

Spring Simulation Multiconference 2010

*Co-located with the 2010 SISO
Spring Simulation
Interoperability Workshop*

in
collaboration
with
ACM/SIGSIM



**April 11 - 15, 2010
Florida Hotel & Conference Center;
Orlando, FL, USA**

Conference Symposia

- **Agent-Directed Simulation (ADS)**
- **43rd Annual Simulation Symposium (ANSS)**
- **13th Communications & Networking Simulation Symposium (CNS)**
- **Symposium on Theory of Modeling & Simulation - DEVS Integrative M&S Symposium (DEVS)**
- **Emerging M&S Applications in Industry & Academia Symposium (EAIA)**
- **High Performance Computing Symposium (HPC)**
- **9th International Conference on Bond Graph Modeling & Simulation (ICBGMS)**
- **Military Modeling & Simulation Symposium (MMS)**
- **Symposium on Simulation for Architecture & Urban Design (SSAUD)**
- **Poster Track**



Sponsored by
The Society for Modeling & Simulation International
<http://www.scs.org>



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Message from The Chairs

Welcome to the 2010 Spring Simulation Multiconference (SpringSim'10), in sunny Orlando, FL !

SpringSim'10, sponsored by The Society for Modeling & Simulation International (SCS) in collaboration with ACM/SIGSIM, brings together various symposia & provides a forum for academia, industry, business, military, & government. It covers a wide variety of disciplines & domains that exploit Modeling & Simulation (M&S) to present their work in a unique setting.

SpringSim'10 brings the next step on a number of exciting changes introduced in the last couple of years. This is the second consecutive year in which a free-to-all-attendees tutorial track is provided, including cutting edge & state-of-the-art technologies in M&S for the participants. This is also the second year of our Poster session, which is particularly focused on the work of Ph.D. students in a way that allows them to share their latest findings with the conference audience; with more than 20 posters scheduled for presentation this year. We also welcome the International Conference on Bond Graph Modeling, new to the SpringSim community this year. Finally we are proud to host the Military Modeling & Simulation track & their amazing 19 sessions.

The Conference Keynotes include:

- Dr. Nabil Adam, who will speak on modeling & simulation usage in the Department of Homeland Defense.
- Dr. George Riley of Georgia Tech who will speak on NS-2 & NS-3 network simulators.

SpringSim'10 will also co-host a **Joint Plenary talk** with the **Spring Simulation Interoperability Workshop** that will be presented by Mr. Doug Craig, a senior NASA official who is leading the Architectural Analysis effort for the Exploration Systems Mission Directorate. The talk will detail how NASA is using advanced simulation to study & refine our Exploration Architecture concepts & plans.

The conference includes varied invited talks on the different symposia, Best Paper Awards & numerous social events.

SpringSim'10 would not be possible without the wide selection of technical presentations & distinguished speakers. An exciting program with 248 papers (selected from 350 submissions) will be presented in multiple parallel tracks within the following Technical Symposia:

- **Agent-Directed Simulation (ADS)**
 - **General Chairs:**
 - Dr. Levent Yilmaz, Auburn University, USA
 - Dr. Tuncer Ören, University of Ottawa, Canada
- **43rd Annual Simulation Symposium (ANSS)**
 - General Chair: Saad Biaz, Auburn University
- **13th Communications & Networking Simulation Symposium (CNS)**
 - General Chair: Dr. Hassan Rajaei, Bowling Green State University, USA
- **Symposium on Theory of Modeling & Simulation - DEVS Integrative M&S Symposium (DEVS)**
 - General Chair: Gabriel A. Wainer, Carleton University, Canada

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Message from The Chairs (continued)

- **Emerging M&S Applications in Industry & Academia Symposium (EAIA)**
 - General Chair: Dr. Andreas Tolk, Old Dominion University, USA
- **High Performance Computing Symposium (HPC)**
 - General Chair: Adrian Sandu, Virginia Tech, USA
- **9th International Conference on Bond Graph Modeling & Simulation (ICBGMS)**
 - General Chair: Professor François E. Cellier, Institut für Computational Science, Zürich, Switzerland
- **Military Modeling & Simulation Symposium (MMS)**
 - General Chair: Dr. Paul Roman, Royal Military College of Canada, Canada
- **Symposium on Simulation for Architecture & Urban Design (SSAUD)**
 - General Chair: Azam Khan, Autodesk Research
- **Poster Sessions**
 - General Chair: Dr. Abdolreza Abhari, Ryerson University, Toronto, Ontario, Canada

We sincerely express our appreciation to the numerous technical reviewers & the various Review & Program Committees for their thorough work in evaluating the papers accepted for publication & making the Conference Proceedings a high quality document. The efforts, diligence, & thoroughness of the reviewers & Program Committees are gratefully acknowledged. The papers presented at the conference will be included in the ACM Digital Library & in varied online repositories.

We extend our gratitude to the conference Organizing Committee members, Keynote & Plenary Speakers, Program Chairs, Track & Session Chairs, as well as paper authors, & panel members for their contributions, efforts, & time. The dedication & diligence of these contributors is invaluable.

We also would like to acknowledge the following SpringSim'10 organizers for their outstanding support during the preparation of this conference:

- Dr. Abdolreza Abhari - Poster Chair
- Dr. François Cellier - Awards Chair
- Drs. Hala ElArang & Damla Turgut - Local Arrangements Co-Chairs
- Ms. D. J. Weed - SCS Executive Director

On behalf of the SpringSim'10 Conference Committee & the Society for Modeling & Simulation International, we invite you all to enjoy the conference.

Dr. Robert McGraw

SpringSim'10 General Chair

Dr. Eric Imsand

SpringSim'10 Vice-General Chair

Michael J. Chinni

SpringSim'10 Program Chair

Best Paper Awards

Each paper listed below is the best paper from their individual symposium & will be honored as such. The overall best paper will be announced at the Conference Keynote.

MMS:

- Go With the Flow: Engagement Factors for Learning in Second Life
 - Karen Cooper, Ph.D. Naval Air Warfare Center Training Systems Division, Orlando, FL

SSAUD:

- Multi-Objective Optimization in Architectural Design
 - Ian Keough & David Benjamin, Burohappold

ICBGMS:

- Bond Graph Dynamic Modeling & Stabilization of a Quad-Rotor Helicopter
 - M. Raju Hossain, D. Geoff Rideout, D. Nicholas Krouglicof, Faculty of Engineering & Applied Science Memorial, University of Newfoundland, St. John's, Newfoundland, Canada

ANSS:

- On Modeling & Simulation of Game Theory-based Defense Mechanisms against DoS & DDoS Attacks
 - Qishi Wu, Sajjan Shiva, Sankardas Roy, Charles Ellis, Vivek Datla, Department of Computer Science, University of Memphis

HPC:

- A Parallel Longest Common Subsequence Algorithm in UPC
 - Bryan M. Franklin & Steven Seidel, Department of Computer Science, Michigan Technological University

ADS:

- Agent-based Simulation of the Diffusion of Warnings
 - Cindy Hui, William A. Wallace, Dept of Decision Sciences & Engineering Systems, Rensselaer Polytechnic Institute
 - Mark Goldberg, Malik Magdon-Ismael, Dept of Computer Science, Rensselaer Polytechnic Institute

CNS:

- CNS: Architecture, design & source code comparison of ns-2 & ns-3 network simulators
 - Juan Luis Font, Pablo Iñigo, Manuel Domínguez, José Luis Sevillano, Claudio Amaya, Department of Computer Technology & Architecture, University of Seville

DEVS/TMS:

- Advanced IDE for Modeling & Simulation of Discrete Event Systems
 - Matías Bonaventura, Rodrigo Castro, Computer Science Department, Universidad de Buenos Aires
 - Gabriel A. Wainer, Dept. of Systems & Computer Engineering Carleton University Centre of Visualization & Simulation (V-Sim)

SpringSim'10 is an annual conference sponsored by The Society for Modeling & Simulation International which covers state-of-the-art developments in computer simulation technologies, as well as scientific, industrial, & business applications. Areas covered include high-performance computing technologies, models & algorithms, GUI visualization technologies, communications & much more. Application disciplines covered include advanced telecommunication; computer systems; military, government & aerospace; energy, & other industries. The conference includes keynote speeches presented by technology & industry leaders, technical sessions, professional development courses & seminars, as well as vendor exhibits. People are always welcome to benefit by taking an organizing role.

SpringSim'10 offers many ways to promote simulation products & to enhance corporate images. You are invited to use **SpringSim'10** in ways that best serve your interests.

Registration

The conference registration/information desk is open during the following hours:

Sunday	April 11	12noon – 6pm
Monday	April 12	7am – 5pm
Tuesday	April 13	7am – 5pm
Wednesday	April 14	7am – 3pm

Speaker's Breakfasts

Breakfast is served for each speaker on the morning of his/her presentation. Presenters meet with Track / Session Chairs to discuss presentations of the day. **Admittance with breakfast ticket only.**

Breakfast will be in the Traditions Room.

