

# SCSC 2010 Program

Co-sponsored by ACM

## General Chair

Gabriel Wainer, Carleton University, Canada

## Program Chairs

Mhamed Itmi, INSA Rouen, France

Peter Kropf, Université de Neuchâtel, Switzerland

Andreas Tolk, Old Dominion University, USA

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## DAY 1 – Monday 12 July

Opening Session and Keynote Speaker

8:30-10:00

SCSC 2010/SummerSim 2010 keynote

Room: Ballroom Section B

Keynote Speaker: *Azzedine Boukerche (SITE, University of Ottawa)*

**Distributed Simulation System - a Necessary Public Security and Safety Testbed for an Urban Emergency Preparedness Class of Applications.**

## Agent-Directed Simulation – Track Chair: Tuncer Ören and Levent Yilmaz

Room: Richelieu

10:30 – 12:00 Session ADS1 Applications

Session Chair: *Tuncer Ören*

An Agent-based Model of the Anopheles gambiae Mosquito Life Cycle

*Ying Zhou, S. M. Niaz Arifin, James Gentile, Steven Kurtz, Gregory Davis, Barbara Wendelberger and Greg Madey*

Towards a Deliberative Agent System based on DEVS Formalism for Application in Agriculture

*Mahuna Akplogan, Gauthier Quesnel, Frédéric Garcia, Alexandre Joannon and Roger Martin-Clouaire*

Modeling with Non-cooperative Agents: Destructive Search for Randomly Located Objects

*Dragos Calitoiu and Dan Milici*

**13:30 – 15:00 Session ADS2 Analysis and Methodology**

*Session Chair: Tuncer Ören*

P-SAM: A Post-Simulation Analysis Module for Agent-Based Models

*S. M. Niaz Arifin, Ryan C. Kennedy, Kelly E. Lane, Gregory R. Madey, Agustin Fuentes and Hope Hollocherò*

Enhanced Network Modeling in ABSNEC

*Richard McCourt and Kevin Ng*

Verification & Validation by Docking: A Case Study of Agent-Based Models of *Anopheles gambiae*

*S. M. Niaz Arifin, Gregory J. Davis, Ying Zhou and Gregory R. Madey*

**15:30 – 17:00 Session ADS3 Agent Modeling and Executable Architectures**

*Session Chair: Andreas Tolk*

Executable Architectures

*Edwin Shuman*

Adding Executable Context to Executable Architectures: Shifting Towards a Knowledge-Based Validation Paradigm for System-of-Systems Architectures

*Johnny Garcia and Andreas Tolk*

**Business, Management, Planning & Logistics – Track Chair: Agostino Bruzzone**

**Room: Frontenac**

**10:30 – 12:00 Session BIS1 Industry Applications**

*Session Chair: Agostino Bruzzone*

Simulation Analyzes Deadlock Concerns in Automotive Manufacture

*Dominic Baffo, Edward Williams and Onur Ülgen*

A Simulation Approach to Airline Maintenance Manpower Planning

*Massoud Bazargan*

Multiobjective Evolutionary Optimization of a Transportation Fleet with a New Monetary Cost Function

*Slawomir Wesolkowski, Ziad Sakr, Bruno Di Stefano and Anna Lawniczak*

### 13:30 – 15:00 Session BIS2 Hybrid and Emerging Methods

*Session Chair: Rubén Fuentes-Fernández*

A Variable Neighbourhood Search Combining Constraint Programming and Lagrangean Relaxation for Solving Routing Problems

*Rosa Herrero, Daniel Guimarans, Juan José Ramos and Silvia Padrón*

Hybrid Search Algorithm to Optimize Scheduling Problems for TCPN Models

*Miguel Antonio Mujica and Miquel Angel Piera*

Simulation of Vertical Handover Algorithms with NCTUns

*Alexander García, Lina Escobar, Andres Navarro, Adriana Arteaga, Fabio Guerrero and Carlos Salazar*

### 15:30 – 17:00 BIS3 Planning Support

*Session Chair: John Richardson*

A New Dynamic Cell Formation Model by Considering Machine Sequence and Labor-Intensive Situation

*Ali Azadeh, Mohammad Sheikhalishahi and Mohammad Zamanipour*

Simulation and Optimization of the Pre-hospital Care System of the National University of Mexico using Travelling Salesman Problem Algorithms

