

Preface	IX
Scientific Programme	1
Author Listing	555

INVITED SPEAKERS

A Case for on-line data analysis for large-scale scientific simulations Alok Choudhary	5
Development and execution of HPC applications on Clusters and Grids by P-GRADE Peter Kacsuk.....	6
Modelling Physics from Materials to Environmental Problems Lucilla de Arcangelis.....	14

MODELLING METHODOLOGY

Simulation Languages and Models

Extending the capabilities of the SMPL discrete-event simulation language X. Molero, V. Santonja, I. Torregrosa and J.A. Alegre.....	19
On the Use of DOE for Characterization of Javaspaces Hans De Neve, Frederic Hancke, Tom Dhaene, Jan Broeckhove and Frans Arickx	24
A Simulation Model for Streaming Applications over a Power Manageable Wireless Link Andrea Acquaviva, Emanuele Lattanzi, Alessandro Bogliolo and Luca Benini	30

Distributed Simulation in Production

Distributed Modular Simulation of Mechatronic Systems Alfonso Gambuzza and Oliver Oberschelp.....	37
A Simulation Study for Assessing the Performance of Manufacturing System of Aerospace Industry Mohd Kamal Mohd Nawawi and Razman Mat Tahar	44

CONTENTS

Validation, Analysis and Evaluation

Simulation Software and Mathematical Analysis of Simulation Results Johann Christoph Strelen.....	51
Manufacturing Data Validation through Simulation Guodong Shao, Y. Tina Lee and Charles McLean.....	56
Towards Performance Evaluation of Mobile Systems in UML Simonetta Balsamo and Moreno Marzolla	61
Simulation of the Behavior a new Model of Reverberating Chamber for the Evaluation of Electromagnetic Compatibility in the Time Domain Nicola Pasquino.....	69

Simulation in Services and Management

A Statecharts Based Methodology for the Simulation of Mobile Agents Giancarlo Fortino and Wilma Russo	77
Simulating Human Resources in Software Development Processes Thomas Hanne and Holger Neu	83
Optimal Recruitment in a Markovian Manpower Planning System Süleyman Ozekici and Ismail Kocaman	88
Simulation Tool to Analyse Gender Diversity at Workplace Ignacio J. Benítez, José L. Díez, Juan A. Lacort, Pedro Albertos and Carlos Candela	92

Object Orientation and Re-Use

UML based FMECA in risk analysis J. Guiochet and C. Baron	99
Object-Based Remote Resource Access Framework Marin Lungu, Constantin Pistol and Anita Lungu,	107

SIMULATION TOOLS

Simula

Object-Oriented Modularity of SIMULA Jaroslav Sklenar.....	117
--	-----

Simulation of FMS including Automated Guided Vehicle Evzen Kindler, Ivan Křivý, Philippe Lacomme and Alain Tanguy	122
---	-----

Traffic Simulation Tools

The “Simulation of Urban Mobility” Package: An Open Source Traffic Simulation Daniel Krajewicz, Markus Hartinger, Georg Hertkorn, Peter Mieth, Christian Roessel, Peter Wagner and Julia Ringel	129
--	-----

An Approach for Dynamic Supply Chain Modelling J. Manuel Feliz Texeiro and António E. S. Carvalho Brito	132
---	-----

Tools for Energy Simulation

Simulation of District Heating Systems for evaluation of Real-Time Control Strategies Fredrik Wernstedt, Paul Davidsson and Christian Johansson	143
---	-----

SIMREN: A Simulation Tool for Renewable Energy Systems Stefan Herbergs, Harry Lehmann and Stefan Peter.....	148
---	-----

Tools for Robotics Simulation

<i>VirtualRobot: An open general-purpose simulation tool for Robotics</i> Martin Mellado, Carlos Correcher, Juan Vicente Catret and David Puig	155
--	-----

Sliding mode control applied to mobile robot: Continuous-time and Discrete-time case M. Hamerlain and T. Alalouche	163
--	-----

Simulation Tools in Distributed Networks

On Using an Emulative Middleware to Model Wireless Networks Simulation Results and Validation Stefano Cacciaguerra, Marco Roccetti, Vittorio Ghini and Stefano Ferretti	169
---	-----

An XML Based Network Simulation Description Language Roberto Canonico, Donato Emma and Giorgio Ventre.....	174
--	-----

Extended NAM: An NS2 Compatible Network Topology Editor for Simulation of Web Caching Systems on Large Network Topologies Roberto Canonico, Donato Emma and Giorgio Ventre	177
--	-----

A Generic Framework for Performance Tests of Distributed Systems Frederic Hancke, Tom Dhaene, Frans Arickx and Jan Broeckhove.....	180
--	-----

CONTENTS

AI AND SIMULATION

AI Agents

A Dynamic Environment Simulator

Xiangdong An and Yang Xiang 187

A Simulation of Intelligent Knowledge Based Agents exploring Their Environment

Hubertus Franke, Hendrik Renken, Peter Scheideler and Andreas Schmidt 192

AI in Expert Systems

An Expert System for Yarn Dyeing

M. R. Shamey and T. Hussain 199

An Implementation of DYVELOP Method to Process System Design

Zbyněk Mikša, Zuzana Hošáková, Jana Dvorská, Jaromír Dvůrák, Jirí Urbánek
and Veronika Urbanková 203

