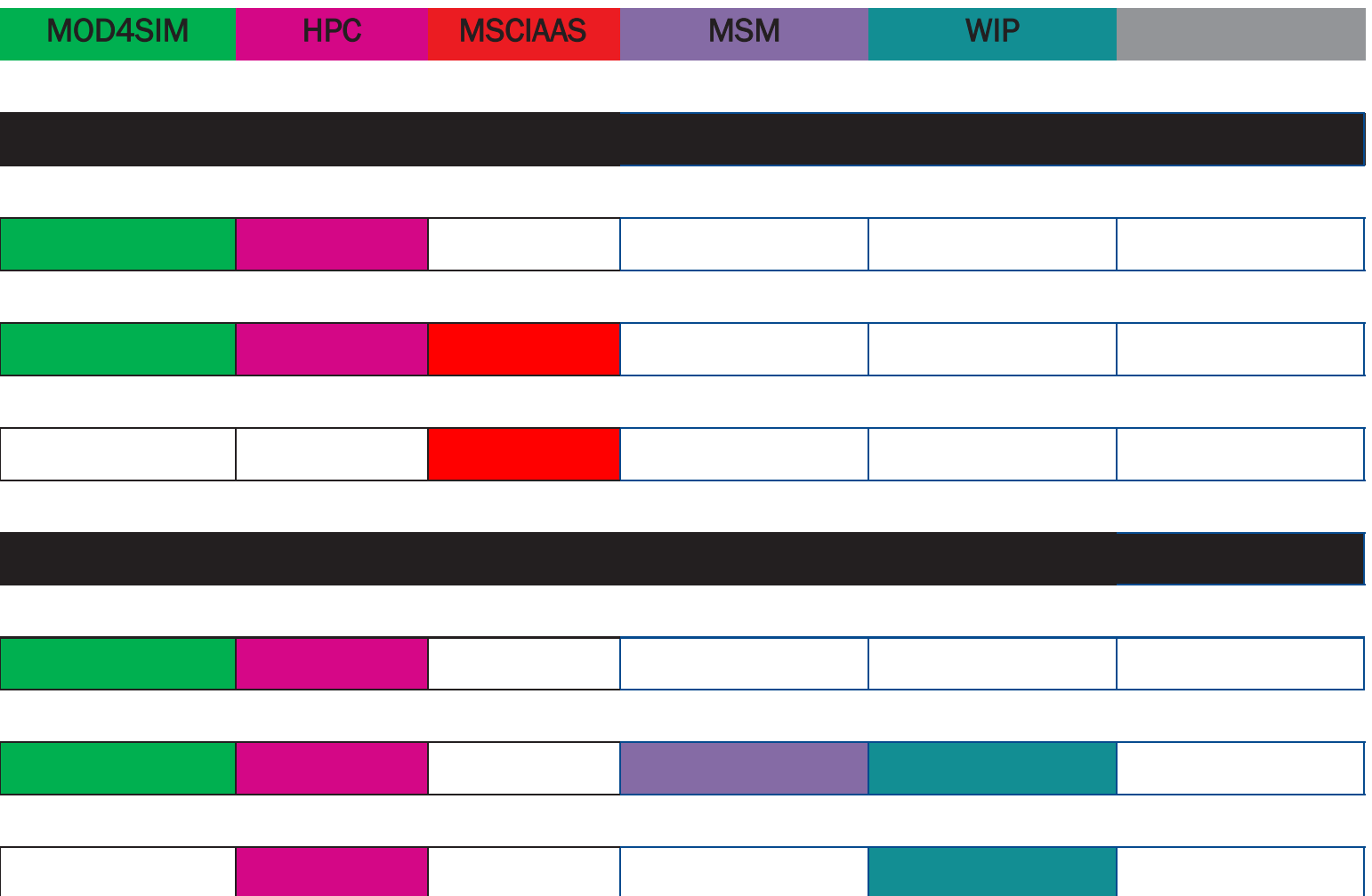
Fourth Floor



SpringSim'18 Sessions at a Glance

		ADS	ANSS	CNS	TMS/DEVS
Monday	16-Apr-18				
0830 – 1000	SCS Plenary				
1000 – 1030	Break				
1030 – 1200	Session Block I				
1330 – 1500	Session Block II				
1500 – 1530	Break				
1530 – 1700	Session Block III				
Tuesday	17-Apr-18				
0830 – 1000	SCS Plenary				
1000 – 1030	Break				
1030 – 1200	Session Block IV				
1330 – 1500	Session Block V				
1500 – 1530	Break				
1530 – 1700	Session Block VI				