Monday	April 12	7am - 8am
Tuesday	April 13	7am - 8am
Wednesday	April 14	7am - 8am

Exhibits Area

The exhibits area will be in Salon 2 & will be open as follows:

Monday	April 12	2:30pm – 3:30pm
Tuesday	April 13	9am - 5pm
Wednesday	April 14	9am – 12noon

See the Exhibits handout for information on the exhibitors.

Conference Reception

The reception will be Mon. April 12 in the exhibits area in Salon 2 from 5pm – 7pm.

SpringSim'10 Pre-Conference Meeting

The **SpringSim'10** Pre-Conference Meeting will be held in the Forum West 1 room on Sun. April 11, from 5:30pm – 7pm. All symposia are expected to send a representative to this meeting.

SpringSim'11

Scientists, engineers, managers, educators, & business professionals who develop or use simulation tools are invited to participate. Proposals are invited for papers, panels, tutorials, workshops, seminars, exhibits, social activities & for other presentation, discussion & sponsorship formats. People are always welcome to take an organizing role. For more information see the SpringSim'11; web site at <http://www.scs.org>.

Symposia Planning Meetings for 2011

All symposia planning meetings for 2011 will be held over lunch in the Traditions Room from 12:15 – 1:15. Lunch will be provided. If you'd like to help plan for 2011, you **must** contact one of the symposium chairs in advance. Seating at lunch is limited so attendance is by invitation only.

Conference Keynote Speakers

The Conference Keynotes will be in Legacy North.

Monday April 12rd from 8:30-9:30

Dr. Nabil R. Adam, Infrastructure & Geophysical Division,
Science & Technology Directorate, US DHS



Modeling & Simulation R&D: Science & Technology Directorate, US DHS

This talk discusses some of the R&D efforts to provide key government stakeholders, Critical Infrastructure & Key Resources (CIKR) owners/operators, & public & private sector decision makers with integrated models, tools, & methodologies to: assess disaster response & recovery plans & decisions when confronted with multiple events, ultimately leading to more effective, efficient disaster response & recovery responses through greater foresight of consequences; enable pre-disaster training at local, state, regional, & national levels to better anticipate post-disaster conditions; & gain insight into the interdependencies & possible cascading effects resulting from various disruptions.

Research: Dr. Adam serves as a Fellow & Sr. Program Manager at the US Department of Homeland Security (DHS) - Infrastructure & Geophysical Division (IGD), Science & Technology Directorate where he manages more than \$30 Million as a part of the Complex Event Modeling, Simulation, & Analysis (CEMSA) program initiated in 2008. He is also a Professor of Computers & Information Systems at Rutgers University; the Founding Director of the Rutgers University Center for Information Management, Integration & Connectivity (CIMIC); & the Director of the recently established information Technology for Emergency mAnageMent (i-TEAM) Research Laboratory. Dr. Adam is one of the Co-founders & past Director of the Meadowlands Environmental Research Institute. Additional research positions held include serving as past Chair of the MSIS Department at RBS.

Publications: Dr. Adam has published numerous technical papers covering such topics as information management, information security & privacy, data mining, Web services & modeling & simulation. His papers appeared in refereed journals & conference proceedings including, IEEE Transactions on Software Engineering, IEEE Transactions on Knowledge & Data Engineering, ACM Computing Surveys, Communications of the ACM, Journal of Management Information Systems, & International Journal of Intelligent & Cooperative Information Systems. He has co-authored/co-edited ten books. Dr. Adam is the co-founder & the Executive-Editor-in-Chief of the International Journal on Digital Libraries & serves on the editorial board of a number of journals including Journal of Management Information Systems, & the Journal of Electronic Commerce. He is also the co-founder & past chair of the IEEE Technical Committee on Digital Libraries.

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Monday April 12th, 9:30 – 10:00

George Riley, Georgia Institute of Technology



Network Simulation with NS3

The ns-3 network simulation environment is the result of a multi-year effort funded by the U.S. National Science Foundation, & is designed to replace the aging but popular ns-2 simulator. In this talk, we will start by discussing some of the basic concepts used when creating simulations of computer networks, & the types of questions that can be analyzed by network simulation tools. Then we will discuss some of the basic design of ns-3 & the tradeoffs that went into those design decisions. Finally, we will demonstrate a simple ns-3 simulation & show the results.

Dr. George Riley received his Ph.D. from the Georgia Tech College of Computing in August 2001, & joined the faculty of ECE at that time. Dr. Riley received a MSCS from Florida Tech in 1996, & a BSEE from University of Alabama in 1972.

Prior to enrolling at Tech in 1996, Dr. Riley was president & CEO of Infoware, Inc. of Cocoa Beach Florida. From 1987 to 1996 Infoware provided software & system design services to the United States Air Force at Patrick Air Force Base, Florida. During that time, Infoware designed, implemented, & deployed numerous systems in support the missile launch activities at Cape Canaveral Air Force Station, including a communications front-end processor for real-time data gathering & a real-time distributed flight safety display system. Concurrently, from 1984 to 2000, Dr. Riley was also vice-president & co-owner of CAM Systems Inc. of Atlanta Georgia. CAM systems developed, under Dr. Riley's direction, a suite of PC based software tools for residential property management.

Joint SCS-SISO Plenary Speaker

The Joint SCS-SISO Plenary will be in Legacy North.

Monday April 12rd, 10:30 – 11:00

Douglas A. Craig, Manager of Strategic Analyses for the Exploration Systems Mission Directorate's Directorate Integration Office at NASA Headquarters.



This talk will detail how NASA is using advanced simulation to study & refine our Exploration Architecture concepts & plans.

Mr. Craig received a Bachelor of Science degree in Aeronautical and Ocean Engineering from Virginia Tech, and a Masters of Business Administration from Florida Tech University. He started his career working for the Air Force at Wright-Patterson AFB as a systems engineer for the Advanced Tactical Fighter program. In 1990, he joined NASA and has worked in positions at the Kennedy Space Center, the Langley Research Center, and NASA Headquarters where he currently works. He is currently assigned to the Exploration Systems Mission Directorate (ESMD) as the ESMD Directorate Integration Office Strategic Analysis Manager. His responsibilities include overseeing the exploration architecture studies including the identification of required technologies; leading the analysis of applicable future potential game-changing technologies, overseeing the Lunar Electric Rover project, managing the ESMD integrated analog mission and field test activities, managing the development of the lunar surface operations simulation capability, and managing the creation of technology development partnerships.

Agent-Directed Simulation (ADS)

General Chairs:

- Dr. Levent Yilmaz, Auburn University, USA
- Dr. Tuncer Ören, University of Ottawa, Canada

Program Chairs:

- Dr. Gregory Madey, University of Notre Dame, USA
- Dr. Maarten Sierhuis, NASA Ames Research Center, USA
- Dr. Yu Zhang, Trinity University

All ADS sessions are in Traditions.

Monday

1:30 - 3:00

Session 1: Simulation in Health Sciences

Session Chair: Levent Yilmaz

- Agent-Based Simulation of Drug Disposition in Cirrhotic Liver
 - Sean H. J. Kim, Sunwoo Park, Glen E. P. Ropella & C. Anthony Hunt
- SPARK: A Framework for Multi-scale Agent-based Biomedical Modeling
 - Alexey Solovyev, Maxim Mikheev, Leming Zhou, Joyeeta Dutta-Moscato, Cordelia Ziraldo, Gary An, Yoram Vodovotz & Qi Mi
- An Agent-Based Model for the Spread of the Dengue Fever: A Swarm Platform Simulation Approach
 - Luis Jacintho, André Batista, Terry Ruas, Maria Marietto & Fábio Silva

3:30 - 5:00

Session 2: Methodology & Tools

Session Chair: Yu Zhang

- Simulated Event Propagation in Distributed, Open Environments
 - Travis Steel & Rym Wenkstern
- A Framework of Intelligent Environment with Smart-Active Objects (IESAO) for Flexible & Efficient Crowd Simulation
 - Anson Yuanxi Liang, Malcolm Yoke Hean Low, Michael Harold Lees, Wentong Cai & Suiping Zhou
- An Approach to Reduce the Gap between Conceptual & Execution Models in Agent-Directed Simulations
 - Pier Taranti, Ricardo Choren, Karin Breitman & Carlos Lucena

(continued)

Tuesday

8:30 – 10:00

Session 3: Network Dynamics

Session Chair: C. A. Hunt

- Stability Analysis in Dynamic Social Networks
 - Wayne Wu & Yu Zhang
- Agent-based Simulation of the Diffusion of Warnings
 - Cindy Hui, Mark Goldberg, Malik Magdon-Ismael & William A. Wallace
- Clustering Method Incorporating Network Topology & Dynamics
 - Chris Kuhlman, Bryan Lewis, Richard Beckman, Stephen Eubank & Tridib Dutta