The CVCA Model; A Cellular Automaton Model of Landscape Ecological Strategies

Jack Wileden, Elisabeta A.Silva and Jack Ahern 206

Neuro Fuzzy Modelling

Datum Plane's Cover and Membership Functions in Fuzzy Modelling

Benmakrouha Farida 213

A Novel Neuro-Fuzzy System for Mobile Reactive Robot Navigation

Monaf S. N. Al-Din 216

Time Series Classification Based on Discrete-Space Feature Extraction

Željko Jagnjić, Nikola Bogunović and Franjo Jović 221

Neuro Fuzzy Modelling with Expert Systems

Simulation and Modelling of Concurrency Control Enhancement through an Adaptive Neuro-Fuzzy Inference Expert System

Munib Qutaishat 229

Machine Learning Fuzzy Method for the Modeling of Experts and Systems

Peter Otto 237

HIGH PERFORMANCE AND LARGE SCALE COMPUTING

Distributed Hardware Software Environments

MPI+OpenMP Implementation of Memory Saving Parallel Pic Applications on Hierarchical Distributed Shared Memory Architectures
Sergio Briguglio, Giuliana Fogaccia, Gregorio Vlad and Beniamino Di Martino..... 247

Logic Gate Modeling and Simulation using Generalized Discrete Event Specifications: G-DEVS
Aziz Namaane and Norbert Giambiasi..... 252

Distributed Computing for Electromagnetic Optimal Design
Marco Cioffi, Alessandro Formisano and Raffaele Martone 257

Dynamic Problem-Independent Metacomputing Characterization Applied To The Condor System
P. Hellinckx, G.Stuer, F. Hancke, D. Dewolfs, F. Arickx, J. Broeckhove and T. Dhaene..... 262

The HeSSE Simulation Environment
N. Mazzocca, M.Rak, R. Torella, E. Mancini and U. Villano 270

Distributed Simulation Applications

Model Integrity and Distributed process Interaction Simulation
Hans P.M. Veeke, Jaap A. Ottjes 279

Transparent Distributed Discrete Event Modeling
Jaap A.Ottjes and Hans P.M.Veeke..... 283

GRAPHICS VISUALIZATION SIMULATION

Advanced Accident Flight Path Simulation and Innovative Visual Animation
Domenico P. Coiro, Agostino De Marco and Paolo Leoncini 291

Simulated Stroboscopic Illumination for Unsynchronized Motion Dynamics
Zhaoyi Li and Renate Sitte 298

Integration of System Dynamics Models and Geography Information Systems
Stefano Mazzoleni, Francesco Giannino, Marco Colandrea, Massimo Nicolazzo and Jonathan Massheder 304

CONTENTS

VIRTUAL REALITY APPLICATIONS

Spline Approximations of Flexible Deformations for Fast Dynamic VR Visualizations

Kevin Tatur and Renate Sitte 309

Automatic 3D Object Placement for 3D Scene Generation

Yoshiaki Akazawa, Yoshihiro Okada and Koichi Niijima 316

SIMULATION IN BIOLOGY

Simulation in Biological Systems

Computer-Aided Performance Assessment of a New Measurement Algorithm for Ultrasonic Based Sensors

Leopoldo Angrisani and Rosario Schiano Lo Moriello 323

Modelling and Simulation of Biological Process (Neural Action Potential) with Hybrid Tools used in Computer Science

Jens Kohlmeyer, Stefan Sarstedt and Wolfgang Mader 328

Metvis: A Tool for Designing and Animating Metabolic Networks

E. Qeli, B. Freisleben, D. Degenring, A. Wahl and W. Wiechert 333

Simulation of Disease Contagion

Modelling the Effect of Information Feedback on the Spread of Disease: A Case Study on the Ebola Virus

Bernadette O'Regan and Richard Moles 341

Simulation of Contagion by Tuberculosis in Public Places at US-Mexico Border Area

Carmen Jáuregui, Alfredo Cristobal-Salas, Antonio Rodriguez-Diaz and Manuel Castañón-Puga 348

Simulation of Ecosystems

Changing the Level of Description in Ecosystem Models: An Overview

Pierrick Tranouez, Sylvain Lerebourg, Cyrille Bertelle and Damien Olivier 355

Hybrid and Hierarchic compartmental Approach for Ecosystem applied to Estuaries Modelization

Guillaume Prevost, Pierrick Tranouez, Cyrille Bertelle and Damien Olivier 360

The Possibility of Qualitative Modeling of Renewable Fish Resources

Ante Munitic, Merica Sliskovic, Josko Dvornik and Gorana Jelic 364

Agent Modeling of the Caparo Forest Reserve
 Magdiel Ablan, Jacinto Dávila,, Niandry Moreno,, Raquel Quintero
 and Mayerlin Uzcátegui367