SpringSim'18 Sessions at a Glance



Agendas

50th Agent-Directed Simulation (ADS)

Agenda

Monday, 16 April 2018

Session III

1530 – 1630

Room: Concordia Room

Chair: Greg Madey

- *Agent-Based Traffic Simulation at City Scale with MARS (Julius Weyl, Daniel Glake, and Thomas Clemen)*
- *Integrating Agent-Based Simulation Into Emergency Operations Center Training Command and Control Systems (Cynthia Nikolai, Samuel Njoroge, and Greg Madey)*

50th Annual Simulation Symposium (ANSS)

Agenda

Monday, 16 April 2018

Session I 1030–1100

Room: Ionic Room

Chair: Erika Frydenlund

Best Paper Presentation

- *Should We Simulate Mental Models to Assess Whether They Agree?* (Eric Lavin, Philippe Giabbanelli, Andrew Stefanik, Steven Gray, and Robert Arlinghaus)

Session II 1330 – 1500

Room: Ionic Room

Chair: Gayane Grigoryan

Special Cyber Track

- *Assessing Security Risk for Wireless Sensor Networks Under Cyber Attack* (Brian Yarbrough and Neal Wagner)
- *Hybrid Simulation and Cyber Physical Systems – State of the Art and a Literature Review* (Andreas Tolk, Ernie Page, and Saurabh Mittal)
- *Assessing the Impact of Cyberloafing on Cyber Risk* (Daniele Vernon-Bido, Gayane Grigoryan, Hamdi Kavak, and Jose Padilla)

Session III 1530– 1700

Room: Ionic Room

Chair: Erika Frydenlund

- *A System Dynamics Simulation Modeling for Managing the Inventory in Multi-Echelon Multi-Product Pharmaceutical Supply Chain* (Mahmoud Abidi, Abdallah Lattouf, and Safwan Altarazi)
- *Agent-Based Model of Sand Supply Governance Employing Blockchain Technology* (Farinaz Sabz Ali Pour, Unal Tatar, and Dr. Adrian Gheorghe)
- *The Achievement Gap Phenomenon: A Practical Application of Modeling & Simulation* (John J. Johnson IV, Jose Padilla, and Saikou Y. Diallo)

Tuesday, 17 April 2018

Session IV 1030 – 1200

Room: Ionic Room

Chair: Gayane Grigoryan

- *Big Data, Agents, and Machine Learning: Towards a Data-Driven Agent-Based Modeling Approach* (Hamdi Kavak, Jose Padilla, Christopher Lynch, and Saikou Diallo)
- *Challenges of Growing Social Media Networks from the Bottom-Up Through the Agent Perspective* (Joseph Shaheen)
- *Making Digital Sense(s) Part I* (Krzysztof Rechowicz, Saikou Diallo, Hector Garcia, John Shull, and Bratislav Cvijetic)

50th Annual Simulation Symposium (ANSS)

Agenda

Session V 1330– 1500 Room: Ionic Room Chair: Ange-Lionel Toba

- *Improving Bulk Power System Resilience by Ranking Critical Nodes in the Vulnerability Graph (Md Ariful Haque, Sachin Shetty, and Gael Kamdem)*
- *Gaming and Simulation for Energy System Infrastructure: A Case of the Power Grid System (Ange-Lionel Toba, Mamadou Seck, and Issakar Ngatang)*
- *Toward a Common Object Model for Integrated Transportation and Land Use Models (Caleb Robinson, John Crittenden, Zhongming Lu, and Richard Fujimoto)*

Session VI 1530 – 1700 Room: Ionic Room Chair: Hamdi Kavak

- *MSM: Trustworthy Multi-Modal Framework for Life-Critical Systems Security (Aakarsh Rao, Jerzy Rozenblit, Roman Lysecky, and Johannes Sametinger)*
- *Power Consumption of Future Event List Implementations in Discrete Event Simulations (SaBra Neal and Richard Fujimoto)*
- *Efficient Reversible Uniform and Non-uniform Random Number Generation in UNU.RAN (Srikanth Yoginath and Kalyan Perumalla)*

21st Communications and Networking Symposium (CNS)