10:30 – 12:00

Session 4: Applications

Session Chair: Joseph Barjis

- Multi Agent Design & Implementation of Crowd Injury Model
 - Emin Kugu, Frederic D. McKenzie, Jiang Li & Ozgur Koray Sahingoz
- Simulation of Pedestrian Behavior in Intermodal Facilities
 - John Usher, Xuan Liu & Eric Kolstad
- Application of the GRAMS Reference Model for Agent-Based Modeling & Simulation to a Warehouse Scenario
 - Robert Siegfried & Axel Lehmann
- An agent based model of opinion dynamics using the anchoring & adjustment heuristic
 - Arpan Jani

1:30 – 3:00

Session 5: Applications

Session Chair: Levent Yilmaz

- An Agent Simulation Study of Optimal Foraging: The Ideal Free Distribution with Individual Scalar Expectancies
 - John Magnotti & Levent Yilmaz
- Creating Portable Agents for Coupling Power Transmission Models
 - Oralee Nudson, Dr. David Newman & Dr. Benjamin Carreras
- Social Emergence in Organisational Contexts: Benefits from Multi-Agent Simulations
 - Volker Nissen & Danilo Saft

(continued)

3:30 – 5:00

Session 6: Verification & Validation

Session Chair: C. A. Hunt

- A Use-Case Approach to the Validation of Social Modeling & Simulation
 - Jonathan Alt, Stephen Lieberman & Curtis Blais
- Docking Agent-based Simulation of Collective Emotion to Equation-based Models & Interactive Agents
 - Stefan Rank
- Verification & Validation of an Agent-Based Forest Fire Simulation Model
 - Muaz Niazi, Qasim Siddique, Amir Hussain & Mario Kolberg

43rd Annual Simulation Symposium (ANSS)

General Chair: Saad Biaz, Auburn University

Program Chairs:

- Eric Imsand, University of Memphis, USA
- Dr. Shaoen Wu, University of Southern Mississippi, USA

Monday ANSS sessions are in Legacy South 3.

Tuesday & Wednesday ANSS sessions are in Forum East 3

Monday, April 12

Room: Legacy South 3

1:30 - 3:00

Session: Computer Hardware & Simulation Construction

- A Parallel Logic Simulation Framework: Study, Implementation, & Performance
- A New Concurrent Mechanism for Distributed Hardware-In-The-Loop Simulation Test System
- A Replication Structure for Efficient & Fault-Tolerant Parallel & Distributed Simulations

3:30 - 5:00

Session: Wireless Networks 1

- Consolidating Multi-Simulation Environments For Radio Effects Analysis
- Enhancement of IEEE 802.11 Modules in ns-2 & Performance Evaluation with Error Rate
- Throughput Analysis in Ad Hoc Networks using Adaptive Carrier Sensing Threshold

Tuesday, April 13

Room: Forum East 3

8:30 - 10:00

Session: Wireless Networks 2

- Intelligent Architecture Through A Supervised Learning Approach in Wireless Multimedia Sensor Networks
- A Wireless Local Area Network Modeling Tool for Scalable Indoor Access Point Placement Optimisation

10:30 - 12:00

Session: Applications 1

- Driving before Constructing: A New Paradigm in Roadway Design
- Simulation of Three Dimensional Elevator System Using Cell-DEVS Formalism
- UAV Search Strategies Using Cell-DEVS

1:30 - 3:00

Session: Applications 2

- Maritime Counter-Piracy Study using Agent-Based Simulations
- Iterative Design Process For The Development & Testing Of Cooperative Applications

(continued)

3:30 - 5:00

Session: System Modeling 1

- Assigning Applications to Servers: A Simulation Study
- Optimal Allocation of Operators in a Cellular Manufacturing System by an Integrated Computer Simulation-Genetic Algorithm Approach
- Conventional Regression versus Artificial Neural Network in Short-Term Load Forecasting

Wednesday, April 14

Room: Forum East 3

8:30 - 10:00

Session: System Modeling 2

- Modeling & Optimization of a Purchasing System in Uncertain Environments by an Integrated Fuzzy Business Process Simulation & Data Envelopment Analysis: A Novel Approach
- Experimenting with Real Time Simulation Parameters for Fluid Model of Soft Bodies
- SFS3: A Simulation Framework for Self-Stabilizing Systems

10:30 - 12:00

Session: System Modeling 3

- On Modeling & Simulation of Game Theory-based Defense Mechanisms against DoS & DDoS Attacks
- An Integrated Fuzzy Simulation-Data Envelopment Analysis Algorithm for Job-Shop Layout Optimization: The Case of Injection Process with Ambiguous Data
- Information Assurance Modeling Using the Department of Defense Architecture Framework

1:30 - 3:00

Session: Simulation Model & Architecture

- Event-Driven Service-Oriented Simulation Framework
- A Knowledge-based Approach to Automated Simulation Model Adaptation
- Simplifying Parallel & Distributed Simulation with the DUP System

3:30 - 5:00

Session: Simulation Model & Architecture

- Profile-Based Partition for Parallel Simulation of DEVS-FIRE
- A Metamodel & a DEVS Implementation for Component Based Hierarchical Simulation Modeling
- A Generalized Model between the OWA Operator, the Weighted Average and the Probability

13th Communications & Networking Simulation Symposium (CNS)

General Chair: Dr. Hassan Rajaei, Bowling Green State University, USA

Program Chair: Dr. Jin Seek Choi, Hanyang University, South Korea

All CNS sessions will be in the Forum West 2 room.

Tuesday, April 13

8:30 - 10:00

Session 1: Wireless Networks I

Session Chair: Lev Sofman, Bell Laboratories, Alcatel-Lucent, USA

- Opening: Hassan Rajaei, CNS'10 General Chair
- Markov Decision Process-Based Analysis of Rechargeable Nodes in Wireless Sensor Networks
 - Sudip Misra, Rashmi Rout, T. Raghu Krishna, Patel Manilal & Mohammad Obaidat, Monmouth University, USA
- A Note on Modeling, Simulation & Analysis of Wireless LANs in Classified Environments
 - Aftab Ahmad, Norfolk State University, USA
- A Simulation Framework for Performance Analysis of Multi-Interface & Multi-Channel Wireless Networks in INET/OMNET++
 - Heywoong Kim, Qijun Gu, Meng Yu, Wangyu Zang & Peng Liu, Texas State University-San Marcos, San Marcos

10:30 - 12:00

Session 2: Traffic Control & Performance Analysis

Session Chair: Aftab Ahmad, Norfolk State University, USA

- Modeling Energy Management Mechanism in Ethernet Passive Optical Networks
 - Ying Yan & Lars Dittmann, Technical University of Denmark (DTU)
- Traffic Dimensioning on Feeder Link in IPTV Networks
 - Lev Sofman, Bell Laboratories, Alcatel-Lucent, USA
- GTNA - A Framework for the Graph-Theoretic Network Analysis
 - Benjamin Schiller, Dirk Bradler, Immanuel Schweizer, Thorsten Strufe & Max Mühlhä7user, TU Darmstadt, Darmstadt, Germany

1:30 - 3:00

Session 3: Network Security & Quality of Services

Session Chair: Aftab Ahmed, Norfolk State University, USA

- Evaluation of QoS-compliant overlays under Denial of Service Attacks
 - Jawwad Shamsi & Monica Brockmeyer, Wayne State University, USA

(continued)

13th Communications & Networking Simulation Symposium (CNS) (continued)

- A Study on QoS of VoIP networks: A Random Neural Network (RNN) Approach
 - Kapilan Radhakrishnan & Hadi Larijani, Glasgow Caledonian University, Glasgow, Scotland, UK
- Architecture, design & source code comparison of ns-2 & ns-3 network simulators
 - Juan Luis Font, Pablo Iñigo, Manuel Domínguez, José Luis Sevillano & Claudio Amaya, University of Seville, Spain
- A Novel Algorithm to Prevent Man in the Middle Attack in LAN Environment
 - Mohiuddin Ahmed & Zubaidah Muataz Hazza I, International Islamic University, Malaysia

3:30 - 5:00

Session 4: Advanced Networks

Session Chair: Hassan Rajaei, Bowling Green State University, USA

- Hand Detection & Tracking for Virtual Training Environments
 - Martez Mott & Hassan Rajaei , Bowling Green State University, USA
- Studying the effect of Internet exchange points on Internet link delays
 - Mohammad Z Ahmad & Ratan Guha , University of Central Florida, USA
- Light-weight Protocol Simulation for Binary Data Exchange over Heterogeneous Networks
 - Salah Sharieh, Kamran Sartipi & Alexander Ferworn, McMaster University Canada
- MySQL Performance Analysis on a Limited Resource Server: Fedora vs. Ubuntu Linux
 - Mohiuddin Ahmed, Mohammad Moshee, Saiful Azad & Shariq Haseeb, International Islamic University, Malaysia

(continued)

13th Communications & Networking Simulation Symposium (CNS) (continued)

