

# **44th Annual Simulation Symposium 2011**

**(ANSS 2011)**

**2011 Spring Simulation Multiconference – Book 2 of 8**

**Boston, Massachusetts, USA  
3-7 April 2011**

**Editors:**

**Saad Biaz**

**Shaoen Wu**

**ISBN: 978-1-61782-836-2**

**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.

**© 2011 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. (2011)

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: 978-1-61782-836-2  
PRINTED IN THE UNITED STATES

# ANSS TABLE OF CONTENTS

TITLE/AUTHORS	Pg #
Chair's Message	4
Program Committee	5
An Energy-Balanced Coding Redundancy Scheduling Approach to Support Quality of Service in Battery-Powered Multi-Hop Wireless Networks <a href="#">Lin Xing, Wei Wang, Shaoen Wu, Kun Hua and Honggang Wang (wei.wang@sdsstate.edu)</a>	6
Statistical Modeling of Optical Neural Transduction <a href="#">Jennifer Byrne, Shahram Sarkani and Thomas Mazzuchi (jenniferbyrne@me.com)</a>	11
Comparative Analysis of OPENMP and MPI on Multi-Core Architecture <a href="#">Michael Chan and Lan Yang (lyang@csupomona.edu)</a>	18
Cognitive Cross-layer Design with QoS Provisioning for Cooperative Wireless Networking <a href="#">Kun Hua, Shaoen Wu, Honggang Wang and Wei Wang (khua@ltu.edu)</a>	26
A Symbolic Model to Traffic Engineering in Wireless Mesh Networks <a href="#">Edgard Jamhour (jamhour@ppgia.pucpr.br)</a>	31
TapRouter: An Emulating Framework to Run Real Applications on Simulated Mobile Ad hoc Network <a href="#">Jinxue Zhang and Zheng Qin (zhang-jx08@mails.tsinghua.edu.cn)</a>	39
A Game Theoretical Approach to Broadcast Information Diffusion in Social Networks <a href="#">Dmitry Zinoviev and Vy Duong (dmitry@mcs.suffolk.edu)</a>	47
Simulations of a New MIMO Zero-Forcing Detector for Correlated and Estimated Rician Fading <a href="#">Xiaonan Shi (nicole@icn.ist.hokudai.ac.jp)</a>	53
Towards Realistic Mobility Modeling for Vehicular Ad Hoc Networks <a href="#">Aifeng Wu, Jianqing Ma and Shiyong Zhang (afwu@fudan.edu.cn)</a>	57
Estimation of New Ignited Fires Using Particle Filters In Wildfire Spread Simulation <a href="#">Haidong Xue and Xiaolin Hu (xhu@cs.gsu.edu)</a>	68
SimSaaS: Simulation Software as a Service <a href="#">Wei-Tek Tsai, Wu Li, Hessam Sarjoughian and Qihong Shao (wu.li@asu.edu)</a>	77

TITLE/AUTHORS	Pg #
Feasibility Study For Automatic Calibration Of Transportation Simulation Models <a href="#">Hong Liu, Qian Yu, Wei Ding, Daiheng Ni, Honggang Wang and Stephen Shannon (HLiu@UMassD.edu)</a>	87
Performance Analysis and Simulation of Packet Scheduling Algorithms In Femtocell Environment <a href="#">Volkan Sevindik, Oguz Bayat and Jay Weitzen (vsevindik@airvana.com)</a>	95
A Correlation Model for Shadow Fading in Multi-Hop Wireless Networks <a href="#">Wen Qin, Michael Rabbat and Bo Yang (wentyishere@gmail.com)</a>	100
Study of the Impact of Link Availability on the Performance of DTN Routing Protocols <a href="#">Fuad Alnajjar and Tarek Saadawi (fuadnad@yahoo.com)</a>	105
Controlled Stochastic Petri Net Model for End-to-End Network QoS Provisioning in Middleware-based Multimedia and Real-Time Systems <a href="#">Hakiri Akram, Berthou Pascal and Gayraud Thierry (hakiri@laas.fr)</a>	111
Stationary Solution Approximation using a Memory-Efficient Perfect Sampling Technique <a href="#">Ricardo M. Czekster, Paulo Fernandes, Afonso Sales and Thais Webber (afonso.sales@pucri.br)</a>	119
Component-Oriented Interoperation of Real-Time DEVS Engines <a href="#">Mohammad Moallemi, Gabriel Wainer, Federico Bergero and Rodrigo Castro (moallemi@sce.carleton.ca)</a>	127
A Bottleneck Aware Routing Metric for Wireless Mesh Networks <a href="#">Bing Qi and Shaoen Wu (bing.qi@gmail.com)</a>	135
Mapping of Software Model to Simulation Model for Performance Requirement Verification <a href="#">Ronaldo Arias and Celso Massaki Hirata (ronaldo@dea.inpe.br)</a>	142
A Latency Simulator for Many-core Systems <a href="#">Sunil Kumar, Tommaso Cucinotta and Giuseppe Lipari (cucinotta@sssup.it)</a>	151
Towards Parameter Estimation in Wildfire Spread Simulation Based on Sequential Monte Carlo Methods <a href="#">Fan Bai, Song Guo and Xiaolin Hu (fbai1@student.gsu.edu)</a>	159

TITLE/AUTHORS	Pg #
A System Dynamics Model to Evaluate Sustainability of Water Supply in a Watershed. <a href="mailto:rlata@concyteq.edu.mx">Roberto de la Llata (rlata@concyteq.edu.mx)</a>	167
On Traffic Locality and QoE in Hybrid CDN-P2P Networks <a href="mailto:moises@gprt.ufpe.br">Moisés Rodrigues, Josilene Moreira, Arthur Callado, Márcio Neves, Djamel Sadok, Per Karlsson and Victor Souza (moises@gprt.ufpe.br)</a>	175
Denosing of Time Domain Responses in Wireless Sensor Network for the Structural Health Monitoring of Transportation Infrastructure <a href="mailto:hwang1@umassd.edu">Tzu-Yang Yu, Honggang Wang and Hong Liu (hwang1@umassd.edu)</a>	183
A (lumped) Markov process for a class of dynamic Petri nets <a href="mailto:capra@dico.unimi.it">lorenzo capra (capra@dico.unimi.it)</a>	188
Enhancement of 802.11 Modules in ns-2 for Wireless Access on Vehicular Environments and Performance Evaluation <a href="mailto:wtcp989@gmail.com">Kyohong Jin, Sungjin Lee, Daehoon Kang, Sangjun An and Jihyun Cha (wtcp989@gmail.com)</a>	198
Latency Modeling and Minimization for Large-scale Scientific Workflows in Distributed Network Environments <a href="mailto:qishiwu@memphis.edu">Qishi Wu, Yi Gu, Yuchen Liao, Xukang Lu, Yunyue Lin and Nageswara Rao (qishiwu@memphis.edu)</a>	205
Simulation of Routing in Nano-manipulation for creating pattern with Atomic Force Microscopy using hybrid PSO-AS <a href="mailto:ahmad.naebi@gmail.com">Ahmad Naebi, Farhoud Hosseinpour, Moharam Habibnejad Korayem, Sureswaran Ramadass, Andrew Meulenberg (ahmad.naebi@gmail.com)</a>	213
SpringSim'11 Consolidated Authors' Index	