Agenda

Monday, 16 April 2018

Session I 1030 – 1200

Room: Veterans Room

Chair: Abdolreza Abhari

- Opening of CNS 2018 (Abdolreza Abhari)
- IOT, Smart Homes, and Zigbee Simulation (Hassan Rajaei and Farbod Mirzaei)
- Predicting Indoor Temperature from Smart Thermostat and Weather Forecast Data (Danilo Yu, Abdolreza Abhari, Alan S. Fung, Kaamran Raahemifar, and Fahranaz Mohammadi)
- Modeling and Simulation of Fully Autonomous Quadrotors (Hala ElAarag, Christian Micklisch, and Nathan Hilliard)

Session II 1330 – 1500

Room: Veterans Room

Chair: Hassan Rajaei

- Handover Oscillation Reduction in Ultra-Dense Heterogeneous Cellular Networks Using Enhanced Handover Approach (Baha Uddin Kazi and Gabriel Wainer)
- Simultaneous Localization and Mapping Using UAVs Equipped with Inexpensive Sensors (Ou Zheng and Hala ElAarag)
- Analyzing the Effect of LTE-A Transmission Parameters on Video Streaming Quality of Experience (Ala'a Al-Habashna, Stenio Fernandes, and Gabriel Wainer)

Session III 1530 – 1700

Room: Veterans Room

Chair: Aftab Ahmad

- Musical Preferences Prediction by Classification Algorithm (Amir Rahnamai Barghi, Arman Ferdowsi and Abdolreza Abhari)
- Data Mining Classifiers Comparison for Seismic Hazard Prediction (Sneha Sneha, Abdolreza Abhari, and Cherie Ding)
- Improving Support Vector Machine Classification Accuracy Based on Kernel Parameters Optimization (Lubna Mohammed and Kaamran Raahemifar)
- Hurst Parameter as a Correlation Measure for Brain Signal (Aftab Ahmad and Jennifer Holst)

Tuesday, 17 April 2018

Session IV 1030 – 1200

Room: Veterans Room

Chair: Salah Sharieh

- Security Game for Cyber Physical Systems (Kamrul Hasan, Sachin Shetty, John Sokolowski, and Deepak K. Tosh)
- A Security-as-a-Service Solution for Applications in Cloud Computing Environment (Wen Chen, Salah Sharieh, and Bob Blainey)
- Simulating Link Aggregation in Private Virtual LAN Using OpenFlow SDN in Cloud Environment (Yasir Malik, Damilola Murtala, and Pavol Zavorsky)

21st Communications and Networking Symposium (CNS)

Agenda

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11th Annual Symposium on Theory of Modeling & Simulation (TMS/DEVS)

Agenda

Monday, 16 April 2018

Session I 1030 – 1200 Room: Composite Room Chair: Xiaolin Hu

Modeling Frameworks & Evaluations

- *Performance Analysis of Parallel/Distributed Particle Filters* (Xudong Zhang, Ali Mohamed, Linda Nguyen, and Feng Gu)
- *Component-Based Simulation for Spatial Complex Systems in VLE Environment* (Paul-Henri Martelloni, Gautier Quesnel, Eric Innocenti, Paul-Antoine Bisgambiglia, Pierre Regis Gonsolin, and Paul Bisgambiglia)
- *Designing a Parallel Ogssim Through Library Specificities* (Sebastien Gougeaud, Soraya Zertal, Jacques-Charles Lafoucriere, and Philippe Deniel)

Session III 1530 – 1730 Room: Composite Room Chair: Hans Vangheluwe

Hybrid Models & Parallelism

- *Parallelism Semantics in Modeling Activities* (Abdurrahman Alshareef and Hessam Sarjoughian)
- *Handling Overlapping Collisions: A Dynamic Topology Approach* (Fernando Barros)
- *Hybrid Agent-Based and Graph-Based Modeling for Building Occupancy Simulation* (Sanish Rai and Xiaolin Hu)
- *DEVS Markov Modeling and Simulation: Formal Definition and Implementation* (Chungman Seo, Bernard Zeigler, and Doohwan Kim)

Tuesday, 17 April 2018

0830—0930 Room: Composite Room Chair: Claudia Frydman

Ph.D. Dissertations

- *An Integrative Framework for Model-Driven Systems Engineering: Towards the Co-Evolution of Simulation, Formal Analysis and Enactment Methodologies for Discrete Event Systems* (Hamzat Olanrewaju Aliyu)
- *Hybrid Multiresolution Simulation & Model Checking: Network-on-Chip Systems* (Soroosh Gholami)
- *Upload User Collaboration in the Data Upload for LTE-Advanced Networks* (Misagh Tavanpour)