Wednesday, April 14

8:30 - 10:00

Session 5: Ad Hoc Network & Mobility Management

Session Chair: Jin Seek Choi, Hanyang University, Korea

- A simulation Model of Sustainable Mobile Sensor Network
 - Chulho Won & Seong-Woo Kim, California State University, Fresno
- Simulation-based Local Train Mobility Model
 - Aftab Ahmad, Norfolk State University, USA
- IPv6 Mobility: Performance Evaluation VoIP on MIPv6
 - Mohiuddin Ahmed, Zuhal Hud, Rachmat Handinugraha & Kazi Shahzabeen Rahnuma, International Islamic University, Malaysia

10:30 - 12:00

Session 6: Web Based Traffic & Applications

Session Chair: Abdolreza Abhari, Ryerson University, Canada

- A Model Validation Study of Hierarchical & Distributed Web Caching Model
 - Rachid El Abdouni Khayari, Adisa Musovic, Axel Lehmann & Michael Boehm, University of Bundeswehr Munchen, Germany
- Characterization of User Networks in Facebook
 - Fatemeh Pakzad & Abdolreza Abhari, Ryerson University, Canada
- Peer-to-Peer Delivery System for Short Video Sharing
 - Maryam Bashardoust Tajali & Abdolreza Abhari, Ryerson University, Canada

Symposium on Theory of Modeling & Simulation - DEVS Integrative M&S Symposium (DEVS)

General Chair: Gabriel A. Wainer, Carleton University, Canada

Program Chair: Mamadou K. Traoré, Université Blaise Pascal, France

All DEVS sessions will be in the Legacy South 2 room.

Note: WIP means Works-In-Progress

Monday, April 12th

1:30 – 3:00

Session: Model-driven methods I

- A MDA-based Approach for the Development of DEVS/SOA Simulations
 - Andrea D'Ambrogio, Daniele Gianni, José L. Risco-Martín & Alessandra Pieroni
- Designing an Interface for Real-Time & Embedded DEVS
 - Mohammad Moallemi & Gabriel Wainer
- SES Based Ontological Process for High Level Information Fusion
 - Hojun Lee & Bernard Zeigler

3:30 - 5:00

Session: Model-driven methods II

- Using Time Stream Petri Nets over a Service Architecture for Workflow Modelling & Enactment
 - Franco Cicirelli, Angelo Furfaro & Libero Nigro
- Performance Analysis Modeling Applied to Business Processes
 - Kelly Rosa Braghetto, João Eduardo Ferreira & Jean-Marc Vincent

Tuesday, April 13th

8:30 - 10:00

Session: Formal methods I

- Verifying Trace Inclusion between an Experimental Frame & a Model
 - Vincent ALBERT, Alexandre NKETSA & Christel SEGUIN
- Temporal Verification of RT-DEVS Models with Implementation Aspects
 - Franco Cicirelli, Angelo Furfaro, Libero Nigro & Francesco Pupo
- Rational Time-Advance DEVS (RTA-DEVS)
 - Hesham Saadawi & Gabriel Wainer

(continued)

Symposium on Theory of Modeling & Simulation - DEVS Integrative M&S Symposium (DEVS) (continued)

10:30 - 12:00

Session: Formal methods II

- Uncovering DEVS Simulation Behaviour Throughout The Open Provenance Model
 - Alejandro Moreno, José L. Risco-Martín & Joaquín Aranda
- Reducing The State Space Of Incompletely Specified Timed Moore Machines
 - Norbert Giambiasi
- Integrating Parallel DEVS & Equation-Based Object-Oriented Modeling
 - Victorino Sanz, Alfonso Urquía & Sebastián Dormido

1:30 - 3:00

Session: Tools & Environments

- Advanced IDE for Modeling & Simulation of Discrete Event Systems
 - Matias Bonaventura, Gabriel Wainer & Rodrigo Castro
- Simulating Domain Specific Visual Models by Observation
 - Javier Troya, José E. Rivera & Antonio Vallecillo
- AnCaraS: a new webometrics web-spider; DEVS-based validation of concepts
 - Brahim Khalil Rebai, Gregory Zacharewicz, David Reymond & Patrice Corbe

3:30 - 5:00

Session: Parallel & Distributed Simulation

- A Distributed Approach to the Simulation of Inherently Distributed Systems
 - Giuseppe Iazeolla, Alessandra Pieroni, Andrea D'Ambrogio & Daniele Gianni
- Conservative DEVS - A Novel Protocol for Parallel Conservative Simulation of DEVS & Cell-DEVS Models
 - Shafagh Jafer & Gabriel Wainer
- Accelerating Large-scale DEVS-based Simulation on the Cell Processor
 - Qi Liu & Gabriel Wainer

(continued)

Symposium on Theory of Modeling & Simulation - DEVS Integrative M&S Symposium (DEVS) (continued)

Wednesday, April 14th

8:30 - 10:00

Session: Applications I

- Comprehensive On-Chip Traffic Generator Model for SoC Design & Synthesis
 - Moath Jarrah, Ameen Jarrah & Bernard Zeigler
- Meta-Simulation of Large WSN on Multi-core Computers
 - Adnan Iqbal & Bernard Pottier
- A Stochastic DEVS Wind Turbine Model for Wind Farm Simulation
 - Eduardo Perez, Lewis Ntaimo, Eunshin Byon & Yu Ding

10:30 - 12:00

Session: Applications II

- A DEVS Model For Demographic Microsimulation
 - Sabine Zinn, Jutta Gampe, Jan Himmelspach & Adelinde M. Uhrmacher
- Agent-Based Stochastic Simulations of Shipboard Disease Outbreaks
 - Bin Yu, Jijun Wang, Michael McGowan & Ganesh Vaidyanathan
- An Agent-Based Approach to Modeling Yard Cranes at Seaport Container Terminals
 - Nathan Huynh & Jose M. Vidal

1:30 - 3:00

Session: WIP I (Modeling Concepts)

- Multiple Worlds: A Formalism For Simulation Based Design
 - Michele Fumarola, Mamadou Seck & Alexander Verbraeck
- On using Design Patterns for DEVS Modeling & Simulation Tools
 - Hamri Maaamar
- Activity Regions in Discrete-Event Systems
 - Alexandre Muzy, Luc Touraille, Hans Vangheluwe, Olivier Michel, David R.C. Hill & Mamadou Kaba Traoré

(continued)

Symposium on Theory of Modeling & Simulation - DEVS Integrative M&S Symposium (DEVS) (continued)

3:30 - 5:00

Session: WIP II (Simulation Approaches)

- Adapting Forces Modeling & Simulation Applications for Use on High Performance Computational Systems
 - Christina Bouwens, Steven Barnes, David Pratt & Peter Melim
- An Advanced Simulation Approach for Parallel DEVS with Ports
 - Pawletta Thorsten & Schwatinski Tobias
- Performance Evaluation of Test Process Based on Stochastic Models
 - Marcelo Marinho

Thursday, April 15th

8:30 - 10:00

Session: WIP III (Simulations Interoperability)

- DEVS Based Plug-in Framework For Interoperability of Simulators
 - Jang Won Bae & Tag Gon Kim
- Synchronizing DEVS/SOA Simulator with Ping Monitoring Application
 - Jonathan Gibbs & Hessam Sarjoughian
- System Entity Structure For XML Meta Data Modeling; Application to the Logistics
 - Youngshin Han, Taekyu Kim, Chungman Seo & Chilgee Lee

Emerging M&S Applications in Industry & Academia Symposium (EAIA)

General Chair: Dr. Andreas Tolk, Old Dominion University, USA

Tracks:

- Modeling & Simulation in Engineering (MSEng)
- Modeling & Simulation in Education (MSE)
- Business & Industry (BIS)

All EAIA sessions will be in the Forum East 2 room.

