

# PROCEEDINGS OF THE 2010 SPRING SIMULATION MULTICONFERENCE

11-15 April – Orlando, FL USA

## 2010 Spring Simulation Multiconference Books:

**Book 1** - Agent-Directed Simulation Symposium (ADS)

**Book 2** - 43<sup>rd</sup> Annual Simulation Symposium (ANSS)

**Book 3** - 13<sup>th</sup> Communications & Networking Symposium (CNS)

**Book 4** - Symposium on Theory of Modeling & Simulation – DEVS Integrative M&S Symposium (DEVS)

**Book 5** - Emerging M&S Applications in Industry & Academia Symposium (EAIA)

**Book 6** - High Performance Computing Symposium (HPC)

**Book 7** - Military Modeling & Simulation Symposium (MMS)

**Book 8** - Symposium on Simulation for Architecture & Urban Design (SimAUD)

**Book 9** - 9<sup>th</sup> International Conference on Bond Graph Modeling & Simulation (ICBGM)

### Production Editors:

Michael J. Chinni

Diane “DJ” Weed

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[www.proceedings.com](http://www.proceedings.com)



Some format issues inherent in the e-media version may also appear in this print version.

**© 2010 SIMULATION COUNCILS, INC.**

Responsibility for the accuracy of all statement in each paper rests solely with the author(s). Statements are not necessarily representative of, nor endorsed by, The Society for Modeling and Simulation International.

Printed by Curran Associates, Inc. (2010)

Permission is granted to photocopy portions of this publication for personal use and for the use of students provided credit is given to the conference and publication. Permission does not extend to other types of reproduction nor to copying for incorporation into commercial advertising nor for any other profit-making purpose. Other publications are encouraged to include 300- to 500-word abstracts or excerpts from any paper contained in this book, provided credits are given to the author and the conference. For permission to publish a complete paper write: The Society for Modeling and Simulation International (SCS), P.O. Box 17900, San Diego, CA 92177, USA.

**Additional copies of the Proceedings are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[curran@proceedings.com](mailto:curran@proceedings.com)  
[www.proceedings.com/0128.html](http://www.proceedings.com/0128.html)

OR

The Society for Modeling  
and Simulation International  
2598 Fortune Way, Ste I  
Vista, CA 92081 USA

ISBN: 978-1-61738-202-4  
PRINTED IN THE UNITED STATES

## Table of Contents: ANSS

<a href="#"><u>Profile-Based Partition for Parallel Simulation of DEVS-FIRE</u></a>	...	3
<a href="#"><u>Simulation of Three Dimensional Elevator System Using Cell-DEVS Formalism</u></a>	...	11
<a href="#"><u>Enhancement of IEEE 802.11 Modules in ns-2 and Performance Evaluation with Error Rate</u></a>	...	19
<a href="#"><u>A Generalized Model between the OWA Operator, the Weighted Average and the Probability</u></a>	...	26
<a href="#"><u>Experimenting with Real Time Simulation Parameters for Fluid Model of Soft Bodies</u></a>	...	32
<a href="#"><u>On Modeling and Simulation of Game Theory-based Defense Mechanisms against DoS and DDoS Attacks</u></a>	...	40
<a href="#"><u>A New Concurrent Mechanism for Distributed Hardware-In-The-Loop Simulation Test System</u></a>	...	48
<a href="#"><u>Iterative Design Process For The Development And Testing Of Cooperative Applications</u></a>	...	56
<a href="#"><u>Driving before Constructing: A New Paradigm in Roadway Design</u></a>	...	62
<a href="#"><u>A Wireless Local Area Network Modeling Tool for Scalable Indoor Access Point Placement Optimization</u></a>	...	67
<a href="#"><u>Intelligent Architecture Through A Supervised Learning Approach in Wireless Multimedia Sensor Networks</u></a>	...	75
<a href="#"><u>Maritime Counter-Piracy Study using Agent-Based Simulations</u></a>	...	82
<a href="#"><u>Scheduling Flow Shops with Multiple Processors: A Flexible ANN-Fuzzy Simulation Approach</u></a>	...	90
<a href="#"><u>Conventional Regression versus Artificial Neural Network in Short-Term Load Forecasting</u></a>	...	96
<a href="#"><u>Optimal Allocation of Operators in a Cellular Manufacturing System by an Integrated Computer Simulation-Genetic Algorithm Approach</u></a>	...	104

<a href="#"><u>Modeling and Optimization of a Purchasing System in Uncertain Environments by an Integrated Fuzzy Business Process Simulation and Data Envelopment Analysis: A Novel Approach</u></a>	...	112
<a href="#"><u>A Parallel Logic Simulation Framework: Study, Implementation, and Performance</u></a>	...	120
<a href="#"><u>A Metamodel and a DEVS Implementation for Component Based Hierarchical Simulation Modeling</u></a>	...	130
<a href="#"><u>Assigning Applications to Servers: A Simulation Study</u></a>	...	138
<a href="#"><u>SFS3: A Simulation Framework for Self-Stabilizing Systems</u></a>	...	143
<a href="#"><u>Information Assurance Modeling Using the Department of Defense Architecture Framework</u></a>	...	152
<a href="#"><u>Consolidating Multi-Simulation Environments For Radio Effects Analysis</u></a>	...	160
<a href="#"><u>Throughput Performance in Multihop Networks using Adaptive Carrier Sensing Threshold</u></a>	...	167
<a href="#"><u>A Replication Structure for Efficient and Fault-Tolerant Parallel and Distributed Simulations</u></a>	...	173
<a href="#"><u>Event-Driven Service-Oriented Simulation Framework</u></a>	...	183
<a href="#"><u>UAV Search Strategies Using Cell-DEVS</u></a>	...	192
<a href="#"><u>A Knowledge-based Approach to Automated Simulation Model Adaptation</u></a>	...	200
<a href="#"><u>Simplifying Parallel and Distributed Simulation with the DUP System</u></a>	...	208
<a href="#"><u>Use of Simulator Training for the Study of Operational Communication - The Case of Pilots of French Nuclear Reactors: Reinforcement of Reliability</u></a>	...	216