Simulation in Health Care Management

Logistical Flow Optimising in Medical Care Processes
 Z. Hošáková, J. Dvořáková, Z. Mikša and V. Urbánková375

The Impact of Education on Healthcare: A Malaria Agent-Based Simulation
 Fatima Rateb, J.J. Merelo, M.G. Arenas, Bernard Pavard and
 Narjes Bellamine-BenSaoud378

ANALYTICAL AND NUMERICAL MODELLING TECHNIQUES

Numerical Modelling Techniques

**Direct Numerical Methods of mathematical modeling in Mechanical Structural
 Design**
 Jihad Sahili387

Advanced Equation Assembling Techniques for Numerical Simulators
 Stephan Wagner, Tibor Grasser, Claus Fischer. and Siegfried Selberherr390

**On Solving Ordinary Differential Equation Systems with Generalized Stochastic
 Petri Nets**
 Olli-Matti Penttinen.....395

Performance Modelling and Analysis

**Coupling Formal Methods in a Performance Modelling Methodology for
 Etherogeneous Supervisory Systems**
 Francesco Moscato, Mauro Iacono and Nicola Mazzocca403

**Approximate and Simulation Based Analysis for Distributed Object Software
 Performance Models**
 Panajotis Katsaros and Constantine Lazos409

**Performance Analysis of Auction-Based Allocation Mechanisms for Cooperation
 of Manufacturers on Production Capacity**
 Baris Tan415

A New Approach to the Modelling and Analysis of Complex Discrete Systems
 A. A. Veselov, Chirag Pathak and Edmund Kazmierczak420

CONTENTS

Analytical Simulation of Electronic Circuits

Performance Assessment of Two D/A Models when operating on Telecommunication Signals

Leopoldo Angrisani, Massimo D'Apuzzo and Mauro D'Arco 429

On the Use of Modulated S Parameters for Modeling RF Wideband Amplifiers

Leopoldo Angrisani, Francesco Falanga and Alessandro Masi 434

Numerical Method used for Simulation of Power Electronic Circuit. Modelisation of the Semi-Conductor by Perfect Switches

Faouzi Boulos..... 442

Information Theoretic Approximations for the M/G/1 Retrial Queue with unreliable Server

A. Aissani and R. Smail 448

Fluid Flow Modelling Simulation

Simulation of Electric Fields around Transmission Lines for Proximity Prediction

Amruth Sivalenka, Mohammed Saffudin and Satish Mohan 453

Modelling of Layered Fluid Flow in a Circular Microchannel

Manisah Aumeerally and Renate Sitte 458

WEB BASED SIMULATION

Packet Delay Models in Packet Switched Networks Performance Assessment through Capacity Measurements

Leopoldo Angrisani, Michele Vadursi, Salvatore D'Antonio and Giorgio Ventre 465

Website Migration Resource Scheduling of Adaptive Distributed Multimedia Web Servers

Mohammad Riaz Moghal and Mohammad Saleem Mian..... 470

The Effect of Traffic Engineering in Planning and Capacity Scaling on Internet Platforms

Gerhard Hasslinger and Stefan Schnitter 475

SIMULATION WITH PETRI NETS

Petri Nets I

Switched LAN Simulation by Colored Petri Nets

Dmitry A. Zaitsev 485

Real-Time Model for processing both scheduling and Petri Net Approaches Mahfoud Mabed and Marc Bourcerie	489
--	-----

Simulating Quantum Interference in Feynman's pnot-computer with Petri Nets Leo Ojala, and Olli-Matti Penttinen	494
--	-----

Petri Nets II

Petri Net distributed simulation using HLA based on Petri net components Stephanie Combettes and Alexandre Nketsa.....	503
--	-----

Encapsulation in an Object-Oriented Notation based on Modular Petri Nets Cecile Bui Thanh and Hanna Klaudel	508
---	-----

Using meta-modelling to process Petri nets models of supply chains". Hendrik Van Landeghem and Carmen Bobeanu.....	513
--	-----

Petri Nets III

A Simulation Platform for Petri Net Models of Dynamically Modifiable Embedded Systems Wang Yan Liu, Carsten Rust and Friedhelm Stappert	521
---	-----

Integrating Load Balancing into Petri-Net based Embedded System Design Carsten Rust, Friedhelm Stappert and Stefan Schamberger.....	526
---	-----

Modeling of Manufacturing System for Performance Analysis: An Approach Based on GSPN Mauro Silva, Paulo Maciel and Wellington Silva	531
---	-----

LATE PAPERS

Emergency Service: A generalised Flexible Simulation Model Paola Facchin and Giorgio Romanin-Jacur	541
--	-----

Analysis of the "reliable criticalities" in a sintering plan: an application of Integrated Factors Method (I.F.M.) Domenico Falcone, Gianpaolo Di Bona and Alessandro Silvestri.....	546
--	-----

BlueGene/L: A Powerful Platform for Simulation Manish Gupta	552
---	-----