Monday: M&S & Education (MSE)

Chair: Ginger Watson-Papelis

1:30 - 3:00

- Meeting the Challenges of STEM Education: Teaching Modeling & Simulation with Real-World Applications
 - Catherine Banks & Sokolowski John
- Simulation Methodology Considerations for Instructional Applications
 - Yiannis Papelis & Ginger Watson

Tuesday: M&S & Engineering (MSEng)

Chair: Andreas Tolk, Patrick Hester

8:30 – 10:00

Session 1 - Optimization in Engineering

- Using Optimization Coupled with Simulation to Construct Layout Solutions
 - Rafael Diaz, Virginia Modeling Analysis & Simulation Center, Old Dominion University, USA
- Supporting the Design of Automated Container Terminals with Multiple Worlds Concept
 - Michele Fumarola, Mamadou Seck, Alexander Verbraeck, Systems Engineering Group, Faculty of Technology, Policy & Management, Delft University of Technology
- HOV Lane Performance Assessment through Operational, Environmental Impacts & Cost Benefit Analysis
 - Virginia Sisiopiku, Ozge Cavusoglu, Department of Civil, Construction & Environmental Engineering, The University of Alabama at Birmingham
 - Saiyid Sikder, Planning Commission, Sher-e-Bangla Nagar, Dhaka, Bangladesh

(continued)

Emerging M&S Applications in Industry & Academia Symposium (EAIA) (continued)

10:30 – 12:00

Session 2 - System Architecture Engineering

- Executing Architecture & the Role of Simulation Modeling
 - Richard Weston, Zihua Cui, Oratai Vacharaphol, MSI Research Institute & UK CECA, Wolfson School, Loughborough University, UK
- Methodology supporting Architecture Validations
 - Johnny Garcia, SIMIS Inc.
- Immersive Engineering
 - Joe Kleiss, United States Army, Armament Research, Development & Engineering Center, Rock Island, Ill. USA

1:30 - 3:00

Session 3 - Systems Engineering

- Applying Methods of the M&S Spectrum for Complex Engineering
 - Patrick Hester, Andreas Tolk, Department of Engineering Management & Systems Engineering, Old Dominion University, USA
- A Generic Open-Source Animator based on X3D & XML
 - Patrick Kirchhof, Kevin Suske, Pasqual Döhning, University of Osnabruck, Department of Production Management & Information Systems, Germany
- Modeling & Simulation in Modern Systems Engineering
 - Joseph Barjis, Department of Systems Engineering, Faculty of Technology, Policy & Management, Delft University of Technology, Delft, The Netherlands

(continued)

Emerging M&S Applications in Industry & Academia Symposium (EIAA) (continued)

3:30 - 5:00

Session 4 - Advanced Applications

- Interoperability for Simulation of Sustainable Manufacturing
 - Guodong Shao, Manufacturing Simulation & Modeling Group, National Institute of Standards & Technology, USA
 - Nils Bengtsson, Björn Johansson, Production Modeling Corporation, Gothenburg, Sweden
- The Impact of Different Decision Behavior Models of Emergency Physicians on the Performance of Emergency Departments
 - Che-Hung Tsai, Cheng-Ching General Hospital, Taiwan
 - Shao-Jen Weng, Ching-Ya Huang, Chang-Yu Yang, Jing-Yi Li, Kuang-Ting Tsai, Department of Industrial Engineering, Tunghai University, Taiwan
- Logic Deduction Agent Based Distributed Parallel Platform on HITL Simulation Systems
 - Fuqing Wang, Dong Wei, Yindong Ji, Tsinghua National Laboratory for Information Science & Technology, Department of Automation, Tsinghua University, Beijing, China

Wednesday: Business & Industry (BIS)

Chair: Agostino Bruzzone, Francesco Longo

0830 - 1000

- Inventory Control With Products Returns: A State Of The Art Overview
 - Agostino Bruzzone, Antonio Cimino, Rafael Diaz & Francesco Longo
- Enhancing Complex System Performance Using Discrete-Event Simulation
 - Glenn Allgood, Mohammed Olama & Joe Lake
- Forecasting Models for Non Continuative Production Systems Application in Fashion Industry
 - Agostino Bruzzone, Marina Massei & Luca Pierfederici

1030 - 1200

- Simulation-Based Business Decision Support for Multi-Site Supply Chain Management
 - Arief Adhitya & Rajagopalan Srinivasan
- Solvability of Formal Verification Problem for Business Process Templates
 - Armen Kostanyan, Samvel Shoukourian & Anna Varosyan
- Empty Containers Repositioning: A State Of The Art Overview
 - Antonio Cimino, Rafael Diaz, Francesco Longo & Giovanni Mirabelli

(continued)

Emerging M&S Applications in Industry & Academia Symposium (EAIA) (continued)

1:30 - 3:00

- Study & modelling of very flexible lines through simulation
 - Alessandro Silvestri, Domenico Falcone, Antonio Forcina, Gianpaolo Di Bona & Antonio Pacitto
- Modeling & Simulation of Storage Space allocation at TPL systems
 - Ming Zhou, Yanchun Pan & Zhimin Chen
- Improving Service of Access on a Logistics Platform
 - Martha Garzon & German Mendez

3:30 - 5:00

- The Induced Probabilistic OWA Distance & its Application in Decision Making
 - Jose M. Merigo & Montserrat Casanovas
- Steering projects through simulation: an innovative tool to improve projects guidance efficiency
 - Luisa Falivene, Massimo de Falco, Raffaele Iannone & Salvatore Miranda

High Performance Computing Symposium (HPC)

General Chair: Adrian Sandu

Vice General Chair: Layne Watson

Program Chair: Will Thacker

Monday HPC sessions will be in Boardroom 3. Tuesday & Wednesday HPC sessions will be in Forum West 2.

Monday

1:30 - 3:00

Keynote Session 1

- Dr. Brian Goldiez, Deputy Director, High Performance Computing, University of Central Florida, Orlando, FL.
- Dr. Roger Smith, Chief Technology Officer, US Army PEO STRI

3:30 - 5:00

Session: Numerical Methods

- Collocation Least-squares Polynomial Chaos Method
 - Haiyan Cheng & Adrian Sandu
- Revisiting Cramer's Rule for Solving Dense Linear Systems
 - Ken Habgood & Itamar Arel
- Block Householder Computation of Sparse Matrix Singular Values
 - Gary W. Howell
- Machine-Efficient Chebyshev Approximation for Exact Arithmetic: their Use With First-Order Ordinary Differential Equations
 - Mohammed Abutheraa & David Lester

Tuesday

8:30 - 10:00

Session: Numerical Optimization

- Obtaining & using second order derivative information in the solution of large scale inverse problems
 - Mihai Alexe, Alexandru Cioaca, Adrian Sandu, Virginia Tech
- Results of Two Global Optimization Algorithms Applied to a Problem in Biomechanics
 - Nicholas Radcliffe, David Easterling, Layne Watson, Michael Madigan, Virginia Polytechnic Institute & State University
 - Kathleen Bieryla, Bucknell University
- Sequential Approximate Optimization in the Problem Solving Environment WBCSim
 - Shubhangi Deshpande, Department of Computer Science, Virginia Tech
 - Layne Watson, Department of Computer Science & Mathematics, Virginia Tech

(continued)

High Performance Computing Symposium (HPC) (continued)

10:30 - 12:00

Session: Parallel Computing Methodologies

- A Parallel Longest Common Subsequence Algorithm in UPC
 - Bryan Franklin & Steven Seidel, Michigan Technological Univ.
- An MPI-based Implementation of Intelligent Agents on Clusters
 - Blesson Varghese, Gerard McKee, Vassil Alexandrov, University of Reading
- Optimizing performance of packet capture in virtual containers of OpenVZ
 - Yi Zhao, Guanyuan Zhang, Jiangning Cui, Institute of Computing Technology, Chinese Academy of Sciences

1:30 - 3:00

Session: Keynote Session 2

- **Dr. Amik St-Cyr, National Center for Atmospheric Research, Boulder, CO**

3:30 - 5:00

Session: Time Stepping

- An efficient error control mechanism for the adaptive 'parareal' time discretization algorithm
 - Bianca Lepsa & Adrian Sandu, Virginia Polytechnic Institute & State University Blacksburg
- Stiffness Detection & Reduction in Discrete Stochastic Simulation of Biochemical Systems
 - Yang Pu, Layne T. Watson, Yang Cao, Virginia Polytechnic Institute & State University
- py_bvp: A Universal Python Interface For BVP Codes
 - Jason Boisvert, Raymond Spiteri, University of Saskatchewan
 - Paul Muir, Saint Mary's University

(continued)

Wednesday

8:30 - 10:00

Session: Accelerators

- Performance Analysis of Cooley-Tukey FFT Algorithms for a Many-core Architecture
 - Long Chen & Guang R. Gao, University of Delaware
- Development & Acceleration of Parallel Chemical Transport Models
 - Paul Eller, Virginia Tech / ERDC
 - Kumaresh Singh, Adrian Sandu, Virginia Tech
- Using GPU to Accelerate a Pin-based Multi-level Cache Simulator
 - Wan Han, Gao Xiaopeng, Long Xiang, Chen Xianqin, Beihang University

10:30 - 12:00

Session: Software & Environments

- Workflows for Parameter Studies of Multi-Cell Modeling
 - Randy Heiland, Maciek Swat, Benjamin Zaitlen, James Glazier, Andrew Lumsdaine, Indiana University
- Increased Efficiency In Finite Element Computations Through Template Metaprogramming
 - Karl Rupp, Institute for Microelectronics, TU Wien
- HPC Based Integrated System for Marine Scientists
 - Mohammed Mujtaba Shareef & Humayun Baig, King Fahd University of Petroleum & Minerals, Dhahran

9th International Conference on Bond Graph Modeling & Simulation (ICBGMS)

General Chair: Professor François E. Cellier, Institut für Computational Science, Zürich, Switzerland

Program Chair: Professor José J. Granda, California State University, Sacramento, USA

All Monday ICBGMS sessions will be held in Legacy South 1. All Tuesday & Wednesday ICBGMS sessions will be held in Forum West 1.