*Esther Segura, Luis Altamirano and Idalia Flores*

A Modeling Methodology for Process Control in the Automated Manufacturing System

*Hyeong-tae Park, Jong-Geun Kwak, Gi-Nam Wang and Sang-chul Park*

## Simulation in Healthcare and Bioinformatics – Track Chair: Isaac Barjis

**Room: Joliet**

### 10:30 – 12:00 Session BIO1 Biological Systems Simulation

*Session Chair: Jonathan Caux*

Applying the TPS Method to Modeling and Simulation of Biological Systems

*Rhys Goldstein, Nada Farran, Hamel Yigang, Sanaa Lissari and Gabriel Wainer*

Hash Life Algorithm on 3D Excitable Medium Application to Integrative Biology

*Jonathan Caux, David Hill and Pridi Siregar*

Modeling of p53 Signaling Pathway Regulation

*Isaac Barjis, Khalid Samarrai and Ruwaa Samarrai*

**13:30 – 15:00 Session BIO2 Healthcare Simulation and Healthcare Education Simulation**

*Session Chair: Walied Samarrai*

SCHNAPS: A Generic Population-based Simulator for Public Health Purposes

*Audrey Durand, Christian Gagné, Marc-André Gardner, François Rousseau, Yves Giguère and Daniel Reinharz*

Investigating Immune System Aging: System Dynamics and Agent Based Modelling

*Grazziela Figueredo and Uwe Aickelin*

Modeling and Simulation of Cellular Transport Mechanism as a Game

*Isaac Barjis, David Smith and Walied Samarrai*

**Work in Progress – Track Chairs: Mhamed Itmi and Andreas Tolk**

**Room: Joliet**

**15:30 – 17:30 WIP-Session 1**

*Session Chair: Zhanyang Zhang*

Modeling and Simulation Education for the Medical and Health Sciences

*John Sokolowski and Catherine Banks*

Stay at Home, Wash Your Hands: Epidemic Dynamics with Awareness of Infection

*Adam Kleczkowski and Savi Maharaj*

DEVS-based Modeling of a Human Motion Data Synthesis System

*Seyed Ali Etemad and Gabriel A. Wainer*

A Scalable Data Distribution Management Approach

*Shih-Hsiang Lo and Yeh-Ching Chung*

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**Day 2 – Tuesday, July 13**

**KEYNOTE SPEAKER**

**8:00-9:00**

**SCSC 2010/SummerSim 2010 keynote**

**Room: Ballroom Section B**

*Keynote Speaker: John Oommen, (SCS, Carleton University)*

**On Utilizing Dependence-tree Modeling in Arbitrary Simulations**

## Posters – Track Chair: Abdolreza Abhari

Room: ???

9:00 – 10:00 Poster Session

## M&S Body of Knowledge

Room: Seigniory

13:30 – 15:00 Panel organizers: Bill Waite, Chairman and CTO, The Aegis Technologies Group and Tuncer Ören, Emeritus Professor, Founding Director of M&SNet of SCS

*Panel Members:* David Gross, Lockheed Martin  
Andreas Tolk, Old Dominion University  
William Tucker, Boeing  
John Williams, NTSA

## Simulation for Defense & Security – Track Chair: Andreas Tolk

Room: Richelieu

10:30 – 12:00 Session DS1 *Logistics and Personnel*

*Session Chair: Johnny Garcia*

Modeling and Analysis of Canadian Forces RSOM Hubs for Northern Operations  
*Ahmed Ghanmi*

Modeling and Simulation of Airship Logistics Heavy Lift for Military Applications  
*Abderrahmane Sokri and Ahmed Ghanmi*

The Arena Career Modelling Environment - A New Workforce Modelling Tool for the Canadian Forces  
*Antony Zegers and Stan Isbrandt*

13:30 – 15:00 Session DS2 *Tactical Application Support*

*Session Chair: Edwin Shuman*

Tactical Vehicle Fleet Mix Optimization  
*Ahmed Ghanmi, Leanne Stuive and Slawomir Wesolkowski*

DEVS based Underwater Warfare Simulation Development for Effectiveness Analysis  
*Kyung Min Seo, Jeong Hee Hong and Tag Gon Kim*

CoUAV: A Multi-UAV Cooperative Search Path Planning Simulation Environment  
*Jens Happe and Jean Berger*

## Work in Progress – Track Chairs: Mhamed Itmi and Andreas Tolk

**Room: Richelieu**

### 15:30 – 17:30 WIP-Session 2

*Session Chair: Steffen Strassburger*

The Role of MSIAC in Supporting Modeling and Simulation

*Jerry Feinberg, Kriya Kaping and Robert Graebener*

Virtual Intelligence, Surveillance and Reconnaissance Evaluation Environment

*Rahim Jassemi-Zargani, Wayne Robbins, Chris Helleur, Sean Bourdon, Nathan Kashyap and David Campbell*

Simulating Windows-Based Cyber Attacks Using Live Virtual Machine Introspection

*Dustyn A. Dodge, Barry E. Mullins, Gilbert L. Peterson and James S. Okolica*

The Logistics Process Analysis Tool: Combining Agent-Based and Discrete Event Simulation for Improved Logistics Analysis

*Charles Van Groningen, Mary Duffy Braun, Brian Craig, Kathy Lee Simunich and Charles Olson*