0930—1000 Room: Composite Room Chair: Joachim Denil

Applications

- *Using CELL-DEVS for Prototyping Unmanned Aircraft System Traffic Simulation* (Ifeoulwa Oyelowo, Bruno Artacho, Gabriel Wainer, and Siu O'Young)

11th Annual Symposium on Theory of Modeling & Simulation (TMS/DEVS)

Agenda

Session VI 1530 – 1700

Room: Composite Room

Chair: Mamadou Seck

WIP and Position Papers

- *Towards a Theory of Economic Value for Modeling and Simulation: Incremental Cost of Parallel Simulation (James Nutaro and Bernard Zeigler)*
- *Towards Evaluating Emergent Behavior of the Internet of Things Using Large Scale Simulation Techniques (Stig Bosmans, Siegfried Mercelis, Joachim Denil, and Peter Hellinckx)*
- *CELL-DEVS Modeling and Simulation of Artificial Hydraulic Fracturing of Rocks in Boreholes (Ifeoluwa Oyelowo, Joseph Boi-Ukeme, Gabriel Wainer, Ngozi Silas Echechini, and Sergio Zlotnik)*
- *Closure Under Coupling: Concept, Proofs, DEVS Recent Examples (Bernard Zeigler)*

Modeling and Simulation of Complexity in Intelligent, Adaptive and Autonomous Systems (MSCIAAS)

Agenda

Monday, 16 April 2018

Session II 1030 – 1200

Room: Mirror Room

Chair: Saurabh Mittal

- *Hybrid Simulation for Cyber Physical Systems - A Panel on Where Are We Going Regarding Complexity, Intelligence and Adaptability of CPS Using Simulation (Andreas Tolk, Fernando Barros, Andrea D'Ambrogio, Akshay Rajhans, Pieter Mosterman, Sachin Shetty, Mamadou Traoré, Hans Vangheluwe, and Levent Yilmaz)*

Session III 1530 – 1700

Room: Landmark Room

Chair: Saurabh Mittal

- *Fundamental Requirements and DEVS Approach for Modeling and Simulation of Complex Adaptive System of Systems: Healthcare Reform (Bernard Zeigler, Saurabh Mittal, and Mamadou Traoré)*
- *Modeling and Simulation of Wind Energy Production in the Smart-Grid Scenario (Laura Perez-Vilarelle, José Luis Risco Martín, and Jose L. Ayala)*
- *Patrolling Task Planning for the Multi-Layer Multi-Agent System Based on Sequential Allocation Method (Xin Zhou, Weiping Wang, Tao Wang, and Xiaobo Li)*

Model-driven Approaches for Simulation Engineering (Mod4Sim)

Agenda

Monday, 16 April 2018

Session I 1030 – 1200

Room: Landmark Room

Chair: Umut Durak

Modeling at Large

- *Introduction to Parallel DEVS Modelling and Simulation (Yentl Van Tendeloo and Hans Vangheluwe)*
- *BPMN Modeling for HLA Based Simulation and Visualization (Simon Gorecki, Youssef Bouanan, Gregory Zacharewicz, and Nicolas Perry)*
- *Enabling Design-Space Exploration for Domain-Specific Modelling (Bart Meyers, Joachim Denil, Ken Vanherpen, and Hans Vangheluwe)*

Session II 1330 – 1500

Room: Composite Room

Chair: Andrea D'Ambrogio

Model-Driven Service Orientation

- *Service Composition and Scheduling in Cloud-Based Simulation Environment (Featured Speaker) (Feng Li, Yuanjun Laili, Lin Zhang, Xiaolin Hu, and B.P. Zeigler)*
- *Model Transformation Services for MSaaS Platforms (Paolo Bocciarelli, Andrea D'Ambrogio, Andrea Giglio and Emiliano Paglia)*
- *A Multi-Paradigm Approach for Modelling Service Interactions in Model-Driven Engineering Processes (Simon Van Mierlo, Yentl Van Tendeloo, István Dávid, Bart Meyers, Addis Gebremichael, and Hans Vangheluwe)*