Monday

Room: Legacy South 1

10:30 - 12:00

• WELCOME

- Prof. José J. Granda, ICBGM'2010 Program Chair, California State University, Sacramento USA & Visiting Professor, ETH Zurich, Switzerland

Session: Bond Graph Theory I

Session Chair: Forbes Brown, USA

- Parameter Sensitivities of Transfer Functions & of Residuals
 - Wolfgang Borutzky, Bonn-Rhein-Sieg University, Sankt Augustin, Germany
- Using Factored Bond Graphs for Distributed Diagnosis of Physical Systems
 - Indranil Roychoudhury, Gautam Biswas & Xenofon Koutsoukos, SGT, Inc., NASA Ames Research Center, Moffett Field, CA. USA
- Modeling Considerations for Nano-Systems Using Bond Graph Techniques
 - Luke Gibbons, José Granda, California State University, Sacramento

1:30 - 3:00

Session Chair: Josko Deur, Croatia

Session: Thermodynamics, Energy & Tools

- Simulation Software for Thermodynamic Models, Part 1
 - Forbes Brown, Professor emeritus, Lehigh University, Bethlehem, PA USA
- Simulation Software for Thermodynamic Models, Part 2
 - Forbes Brown, Professor emeritus, Lehigh University, Bethlehem, PA USA
- Coupling of classical & renewable energy sources. Modeling & power flow management.
 - Roberto Sanchez, Frédéric Colas, Geneviève Dauphin-Tanguy & Xavier Guillaud, Ecole Centrale de Lille BP 48, 59651 Villeneuve d'Ascq Cedex, France

(continued)

3:30 – 5:00

Session Chair: TBD

Session 3: Robotics & Control Systems

- Observer for an omnidirectional mobile robot
 - Naima Hadji & Ahmed Rahmani, University of Lille, France
- Force Control in Single DOF Dual Arm Cooperative Space Robot
 - Haresh Patolia, P. M. Pathak & S. C. Jain, Robotics & Control Laboratory Mechanical & Industrial Engineering Department , Indian Institute of Technology, Roorkee, India
- Steady State of a Planar Robot: A Bond Graph Approach
 - Gilberto Gonzalez & Aaron Padilla, University of Michoacan, Faculty of Electrical Engineering, Mexico

Tuesday

Room: Forum West 1

8:30 - 10:00

Session 4: Plenary Session

Session Chair: José Granda, U.S.A.

- Toward Green Mobility: Integrating Electric Drive Vehicles & Smart Grid Technology
 - Professor Jeffrey L. Stein, Department of Mechanical Engineering, University of Michigan, USA

10:30 - 12:00

Session 5: Mechatronics Systems

Session Chair: Dean Karnopp, USA

- A Bond Graph Model of an Electromagnetic Launcher
 - Michael Bryant, Department of Mechanical Engineering.
- Bond Graph Modeling of Series-Parallel Hybrid Electric Vehicle Power Train Dynamics
 - Josko Deur, Mihael Cipek & Josko Petric, University of Zagreb, Croatia
- Reconfiguration of Four Legged Walking Robot for Actuator Faults
 - Krishnan L V, P M Pathak, S C Jain & A K Samantaray, Robotics & Control Laboratory Mechanical & Industrial Engineering Department, Indian Institute of Technology, Roorkee

(continued)

1:30 - 3:00

Session Chair: Gregorio Romero, Spain

Session 6: Mechanical Systems

- Bond Graph Modeling of a Cracked Rotor
 - Vikas Rastogi & Chandan Kumar, Mechanical Engineering Department Sant Longowal Institute of Engineering & Technology Longowal, Punjab, India
- The Effect of Weight on Bit on the Contact Behavior of Drillstring & Wellbore
 - Ahmad Ghasemloonia, Geoff Rideout & Stephen Butt, Faculty of Engineering Memorial University St. John's-NL Canada
- Bond Graph for a Finite Element of a Beam Subjected to Axial Force & Lateral Excitation, with Applications
 - Vjekoslav Damic & Majda Cohodar, University of Dubrovnik, Department of Mechanical Engineering, Dubrovnik, Croatia
- Finite Element Bond Graph Model of Rotors
 - Mohsen Nakhaeinejad, Sanghoon Lee & Michael Bryant, Mechanical Engineering. University of Texas

3:30 – 5:00

Session 7: Biomechanics & Industrial Applications

Session Chair: Geoff Rideaut, Canada

- Modelling & simulation of a Thrombectomy Probe applied to the Middle Cerebral Artery by using the Bond Graph technique.
 - Gregorio Romero, Irene Higuera, Jesús Félez, Gilliam Pearce & Neil D Perkinson, Universidad Politécnica de Madrid, Spain
- Pseudo Bond Graph for Fault Detection & Isolation of an Industrial Chemical Reactor Part I: Bond Graph Modeling
 - Rafika El Harabi, Belkacem Ould Bouamama, Mohamed Kony Ben Gayed & Momamed Naceur Abdelkarim, Ecole Polytechnique Universitaire de Lille, France.
- Pseudo Bond Graph for Fault Detection & Isolation of an Industrial Chemical Reactor Part II: FDI System Design
 - Rafika El Harabi, Belkacem Ould Bouamama, Mohamed Kony Ben Gayed & Mohamed Naceur Abdelkrim, Ecole Polytechnique Universitaire de Lille, France

(continued)

Wednesday, April 14

Room: Forum West 1

8:30 - 10:00

Session 8: Bond Graph Theory II

Session Chair: TBD

- Understanding Structural Problems in Structural Damping with Bond graphs
 - Dean Karnopp, Department of Mechanical & Aeronautical Engineering, University of California, Davis
- Two-equation traffic flow models framed within the bond graph theory
 - Catalin Marian Chera, Jorge Luis Baliño & Geneviève Dauphin-Tanguy, Laboratoire d'Automatique, Genie Informatique et Signal, Ecole Centrale de Lille, France
- Bond Graph Representation of Standard Interconnection Model
 - Mariem El Feki, Wilfrid Marquis-Favre, Laurent Krähenbühl & Daniel Thomasset, AMPERE laboratory, INSA-Lyon, France

10:30 - 12:00

Session 9: Ground & Aerospace Vehicles

Session Chair: Felix Soto, NASA USA

- Identifying An Aircraft Fuel Pump Failure Using Bond Graph Modeling
 - Donald Margolis, Department of Mechanical & Aeronautical Engineering, University of California Davis, CA USA
- Flexible Truck Modeling & Investigation of Coupling Between Rigid & Flexible Dynamics
 - D. Geoff Rideout & M. Tanveer Khan, Faculty of Engineering & Applied Science Memorial University St. John's, NL Canada
- Bond Graph Dynamic Modeling & Stabilization of a Quad-Rotor Helicopter
 - Mohammed Raju Hossain, Geoff Rideout & Nicholas Krouglicof, Instrumentation Control & Automation Lab (INCA) Faculty of Engineering & Applied Science, Memorial University, Canada

Military Modeling & Simulation Symposium (MMS)

General Chair: Dr. Paul Roman, Royal Military College of Canada, Canada

Program Chair: LTC Robert Kewley, PhD, Director of Information Engineering, Systems Engineering Department, US Military Academy at West Point, USA

Monday 12 April

Room: Salon 1

1:30 – 3:00

MMS Keynote:

- **COL David A Smith, Commander, Marine Corps Training Systems Command**

3:30 -5:00

Paper Session: Serious Games

Session Chair: Roger Smith, Chief Technology Officer, US Army PEO STRI

- Applying Advanced User Models & Input Technologies to Augment Military Simulation-Based Training
 - Bruno Emond, H el ene Fournier & Jean-Fran ois Lapointe
- Serious Games & Small Unit Tactical Decision Making
 - Thomas Biedermann
- Serious Games for First Person Thinker
 - Matthew Crozier, Alexander Moore & Thomas Verna

Tuesday 13 April

Room: Legacy South 3

8:30 - 10:00

Panel Session: Virtual Worlds: Is There a Future With Serious Role-Playing Games for Learning Using Open Meatverses?

