

Preface	XI
Scientific Programme	1
Author Listing	533

KEYNOTE ADDRESS

Didactic Role of Computer Simulation in Education and Industry K. Heinz Weigl	5
---	----------

AOSE AND SIMULATION

Modeling of Social Systems with INGENIAS Juan Pavón, Candelaria Sansores and Jorge Gómez-Sanz	9
Simulation-Driven Development of Multi-Agent Systems Giancarlo Fortino, Alfredo Garro, Wilma Russo, Roberto Caico, Massimo Cossentino and Francesco Termine	17
Agents & Artifacts for Systems Biology: Toward a Framework based on TuCSon Sara Montagna, Alessandro Ricci and Andrea Omicini	25
Simulating Minority Game with TuCSon Enrico Oliva, Mirko Viroli and Andrea Omicini	33

MULTI-AGENT SYSTEMS

Biometric Authentication and Reputation Based Policies in a MAS Security Framework V. Conti, G. Milici, F. Sorbello, S. Vitabile and G. Pilato	41
Developing Anticipatory and Affective Competences in Multi Agent Systems Christiano Castelfranchi, Rino Falcone and Michele Piunti.....	46
ToothAgent: Brushing on your Behalf Sameh Abdel-Naby and Paolo Giorgini	49

CONTENTS

AGENT BASED TECHNOLOGIES

Choosing the right Design Pattern: the Implicit Culture Approach
Aliaksandr Birukou, Enrico Blanzieri and Paolo Giorgini.....55

Knime: The Konstanz Information Miner
Michael R. Berthold, Nicolas Cebron, Fabian Dill, Giuseppe Di Fatta,
Thomas R. Gabriel, Florian Georg, Thorsten Meinl, Peter Ohl,
Christoph Sieb and Bernd Wiswedel.....58

An Integrated Decision Support System based on Software Agents
Magid Nikraz and Parisa A. Bahri62

DISTRIBUTED SIMULATION

Towards DEVS Meta Language
Vladimír Janoušek, Petr Polášek and Pavel Slavíček.....69

**An Events Synchronization Approach for Integration of Simulators
in a Distributed Environment**
Moreno Carullo, Antonella Zanzi, Ignazio Gallo and Alberto Coen-Porisini74

AI-BASED SIMULATION APPLICATIONS

**Rewarding and Punishing Evolving Collusion in a Simulation
of an Oligopolistic Marketplace**
Stephen Huxford and David Hunt81

A Multimodal Chat Bot Based Information Technology System
A. Augello, A. Santangelo, A. Gentile, S. Gaglio and G. Pilato86

ORGANIZATIONAL SIMULATION

Improving a Call Center Performance at a Telecommunication Company
Fawaz Abdulmalek.....93

**A New Highly Flexible Simulation Model for an Adaptable, Efficient and
Safe Sectorization in an Air Traffic Area Control Center**
Lorenzo Brunetta and Giorgio Romanin-Jacur.....97

MILITARY ORGANIZATIONAL SIMULATION

University Centers of Excellence in support of Military Systems
Michael D. Letherwood, David D. Gunter and David J. Gorsich103

Simulation rules and ontologies as integral components of decision support systems Tobias Lehmann, Robert Schmied, and Andreas Karcher	108
--	-----

LARGE SCALE SIMULATORS

A Flight Simulation Environment at the University of Naples Domenico P. Coiro, Agostino De Marco and Fabrizio Nicolosi	115
--	-----

Laboratory Tools for Use in Simulation Based Development of Advanced Military Run Flat Tire Systems Aleksander Kurec and Jose R. Mabesa Jr.	123
--	-----

TRAINING SIMULATORS AND DISTANCE LEARNING

Construction Machinery Dynamic Models for Real-Time Training Simulators Aron Pujana-Arrese, Ana I. Martínez-Esnaola, Félix Martínez, Carlos F. Nicolás and Joseba Landaluze.....	131
--	-----

The Need for a Simulator in Dutch Drinking Water Treatment Ignaz Worm and Luuk Rietveld	139
---	-----

Physical Dam and Water Flood Simulator of the Mijares River Nicolas Montés, Leopoldo Armesto and Josep Tornero	143
--	-----

Simulation Based Training and Assistance System for Biogas Facilities Alexei Lisounkin, Alexander Sabov, Gerhard Schreck and Jörg Krüger	151
--	-----

Distance Learning: Testing an Interactive mathematical Course Tiziana Durante, Annunziata Cascone and Rosaria Menna	156
---	-----

COMPLEX SYSTEMS SIMULATION

Discovering Relationships that are not Functions William Conley	163
---	-----

Modeling Collaborations as Complex Systems Guenther Schuh, Alexander Sauer and Sebastian Doering	168
--	-----

Modeling a Complex Real-Time System Ari Happonen and Jari Porras.....	175
---	-----

Generalized Backpropagation through Time for Continuous-Time Neural Models Identification Krzysztof Fajarewicz	178
--	-----

CONTENTS

Phenomenon Computational Pattern: Coupling Relationships between Phenomena on Multiphysics Simulation Felix C.G. Santos, Jose M.A. Barbosa and Eduardo R. de Brito	182
--	------------

MANUFACTURING PROJECT DATA SIMULATION

Improving Multiple Project Management using Simulation Torsten Licht, Christopher Schlick, Holger Luczak, Lothar Dohmen and Ludger Schmidt.....	191
Project Selection using Monte Carlo Simulation Technique Ahmad R. Sarfaraz	199