Tuesday, 17 April 2018

Session IV 1030 – 1200

Room: Composite Room

Chair: Umut Durak

Model-Driven CPS

- *Model-Driven Time-Accurate DEVS-Based Approaches for CPS Design (Featured Paper) (Abdurrahman Alshareef and Hessam Sarjoughian)*
- *Modeling and Simulation Based Development of an Enhanced Ground Proximity Warning System for Multicore Targets (Umut Durak, David Müller, Florian Möcke, and Claus Bertram Koch)*
- *Design Patterns for Variability Modeling Using SES Ontology (Christina Deatcu, Hendrik Folkerts, Thorsten Pawletta, and Umut Durak)*

Session V 1330 – 1500

Room: Composite Room

Chair: Mamadou Seck

Standard Modeling Languages

- *Towards a Framework for Executable Systems Modeling: An Executable Systems Modeling Language (ESYSML) (Matthew Amissah, Ange-Lionel Toba, Mamadou Seck, and Holly Handley)*
- *Improving the fUML Performance for C++ Following a Model-Driven Approach (Francesco Bedini, Ralph Maschotta, Alexander Wichmann, and Armin Zimmermann)*
- *A Workflow for the Design of Optimized System Architectures Using Model-Driven Optimization (Alexander Wichmann, Ralph Maschotta, Francesco Bedini, and Armin Zimmermann)*

26th High Performance Computing Symposia (HPC)

Agenda

Monday, 16 April 2018

Session I 1030 – 1200 Room: Tuscan Room Chair: Layne Watson

- *Hybrid MPI+OpenMP Parallelization of Image Reconstruction in Proton Beam Therapy on Multi-Core and Many-Core Processors* (James Della-Giustina, Carlos Barajas, Matthias Gobbert, Dennis Mackin, and Jerimy Polf)
- **Fast Convolution Kernels on Pascal GPU with High Memory Efficiency* (Qiong Chang, Masaki Onishi, and Tsutomu Maruyama)

Session II 1330 – 1500 Room: Tuscan Room Chair: Philip Hammonds

- *Toward Designing a Dynamic CPU Cap Manager for Timley Dataflow (TDF) Platform* (Mohammad Reza Hoseiny Farahabady, Saeed Bastani, Javid Taheri, Albert Y. Zomaya, Zahir Tari, and Samee U. Khan)
- *Predicting System Performance by Interpolation Using a High-Dimensional Delaunay Triangulation* (Tyler Chang, Layne Watson, Thomas Lux, Jon Bernard, Bo Li, Li Xu, Godmar Back, Ali Butt, Kirk Cameron, and Yili Hong)
- *Software Architecture for Parallel Particle Tracking with the Distribution of Large Amount of Data* (Florent Bonnier, Xavier Juvigny, and Nahid Emad)

Tuesday, 17 April 2018

Session III 1030 – 1200 Room: Tuscan Room Chair: David Easterling

- *On Tuning the Symmetric Sparse Matrix Vector Multiplication with CSR and TJDS* (Euripides Montagne, Edward Aymerich, Alexandre Duchateau, and Frank Plocham)
- *Modeling a Task-Based Matrix-Matrix Multiplication Application for Resilience Decision Making* (Erik Jensen and Masha Sosonkina)
- *Comparisons of Frequency Scaling Modes in Quantum Chemistry Application Gamess* (Vaibhav Sundriyal)

Session IV 1330 – 1500 Room: Tuscan Room Chair: Will Thacker

- *Remote High Performance Visualization of Big Data for Immersive Science* (Faiz Abidi, Nicholas Polys, Srijith Rajamohan, Lance Arsenault, and Ayat Mohammed)
- *Predictive Modeling of I/O Characteristics in High Performance Computing Systems* (Thomas Lux, Layne Watson, Tyler Chang, Jon Bernard, Bo Li, Li Xu, Godmar Back, Ali Butt, Kirk Cameron, and Yili Hong)

26th High Performance Computing Symposia (HPC)

Agenda

Session V 1530 – 1700 Room: Tuscan Room Chair: Ruth Cheng

- *CDBB: An NVRAM-based Burst Buffer Coordination System for Parallel File Systems (Ziqi Fan, Fenggang Wu, Jim Diehl, Doug Voigt, and David Du)*
- *Convergence and Resilience of the Fine-Grained Parallel Incomplete LU Factorization for Non-Symmetric Problems (Evan Coleman and Masha Sosonkina)*
- *Parallel in Time Algorithms for Multiscale Dynamical Systems Using Interpolation and Neural Networks (Gopal Yalla and Bjorn Engquist)*