Panel Chair: Andrew Stricker (Air University)

- Overview of Collaborative Design-Build Framework Used to Support the Exploration of Serious Role-Playing Games for Learning in Second Life.
 - Dr. Andrew Stricker (Air University), Ms. Jeanne Holm (NASA/Jet Propulsion Laboratory), & Mr. Mike McCrocklin (Air University):
- Lessons Learned With Individual & Team Assessment Methods Used in Serious Role-Playing Games for Learning in Second Life.
 - Dr. Cynthia Calongne (Colorado Technical University) & Ms. Toni Scribner (Air University)
- Faculty Perspectives on Challenges & Opportunities for Using Serious Role-Playing Games for Learning in Second Life for Professional Military Education.
 - Dr. Philomeno Arenas (Squadron Office College) & Dr. Kimberly Combs Hardy (Holms Center, Air University)

(continued)

Military Modeling & Simulation Symposium (MMS) (continued)

8:30 - 10:00

Panel Session: Unmanned System Challenges Facing the US Military

Panel Chair: Dr. Stephanie Lackey, UCF Institute for Simulation & Training

Panelists:

- Advancing R&D for Unmanned Weapon Systems (Remote to Autonomy)
 - Irwin Hudson, Research Development Engineering Command (RDECOM)– US Army perspective
- Unmanned Air System Team Training Issues
 - William Becker, Ph.D., Naval Post-Graduate School (NPS) – US Marine Corps perspective
- HSI Implications for Unmanned Systems
 - James Pharmer, Ph.D., Naval Air Warfare Center Training Systems Division (NAWCTSD) – US Navy perspective
- Air Force Predator Training Challenges & Lessons Learned
 - Robert Nullmeyer, Ph.D., Air Force Research Laboratory (AFRL) – US Air Force perspective

10:30 - 12:00

Panel Session: A Path Forward: Advancing the Science of UxV Operations & Training

Panel Chair: Dr. Kevin Stagl, Senior Research Scientist, CHI Systems, Inc.

- Human-Robot Teams
 - Aaron A. Pepe, CHI Systems, Inc.
- Interoperability of Simulated & Real Unmanned Systems in Distributed Simulations
 - Daniel Barber, UCF Institute for Simulation & Training
- Understanding the Embodied, Enactive, & Embedded Qualities of Unmanned Systems
 - Stephen Fiore, University of Central Florida
- Training UAS Operators for Overseas Contingency Operations
 - Dr. Kevin Stagl, Senior Research Scientist, CHI Systems, Inc.

12:00 – 1:00

Lunchtime Demonstration

- Training Cooperative Engagements Between Unmanned Aircraft Systems & Attack Helicopters in VBS2
 - Scott Billie, West Point Department of Systems Engineering

(continued)

Military Modeling & Simulation Symposium (MMS) (continued)

1:30 - 3:00

Panel Session: Automating Instructional Support for Simulation Based Training

Panel Chair: Denise Nicholson

- Automating Instructional Support for SBT: Next-generation Expeditionary Warfare Intelligent Training (NEW-IT)(session abstract)
 - Denise Nicholson
- Automating Instructional Support for SBT: Insights From Field Research
 - Roberto Champney, Laura Milham, Tiffany Parrish, Christina Kokini & Kay Stanney
- Automating Instructional Support for SBT - Instructional Strategies for Scenario-based Training: Insights from Applied Research
 - Jennifer Fowlkes, Sae Schatz & Kevin Stagl
- Automating Instructional Support for SBT - Insights from Empirical Metacognitive Research
 - Jennifer Vogel-Walcutt & Stephen Fiore
- Automating Instructional Support for SBT - Developing an Instructor Support System for Scenario-Based Training
 - John Kropewnicki, Derek Fry & John Poyau

3:30 - 5:00

Paper Session: Optimization

- Maintenance Planning Using Simulation Based Optimization
 - Erik Johansson
- Research Advances in Automated Red Teaming
 - James Decraene, Fanchao Zeng & Malcolm Low
- A Constraint-based Solver for the Military Unit Path Finding Problem
 - Louise Leenen, Johannes Vorster & Willem Hermanus le Roux

Wednesday 14 April

8:30 – 10:00

Panel Session: Serious Games & Virtual Worlds - Building the Puzzle Without a Picture

Chair: Dr. Paul Roman, Royal Military College, Canada

Panelists:

- Roger Smith, Ph.D., Chief Technology Officer PEO STRI
- Andrew Stricker, Ph.D., Air University
- Michael Macedonia, Ph.D., Vice-President Technology, SAIC
- Peter Morrison, CEO Bohemia Interactive Australia

(continued)

Military Modeling & Simulation Symposium (MMS) (continued)

10:30 - 12:00

Paper Session: Soldier Systems

Chair: Rob Kewley

- A Preliminary Investigation into the Modeling & Simulation of Engagement Decision-making Processes & Encumbrance
 - Daniel Rice, Mitha Andra & Dale Malabarba
- Further Explorations in Primitives of Meaning
 - Charles Turnitsa, Andreas Tolk & Robert Kewley

12:00 – 1:00

Lunchtime Demonstrations

- Modeling & Simulation using IWARS 2.0
 - Mitha Andra & Daniel Rice
- A human-in-the loop approach for representing populations in virtual & constructive simulations
 - Jerome Levesque, Francois Cazzolato & Robin Harrap
- Enhanced Expert Field Medical Training Simulations & their effect on the Modern Combat Life Saver Training Procedures
 - Radha Kuskuntla, Eric Imsand & Drew Hamilton

1:30 - 3:00

Paper Session: Simulation Based Training

Chair: Paul Roman

- A Scenario Generation Framework for Automating Instructional Support in Scenario-based Training
 - Glenn Martin & Charles Hughes
- What Information Does this Question Convey? Leveraging Help-Seeking Behavior for Improved Modeling in a Simulation-Based Intelligent Tutor
 - Jeremiah Folsom-Kovarik, Sae Schatz, Gita Sukthankar & Denise Nicholson
- Go With the Flow: Engagement Factors for Learning in Second Life
 - Karen Cooper

(continued)

Military Modeling & Simulation Symposium (MMS) (continued)

3:30 - 5:00

Panel Session: Simulation Based Training for Irregular Warfare

Chair: Sae Schatz

- Special Operations Forces Virtual Rehearsal
 - Chip Bowlin
- Blended Solutions for Counter-IED Training
 - Jerzy Jarmasz
- The Human Terrain: A Necessary Training Component for the Contemporary Training Environment
 - Jérôme Levesque
- Lessons Learned in the Design & Development of a Scenario-Based Cultural Training System
 - Tom Santarelli
- SBT for Irregular Warfare: Challenges for Team Performance Measurement
 - Joan Johnston

Thursday 15 April

Room: Forum East 3

0830 - 1000

Panel Session: Emerging Targets for Simulation Based Training

Chair: Sae Schatz

- Small Unit Excellence
 - Clarke Lethin
- Modeling & Simulation for Human Performance in Extreme Environments
 - Jason Kring
- Neurocognitive Enhancements to Scenario Based Training for Warfighter Intuition
 - Joseph Cohn, Tracey Wheeler, & Mike Lowe
- Human-Robot Collaboration
 - Daniel Barber

8:30 - 10:00

Paper Session: Unmanned Systems & Interoperability

Chair: Dr. Stephanie Lackey

- The Impact of Unmanned Weapon Systems on Individual & Team Performance
 - Eric Ortiz, Stephanie Lackey, Jonathan Stevens & Irwin Hudson
- Simulation of Fully Autonomous Control of Unmanned Air Vehicles for Maritime Surveillance
 - Luke Ng, Paul Hubbard & Siu O'Young
- Defining the Entity Transfer Interoperability Reference Model for Military Applications
 - Miguel Serna, Fernando Sevillano, Marta Beltran & Antonio Guzman

(continued)

Military Modeling & Simulation Symposium (MMS) (continued)

10:30 - 12:00

Paper Session: Simulation Formalisms

- A Cordon & Search Model & Simulation using Timed, Stochastic, Colored Petri Nets for Robust Decision-Making
 - Paul Maxwell, Anthony Maciejewski, H.J. Siegel & Jerry Potter
- DEVS based Validation of Warship Anti-Air Defense Doctrine
 - JeongHoon Kim, ChangBeom Choi, IlChul Moon & TagGon Kim
- Application of RT-DEVS in Military
 - Mohammad Moallemi, Dieynaba Alpha Tall, Gabriel Wainer & Antoine Awad

10:30 - 12:00

Room: Forum East 2

Joint Session with SISO: Modeling Human Social & Cultural Behavior

Chair: Rob Kewley

- Enabling Psychological Operations in Simulation
- Joe Gonzalez
- Visualizing the Human, Social, Cultural & Behavioral Components of a Complex Conflict Ecosystem
- Jonathan Alt, Stephen Lieberman & Thomas Anderson
- Violent Extremist Network Representation & Attack the Network Course of Action Analysis in Social Simulation
- Jonathan Alt, Stephen Lieberman & Sean Everton

1:30 - 3:00

Panel Session: Dual-Use Modeling & Simulation

Chair: Sae Schatz

- Dual-Use Application of Non-Player Game Characters from Defense to Medical Training
 - Wayne Zachary
- Leveraging DoD Technologies to Benefit DHS Law Enforcement Training
 - Henry Marshall
- FAA Modeling & Simulation Needs for Future NEXTGEN Research
 - Ferne Friedman-Berg, Ph.D. & Ben Willems
- Multi-Agency Collaboration Experimentation in Emergency Response
 - Valerie J. Gawron

Symposium on Simulation for Architecture & Urban Design (SSAUD)

General Chair: Azam Khan, Autodesk Research

All SSAUD sessions will be held in Forum West 3.