## Computer Graphics for Simulation – Track Chair: John Richardson

**Room: Frontenac**

### 10:30 – 12:00 Session CG1 *Web3D and Distributed Simulation API's for CG in Simulation*

*Session Chair: John Richardson*

Analysis of X3D Scene, Web X3D Objects and Media Panoramas

*Jussara Kofuji, Sergio Kofuji and Marcelo Zuffo*

Verbal control of Mathematical Tools for Simulation and Virtual Environments

*John Richardson*

Insight3D: A High Performance Toolkit for Advanced Visualization of Space and Terrestrial Environments

*Graham Beasley*

### 13:30 – 15:00 Session CG2 *Parallel, Semantic and CA techniques for CG in Simulation*

*Session Chair: John Richardson*

N-body Parallel Model of Tumor Proliferation

*Rafal Wcislo, Pawel Gosztyla and Witold Dzwiniel*

CFD Modelling as an Integrated Part of Multi-Level Simulation of Process Plants – Semantic Modelling Approach

*Marek Gayer, Juha Kortelainen and Tommi Karhela*

Dynamic Cloud Simulation Using Cellular Automata and Texture Splatting  
*Eric Upchurch and Sudhansu K. Semwal*

## Work in Progress – Track Chairs: Mhamed Itmi and Andreas Tolk

**Room: Frontenac**

### 15:30 – 17:30 WIP-Session 3

*Session Chair: Lisa Blair*

Route Reasoning-based Mobility Modeling and Simulation for Street Fight using DEVS  
*Kyu Cheol Cho, Sung Ho Jang, Chang Hyeon Noh, Tae Young Kim, Jong Sik Lee, Jae Min Lee, Tae Sup Kim and Kang Sun Lee*

Operators Training in Container Terminals by using Advanced 3D Simulation  
*Antonio Cimino, Francesco Longo and Giovanni Mirabelli*

Cloud Dynamics Simulation with Cellular Automata  
*Alisson Rodrigo and Maury Gouvea Jr.*

Left Ventricle Wall Motion Estimation in Echocardiographic Images  
*Nadia Souag, Saliha Tamrent, Med Mokhtar Djebbour and Abdelaziz Dahmani*

## General Track – Track Chair: Peter Kropf

**Room: Joliet**

### 10:30 – 12:00 Session EMS Emergency Simulation

*Session Chair: Francesco Longo*

A DEVS Fire Jumps Model and Associated Simulations using ForeFire  
*Bahaa Nader, Jean Baptiste Filippi and Paul Antoine Bisgambiglia*

Simulating the Impacts of a New Madrid Earthquake on the Regional Electric Infrastructure  
*Edgar Portante, James Kavicky, Stephen Folga, Gustav Wulfschuhle, Brian Craig and Leah Talaber*

### 13:30 – 15:00: Session GT1 Meshes and Vectors

*Session Chair: Peter Kropf*

A Framework for Modeling Mosquito Vectors  
*James Gentile, Gregory Davis, Brandy St. Laurent and Steve Kurtz*

Accelerating the computation of parallel trajectories of gradient descent with the Cell-BE multiprocessor environment  
*Gabriel Wainer and Yuri Boiko*

Simulating Tightly Intermeshing Co-Rotating Twin Screw Extruders with SIGMA  
*Nils Kretzschmar and Volker Schoepner*

## Work in Progress – Track Chairs: Mhamed Itmi and Andreas Tolk

**Room: Joliet**

**15:30 – 17:30 WIP-Session 4**

*Session Chair: Jerry Feinberg*

A Framework of Intentional Characters for Simulation of Social Behavior  
*Luís César da Costa, Esteban Walter Gonzales Clua, Gilson Antônio Giraldi, Bruno Richard Schulze, Anselmo A. Montenegro and Reinaldo A. C. Bianchi*

Determining Operational Utility of the Cultural Geography Model  
*Lisa Bair and Eric Weisel*

Modeling and Simulation of Conflict and Peacekeeping  
*Mamadou Seck*

Synergy of the Reinforcement and Agent-Based Technique for Finding Optimal Solution in a Predefined Interval  
*Blerim Qela and Hussein Mouftah*

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## Day 3 – Wednesday, 14 July

**Posters – Track Chair: Abdolreza Abhari**

**Room: ???**

**9:00 – 10:00 Poster Session**

**Model-based Design and Simulation – Track Chair: Hiren Patel**

**Room: Laurentian**

**10:30 – 12:00 Session MBD1 M&S Methods**

*Session Chair: Gilbert Arbez*

Conservative vs. Optimistic Parallel Simulation of DEVS and Cell-DEVS: a Comparative Study  
*Shafagh Jafer and Gabriel Wainer*