Work In Process (WIP)

Agenda

Tuesday, 17 April 2018

Session V 1330 – 1500

Room: Concordia Room

Chair: Ömer Keskin

- *Extending Non-functional BPMN Properties for Simulation of Workflow Pathways* (Kawtar Ougab, Gregory Zacharewicz, Yves Ducq, and Said Tazi) (Social & Networking)
- *TRLAN SVD Iterative Solver with Fixed-Size Reverse Communication for In-Database Processing of Sparse Datasets* (Piotr Luszczek, Ichitaro Yamazaki, Jakub Kurzak, and Jack Dongarra)

Session VI 1530 – 1630

Room: Concordia Room

Chair: Ömer Keskin

- *Co-Simulation System Serving the Configuration of Lean Tools for a Manufacturing Assembly Line* (Jala Possik, Aicha Amrani, Gregory Zacharewicz)
- *The Role of Opinion Hardening and Opinion Leaders in an Opinion Dynamics Simulation Model* (Arpan Jani)

Student M&S Demo Session/Poster

Agenda

Sunday, 15 April 2018

Session I 1330 – 1500

Room: Concordia Room

Chair: Salim Chemlal

- *CPDENSE: A Crowd Simulator for Dense Scenarios* (Omar Hesham and Gabriel Wainer)
- *Youth Camp Space Utilization and Camper-Flow Improvement by Using Simulation* (Laura Bacchiocchi, Emily Greene, and Emre Tokgoz)
- *Tool Development for Electricity System Network Management* (Ange-Lionel Toba, Issakar Ngatang, Omer Faruk Keskin, And Mamadou Seck)
- *SYNVIZER: An Interactive Flow Synthesizer and Visualizer* (Ahmet Saglam And Zhanping Liu)
- *Optical Imaging System for Safe Chest Wall Deformity Measurement and Monitoring* (Nahom Kidane, Mohammad Obeid, Robert Kelly, And Rick Mckenzie)

Session II 1530 – 1700

Room: Concordia Room

Chair: Salim Chemlal

- *Data Mining Classifiers Comparison for Seismic Hazard Prediction* (Sneha Sneha, Abdolreza Abhari, and Chen Ding)
- *Simulation and Improvement of a Supply Chain Corporation's Branch* (Patrick Genovese and Emre Tokgoz)
- *Analyst-Oriented Document Filtration and Active Learning Model* (Christopher Smith, David Weller-Fahy, Jason Matterer, and William Streilein)
- *A System Dynamics Simulation Modeling for Managing the Inventory in Multi-Echelon Multi-Product Pharmaceutical Supply Chain* (Mahmoud Abidi, Abdallah Lattouf, and Safwan Altarazi)

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Baltimore

Things to Do in Baltimore

National Aquarium

501 E Pratt St, Baltimore, MD 21202
Phone: (410) 576-3800

Website: <http://www.aqua.org/>

Considered one of the world's best aquariums, the National Aquarium's mission is to inspire conservation of the world's aquatic treasures. It champions environmental initiatives by engaging with visitors, volunteers, education groups and schools to actively participate in the preservation of the world's natural resources and living systems. The National Aquarium delivers meaningful experiences through its living collection of more than 17,000 animals from more than 750 species of fish, birds, amphibians, reptiles, marine mammals and sharks, as well as through exclusive behind-the-scenes experiences like sleepovers and tours, science-based education programs and hands-on experiences in the field.

Fort McHenry National Monument

2400 E Fort Ave, Baltimore, MD 21230-5390
Phone: +1 410-962-4290

Website: <https://www.nps.gov/fomc/index.htm>

Historic fort that inspired Francis Scott Key to write the U.S. national anthem. Fort McHenry offers many things to do. Places to go include the Visitor Center with a video and exhibits, followed by a walk to the fort and many more exhibits. Outdoor activities feature daily programs, weather permitting. The Schedule of Events is always full of activities each year. Nearby attractions are numerous in the Baltimore metro area.

Inner Harbor

401 Light St, Baltimore, MD 21202
Phone: +1 877-225-8466

Website: <https://baltimore.org/article/baltimore-inner-harbor>

One of America's oldest seaports dating from the 1600s is today an important landmark and popular tourist destination. Park your car and follow the brick promenade through this bustling complex of eateries, stores, museums, entertainment and children's attractions. Sample the fresh seafood right out of Chesapeake Bay.