Monday, April 12

1:30 – 3:00

Session: Beyond Simulation

Session Chair: Ramtin Attar

- Beyond Simulation: Designing for Uncertainty & Robust Solutions
 - Sean Hanna, Lars Hesselgren, Victor Gonzalez & Ignacio Vargas, University College London, PLP Architecture, Next Limit Technologies
- Schedule-Calibrated Occupant Behavior Simulation
 - Rhys Goldstein, Alex Tessier & Azam Khan, Autodesk Research

3:30 – 5:00

Session: Generative Approaches

Session Chair: Torben Berns

- Real-Time Design Feedback
 - Paola Sanguinetti, Marcelo Bernal, Maher El-Khaldi & Matthew Erwin, Georgia Institute of Technology
- Explorations of Agent-based Simulation for Architectural Design
 - Nick Puckett, University of Kentucky
- Programming in the Model: Contextualizing Computer Programming in CAD Models
 - Maryam M. Maleki & Robert F. Woodbury, School of Interactive Arts & Technology, Simon Fraser University

Tuesday, April 13

8:30 – 10:00

Session: Life Support

Session Chair: Richard Howard

- Integrating Building Information Modeling & Cell-DEVS Simulation
 - Ahmed Sayed Ahmed, Gabriel Wainer & Samy Mahmoud, Carleton University
- A Method for Simulating NOx Dispersion in an Urban Area Using ENVI-met
 - Francisco Rasia & Eduardo Krüger, Federal Technological University of Paraná
- Space Perception & Luminance Contrast
 - Nan-Ching Tai & Mehlika Inanici, University of Washington, Department of Architecture

(continued)

Symposium on Simulation for Architecture & Urban Design (SSAUD) (continued)

10:30 – 12:00

Session: Architect-oriented

Session Chair: Virginia P. Sisiopiku

- Toward Architect-friendly Energy Evaluation Tools
 - Lieve Weytjens & Griet Verbeeck, Hasselt University
- Multi-Objective Optimization in Architectural Design
 - Ian Keough & David Benjamin, Buro Happold Consulting Engineers & Columbia University Graduate School of Architecture
- Finding Synergy in Simulation, Modeling by Architects & Engineers in Conceptual Design
 - Alexander Hirsig, Harvard University Graduate School of Design

1:30 – 3:00

Session: The Power of Data

Session Chair: Nick Puckett

- 210 King Street: A Dataset for Integrated Performance Assessment
 - Ramtin Attar, Venk Prabhu, Michael Glueck & Azam Khan, Autodesk Research
- Intuitive Structures: Applications of Dynamic Simulations in Early Design Stage
 - Andrzej Zarzycki, New Jersey Institute of Technology
- Exploring Parametric BIM as a Conceptual Tool for Design & Building Technology Teaching
 - Andrzej Zarzycki, New Jersey Institute of Technology

3:30 – 5:00

Session: Community Panel #1

Session Chair: Torben Berns

- To help steer the building simulation community toward a whole system design, we call on the community to participate in this group discussion of practical ways to drive toward a common goal.

Symposium on Simulation for Architecture & Urban Design (SSAUD) (continued)

Wednesday, April 14

8:30 – 10:00

Session: Augmented Reality

Session Chair: Ivanka Iordanova

- DeskCube: using Physical Zones to Select & Control Combinations of 3D Navigation Operations
 - Michael Glueck, Sean Anderson & Azam Khan, Autodesk Research
- Input Devices for Interactive Architectural Visualization
 - Ultan Byrne & Tom Bessai, John. H. Daniels Faculty of Architecture, Landscape & Design, University of Toronto
- Augmented Reality Framework supporting Conceptual Urban Planning, enhancing the Awareness for Environmental Impact
 - Holger Graf & Pedro Santos, Fraunhofer Institute

10:30 – 12:00

Session: Transportation

Session Chair: Azam Khan

- Supporting Outdoor Mixed Reality Applications for Architecture & Cultural Heritage
 - Pedro Santos, Dominik Acri, Thomas Gierlinger, Hendrik Schmedt & André Stork, Fraunhofer Institute & TU-Darmstadt
- Conversion of One- to Two-Way Streets in Birmingham Downtown: A Feasibility Study
 - Virginia Sisiopiku, Jugnu Chemmannur & James Brown, The University of Alabama at Birmingham, TRIA, Inc., Gonzalez-Strength & Associates, Inc.
- Virtual Driving & Eco-Simulation
 - Christopher J. Grasso, Michael J. McDearmon & Yoshihiro Kobayashi, Forum8AZ & Arizona State University

Symposium on Simulation for Architecture & Urban Design (SSAUD) (continued)

1:30 – 3:00

Session: Superstructure

Session Chair: Yoshihiro Kobayashi

- Associative modelling of Multiscale Fibre Composite Adaptive Systems
 - Maria Mingallon, Sakthivel Ramaswamy & Konstantinos Karatzas, Architectural Association School of Architecture
- LibreArchi: Library of Interactive Architectural Models Containing Exploratory & Didactic Simulations
 - Ivanka Iordanova & Temy Tidafi, Université de Montréal, Canada
- BIM-based Building Dashboard
 - Ramtin Attar, Ebenezer Hailemariam, Michael Glueck, Alex Tessier, James McCrae, Azam Khan, Autodesk Research
- Project Metropolis: Digital Cities
 - Richard Howard, Autodesk Inc.

3:30 – 5:00

Session: Community Panel #2

- **Introducing DEVS for Collaborative Building Simulation Development**
 - **Rhys Goldstein and Azam Khan, Autodesk Research**

To accurately predict a building's energy use patterns, numerous interacting subsystems must be simulated in combination. These subsystems include indoor and outdoor climates, HVAC equipment, and occupant behavior, among others. We envision a collaborative simulation development process in which different researchers model different subsystems, then combine their work to produce realistic simulations of entire buildings. The problem is that models embedded in different simulation tools are rarely easy to integrate. In this tutorial we will introduce the audience to DEVS, and demonstrate how the formalism can be used to integrate models and encourage collaboration.

Posters

General Chair: Dr. Abdolreza Abhari, Ryerson University, Toronto, Ontario, Canada

Tuesday, April 13, 1:00 - 2:00 & 3:00 - 4:00

- Two-Way Material Transportation Method Based on 300mm Wafer FAB Line Simulation
 - youngshin Han & Chilgee Lee
- A Formal Approach to Protocol Offload for Web Servers Applied to a TCP Offload Engine & Web Traffic
 - Juan Sola-Sloan
- Unmanned Aerial Systems: The Role of the Operator & Human Factor Implications
 - Benjamin Goldberg
- Procedural Generation Of Building Blueprints for Real-Time Applications
 - Daniel Sanchez, Juan Sola-Sloan & Elio Lozano
- Mobile Mash-up Model Based on Hybrid P2P using Ajax Technology
 - Haleh Khojasteh & Abdolreza Abhari
- Genetic Algorithms: An Approach to Optimal Web Cache Replacement
 - Fouad Butt & Abdolreza Abhari
- Enhancing Broadcast Authentication in Sensor Networks
 - Arayeh Norouzi, Abdolreza Abhari & Truman Yang
- A Verification Method for Web Service Composition based on Discrete Event System Modeling & Simulation
 - Seong Yong Lim, Jongmoon Baik, Hojin Choi & Dan Hyung Lee
- Modeling the Streaming Functionality for BitTorrent
 - Shahin Talaei & Abdolreza Abhari
- Reactive Monitoring of Aggregates in Gaussian Random Field over Wireless Sensor Networks
 - Amin Mohtasham, Ahmad Khonsari & Abdolreza Abhari
- Gender Change in Certain Species - An Agent-Based Modeling Study
 - Jun Zhang, Mahmoud Khasawneh & Shannon Bowling
- Semantics-Based Asynchronous Speculative Locking Protocol for Improving the Performance of Read-only Transactions
 - Ragnathan Thirumalaisamy, Polepalli Krishna Reddy & Mohit Goyal
- Evaluating Usability & Precision of Visual Search Engine
 - Leyla Zhuhadar & Olfa Nasraoui
- Using the Intel MPI Benchmarks (IMB) to Evaluate MPI Implementations on an Infiniband Nehalem Linux Cluster
 - Ahmed Bukhamsin, Mohamad Sindi & Jallal Al-Jallal
- Applying Data-flow Analysis to Models - A Novel Approach for Model Analysis
 - Christian Saad & Bernhard Bauer

(continued)

Posters (continued)

- Kronecker Descriptor Partitioning for Parallel Algorithms
- Ricardo M. Czekster, Cesar A. F. De Rose, Paulo Fernandes, Antonio M. de Lima & Thais Webber
- A Novel Approach to Visual CA Modeling
- Hessam Sarjoughian, Sajjan Sarkar & Gary Mayer

Handouts

See the **SpringSim'10** handout packet for:

- Hotel maps
- Last minute changes
- Conference at-a-glance layouts