Enhancing DEVS Simulation through Template Metaprogramming: DEVS-MetaSimulator  
*Luc Touraille, Mamadou K. Traoré and David R.C. Hill*

Using Specification and Description Language to define and implement Discrete Simulation Models  
*Pau Fonseca i Casas*



## Model-based Design and Simulation – Track Chair: Hiren Patel

**Room: Richelieu**

### 13:30 – 15:00 Session MBD2 *Model-based Design*

*Session Chair: Mamadou Seck*

An Activity-Object World View for ABCmod Conceptual Models  
*Gilbert Arbez and Louis Birta*

Creation of DEVS Models using Imitation Learning  
*Michael Floyd and Gabriel Wainer*

Symbolic State-space Inspection of a Class of Dynamic Petri Nets  
*Lorenzo Capra and Walter Cazzola*

## Work in Progress – Track Chairs: Mhamed Itmi and Andreas Tolk

**Room: Richelieu**

### 15:30 – 17:30 WIP-Session 5

*Session Chair: John Sokolowski*

A Game Theoretical Approach to Modeling Full-Duplex Information Dissemination  
*Dmitry Zinoviev and Vy Duong*

Simulation-Based Mapping of Capacity-Dependent General Optimal Market Area Model  
*Zbigniew Pasek and Marzieh Mehrjoo*

A Simulation Model to improve Air Cargo Operations in Passenger Aircraft  
*Miquel Angel Piera Eroles*

Challenges for the Automatic Generation of Simulation Models for Production Systems  
*Bergmann Soeren and Strassburger Steffen*

## Advanced Selected Topics – Track Chair: Gianfranco Fancello

**Room: Frontenac**

### 10:30 – 12:00 Session MA *Microarchitecture and circuits simulation*

*Session Chair: Jose L. Risco-Martin*

Simulating a LAGS Processor to Consider Variable Latency on L1 D-Cache  
*J. Manuel Colmenar, Oscar Garnica, Juan Lanchares and J. Ignacio Hidalgo*

Symbolic Flattening of DEVS Models  
*Bin Chen and Hans Vangheluwe*

Real-Time Step Motor Emulation for Hardware-in-the-Loop Simulation  
*Alvaro Ocegüera, Twan Basten, Lou Somers and Sander Hulsenboom*

### **13:30 – 15:00 Session TRA Simulation for Transportation**

*Session Chair: Gianfranco Fancello*

A Comparative Study on Car Ownership Modeling by Applying Fuzzy Linear Regression and Artificial Neural Network: Case Study of IRAN  
*Koosha Rafiee, Ali Azadeh and Amir-Mohammad Zohrevand*

A Comparison of Artificial Neural Network and Fuzzy Linear Regression in Tire Reliability Analysis  
*Koosha Rafiee, Ali Azadeh and Amir-Mohammad Zohrevand*

Multi-Hop Shortest Path Computation for Rotary Wing Search and Rescue  
*Richard McCourt, Slawomir Wesolkowski, Irene Collin and Andrew Billyard*

### **Work in Progress – Track Chairs: Mhamed Itmi and Andreas Tolk**

**Room: Frontenac**

#### **15:30 – 17:30 WIP-Session 6**

*Session Chair: Savi Maharaj*

Defining Simulation Capabilities for Potential Sea Base Enabler: Innovative Naval Prototype Transformable Craft (T-Craft)  
*Ryan Hernandez*

Markov Process Modeling and Simulation for Wireless Sensor Network Life Estimation with QoS Constrains  
*Zhanyang Zhang and Miriam Tausner*

Simulation of Markovian Models using Bootstrap Method  
*Ricardo M. Czekster, Paulo Fernandes, Afonso Sales, Dione Taschetto and Thais Webber*

Development of Virtual Training Simulators with Modelica  
*Carla Martin-Villalba, Alfonso Urquia and Sebastian Dormido*

## GENERAL TRACK – Track Chair: Gabriel Wainer

**Room: Joliet**

### 10:30 – 12:00 Session GT3 *Integration and Evaluation*

*Session Chair: Pau Fonseca*

Integration of Induction Generator Dynamics in Multimachine System Transient Analysis  
*Abu Rahim and Edwin Nowicki*

Modelling Environmental Impact and Efficiency in Maritime Logistics  
*Agostino Bruzzone, Marina Massei, Francesca Madeo and Federico Tarone*

### 13:30 – 15:00 Session GT2 *Advanced Applications*

*Session Chair: Mamadou Seck*

Simulation of Stream Denitrification for Watershed Model  
*Ping Wang, Gary Shenk and Lewis Linker*

Formal Specification and Analysis of Accelerated Heartbeat Protocols  
*Muhammad Atif and MohammadReza Mousavi*

On Simulating Episodic Events Against a Background of Noise-like Non-episodic Events  
*Colin Bellinger and John Oommen*