The Walters Art Museum

600 N Charles St, Baltimore, MD 21201-5118
Phone: +1 410-547-9000

Website: <https://thewalters.org/>

The Walters Art Museum in Baltimore, Maryland is internationally renowned for its collection of art. The collection presents an overview of world art from pre-dynastic Egypt to 20th-century Europe, and counts among its many treasures Greek sculpture and Roman sarcophagi; medieval ivories and Old Master paintings; Art Nouveau jewelry and 19th-century European and American masterpieces.

Things to Do in Baltimore

Baltimore Museum of Art

10 Art Museum Dr, Baltimore, MD 21218-3898

Phone: +1 443-573-1700

Website: <https://artbma.org/>

The Baltimore Museum of Art (BMA) is home to an internationally renowned collection of 19th-century, modern, and contemporary art. Founded in 1914 with a single painting, the BMA today has 90,000 works of art-including the largest holding of works by Henri Matisse in the world.* The museum is currently undergoing an unprecedented \$28 million renovation to provide visitors with a more welcoming environment and more imaginative and inspiring encounters with art. The BMA is remaining open throughout the multi-year project so that visitors can enjoy its outstanding selection of European and American painting and sculpture from the 17th through 20th centuries and the newly reinstalled Contemporary Wing with 14 galleries showcasing the art of our time. Two beautifully landscaped gardens display an array of 20th-century sculpture that is an oasis in the city.

Baltimore and Ohio Railroad Museum

901 W Pratt St, Baltimore, MD 21223-2699

Phone: +1 410-752-2490

Website: <http://www.borail.org/>

Located at the site of the oldest railroad station in America, this museum traces the development of trains and features a huge collection of railroad memorabilia, a model railroad and an operating replica of the very first locomotive, The Tom Thumb, which was built here.

Edgar Allan Poe's Grave Site and Memorial

Westminster Cemetery on the southeast corner of Fayette and Greene sts., Baltimore, MD 21201-1768

Phone: +1 410-706-2072

Website: <https://www.eapoe.org/balt/poegrave.htm>

Burial site of the famous author.

Federal Hill Park

300 Warren Ave, Baltimore, MD 21230

Website: <http://www.federalhillonline.com/>

Former lookout during the Civil War and the War of 1812 is now a scenic park overlooking the Inner Harbor.

Restaurants in Baltimore

Cazbar

316 N Charles St, Baltimore, MD 21201-4302

Phone: +1 410-528-1222

Website: <http://www.cazbar.pro/>

The Cazbar, established in 2006, is Baltimore's first & only Turkish Restaurant. With food, atmosphere, & entertainment served in an authentic Turkish style, Cazbar is sure to provide a thoroughly exotic & enchanting dining experience. Open daily for lunch and dinner and serving brunch on Saturday and Sunday.

Maisy's

313 N Charles St, Baltimore, MD 21201-4364

Phone: +1 443-220-0150

Website: <https://www.maisysbaltimore.com/>

Whether you live in the neighborhood or are in town on business, you will always feel at home in the warm and inviting atmosphere of Maisy's. The friendly service each and every time you visit will keep you coming back. Stop by any day between 4pm & 7pm for happy hour! Amazing specials and unbelievable deals on pizza & wings!

Sotto Sopra

405 N Charles St, Ste 1, Baltimore, MD 21201-4413

Phone: +1 410-625-0534

Website: <https://www.sottosoprainc.com/new-index>

Sotto Sopra Restaurant is a contemporary Italian Restaurant with a Maryland accent that has been housed in a 19th century building since 1996. Located on one of America's designated scenic byways, Charles Street, Sotto Sopra Restaurant can be found across from the Baltimore Basilica, the first Catholic Cathedral in the United States at the archway to Baltimore's cultural district.

Cafe Poupon

225 N Charles St, Baltimore, MD 21201-4101

Phone: +1 443-573-4620

Website: <https://www.patisseriepoupon.net/>

Bakery & coffeehouse with a Parisian feel serving traditional French pastries & sandwiches.

Pho Viet

104 Saint Paul St, Baltimore, MD 21202-1704

Phone: +1 410-244-1428

Friendly and fast Vietnamese Soups and other food. Vegetarian options available.

Restaurants in Baltimore

Puerto 511

102 Clay St, Baltimore, MD 21201-3501

Phone: +1 410-244-8837

Website: <https://www.puerto511.com/>

Puerto 511 is a casual, with passion and affection of home restaurant. They cook from their childhood memories. They work with fresh and local products, always caring for their origin, always thinking of that flavor that makes them travel to that unique moment of life, and when closing your eyes, takes you to beautiful Peru.

Poets Modern Cocktails & Eats

24 W Franklin St, Hotel Indigo, Baltimore, MD 21201-5006

Phone: +1 443-961-3400

Website: <https://www.baltimoreindigohotel.com/poets-restaurant>

Poets Modern Cocktails & Eats offers a creative food and drink scene that reflects the vibrant aesthetic of Hotel Indigo Baltimore. Enjoy eclectic regional cuisine and share fare, including sandwiches, salads, burgers and flatbreads, sourced from local farms when possible. Enjoy classic and artisan cocktails, including the Build Your Own Manhattan, a fabulous wine list, and local and craft beers. With its warm, playful and contemporary vibe, Poets is the place you'd go for lunch with friends or your last sip of the day. Enjoy signature small plates packed with local flavor, such as our Fire Grilled Wings, paired with a Poets Gold Ale, crafted right here in Baltimore. Wake up to a hot cappuccino or wind down with your favorite local brew. Poets is open for breakfast, lunch, and dinner, and offers professional catering for your meetings and events.

Supano's Steakhouse

110 Water St, Baltimore, MD 21202-1001

Phone: +1 410-986-4445

Website: <http://www.supanossteakhouse.com/>

Supano's Steakhouse restaurant's dry aged steaks are a favorite of local residents and guests visiting the Baltimore Inner Harbor. Supano's offers many different beef types and select steak cuts: Dry Aged Prime Beef, Dry Aged Hand Selected Certified Angus Beef. Our prime dry aged steaks include; Dry Aged Filet Mignon, Dry Aged Ribeye Steaks, Dry Aged NY Strip Steaks and Dry Aged Chops.

Lumbini

322 N Charles St, Baltimore, MD 21201-4302

Phone: +1 410-244-5556

Website: <http://lumbinirestaurant.com/>

Serves authentic Nepalese & Indian Cuisine on classic copper utensils!

2018 SUMMER SIMULATION MULTI-CONFERENCE

scs.org/summersim/

JULY 9-12, 2018

The University of Bordeaux, Bordeaux, France

DESCRIPTION:

The Summer Simulation Multi-Conference 2018 (SummerSim'18) is a combination of the 50th Summer Computer Simulation Conference (SCSC), the 21st International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS) and the 13th International Conference on Bond Graph Modeling (ICBGM). SummerSim is SCS's premier international conference in cooperation with ACM SIGSIM. The conference focuses on modeling and simulation, tools, theory, methodologies and applications and provides a forum for the latest R&D results in academia and industry. We encourage you to take the opportunity to experience the tutorials, tracks, and workshops that will be available.

SYMPOSIUMS & TRACKS:

21st International Symposium on Performance Evaluation of
Computer and Telecommunication Systems (SPECTS)
13th International Conference on Bond Graph Modeling (ICBGM)
50th Summer Computer Simulation Conference (SCSC):
Agent-based Modeling and Simulation (ABMS)
Computer Graphics for Simulation (CGS)
Cyber Modeling & Simulation, Ranges, and Tools (CyberSim)
Applied Theory of Modeling and Simulation (AToMS)
Emergency Management Simulation (EMS)
Grand Challenges in Modeling and Simulation (GCMS)
Modeling and Simulation as a Service (MSaaS)
Modeling and Simulation of Complex, Intelligent, Adaptive and
Autonomous Systems (MSCIAAS)
Modeling and Simulation for Sustainability (MSS)
Simulation in the System Design Flow (SDF)
Modeling and Simulation in Engineering Education (MSEE)
Verification and Validation of Computer Simulation Models (V&V)
Work in Progress (WIP)
Student Colloquium (WIP)

KEYNOTE SPEAKER:

Wil van der Aalst,
Technische Universiteit Eindhoven
Andreas Tolk,
The MITRE Corporation

Register Today!

SCS.org/SummerSim

For questions, please contact:

scs@scs.org | (858) 277-3888

For more information on registration dates
and hotel deadlines, visit scs.org/summersim