SIMULATION DRIVEN DESIGN SYSTEMS

Architecture for integrated simulation driven design systems Kaushik Sinha and Roland Haas	205
Life Cycle Features for Mechanical Product Analysis and Simulation Christian Mascle	210

INDUSTRIAL PROCESS ANALYSIS SIMULATION

Simulation Case Study: An Analysis of Reactor Refuelling Lead Time in a Power Plant Habtom Mebrahtu, Caroline Strange, Rob Walker and Stefan Roman.....	217
Hybrid Petri net Based Modeling and Simulation of Hybrid Process Industries Mahsa Ghaeli, Parisa A. Bahri and Peter L. Lee.....	223
An On-Line Parameter Estimation Scheme for a Fault Diagnosis System C. Angeli and A. Chatzinikolaou.....	229
Block World Planning with Incomplete information and sensing actions as Linear Programming Problem Adam Galuszka and Krzysztof Skrzypczyk.....	234
On Conversion and Symbolic Computation of Modelica Declarative Models with Matlab Dorel Aiordachioaie, Emil Ceanga and Gabriel Sirbu	237

Modelling of Tubular Ammonia Decomposition Reactors for Fuel Cell Operations
 Klaus Hellgardt, David J. Richardson, Paul A. Russell, Geoffrey Mason
 Bryan A. Buffham and Ian W. Cumming242

STEEL MANUFACTURING SIMULATION

The use of simulation to validate a new objective of steelmaking production
 A. Bellabdaoui and S. Allet251

Coupled heuristic and simulation for steel production planning
 A. Bellabdaoui.....259

Application of Artificial Intelligence Algorithms for the Modeling of the Surfaces of Abrasive Grains
 Piotr Stępień, Błażej Bałasz, Tomasz Szatkiewicz and Tomasz Królikowski265

Simulation of the Formation Process of Regular Grooves on Surface Ground
 Piotr Stępień and Błażej Bałasz269

On the Simulation of Roundness Profiles obtained from Turning
 Giovanni Moroni, Massimo Pacella and Alfredo Elia.....277

ELECTRONICS DESIGN SIMULATION

Fuzzy Simulation to Speedup Computer Design
 Giuseppe Ascia, Vincenzo Catania, Alessandro G. Di Nuovo,
 Maurizio Palesi and Davide Patti285

SIMPiI-K: a SIMD Reconfigurable Platform Processor for Real-Time Image Processing
 F. S. Fabiano, A. Gentile and F. Sorbello290

Scalable Circuit Models for Passive High Speed Interconnection Structures
 Tom Dhaene297

Simulation of Circadian Rhythm Phase Lags between Servers
 Peter Lawrence.....300

CONTENTS

SEMICONDUCTOR MANUFACTURING

Simulation Based Assessment of Lot Plan Repair Strategies in Semiconductor Manufacturing Ilka Habenicht	309
Performance Evaluation of a shifting Bottleneck Heuristic for a Multi-Product Waferfab by Discrete Event Simulation Jens Zimmermann and Lars Mönch.....	314
Analysis of a semiconductor wafer fab with an intermediate storage for partially finished logic products Oliver Rose	319

TEXTILE PROCESS SIMULATION

Issues in Processing Unstable Twisted Fibre Assemblies Canh Dung Tran and David G. Phillips and G.H.M. van der Heijden	325
Composite Textile structure for ballistic protection François Boussu, Virginie Begus and Jean-Luc Petitriot.....	330
Diagnosis, Thermal and Hydrodynamical Modelling in Bobbin Dyeing Processes Carlo Beltramo and Giorgio Rovero	333
Simulation of the Unwinding Process Yordan K. Kyosev, Sven Hoffmann, Marion Strauf Arnabile, Ingo Reinbach and Thomas Gries	340
Simulation of Complex Structure Yarns Fenglei Zhou.....	345

VIRTUAL TEXTILES AND OPTIMIZATION

A plug-in to define assembling and sewing parameters for Virtual Clothing Simulation Rossella Mana, Umberto Cugini, Alberto Carubelli and Caterina Rizzi.....	353
A Virtual Prototyping Tool for Knitwear Simulation Sylvia Chalença, Olivier Nocent, Jean-Michel Nourrit and Yannick Remion....	359
Fabric Behaviour under Bi-Axial Tensile Testing Bi-Model in Feedback Configuration Agnieszka Cichocka, Pascal Bruniaux and Vladan Koncar	365

Adaptive model of the human body - Methodology of design of the mannequin morphotype
Agnieszka Cichocka and Pascal Bruniaux.....370

Supply Chain Multi-Objective Simulation Optimization
Jeffrey A. Joines, Kristin A Thoney, Russell E. King and Michael G. Kay.....377

DECISION SUPPORT SYSTEMS

An Object Oriented Time Model of a Decision Support System for Intoxication Diagnoses
Joël Colloc and Peter Summons.....387

A Simulation-based Expert System for Process Diagnosis
Yusong Pang, Hans P. M. Veeke and Gabriel Lodewijks393

Multi Skilled Maintenance of a High-Speed Railway
Michiel de Gijt, Jaap Ottjes, Jaap Hagestein and Gabriel Lodewijks399

LOGISTICS SIMULATION

Towards a best strategy in inventory decision making and demand forecasting for intermittent demand
Katrien Ramaekers and Gerrit K. Janssens.....409

Warehouse and Manufacturing Logistics Design using a Data Driven Generic Model Generator
José A. Basto and António C. Brito.....415

SUPPLY CHAIN SIMULATION AND OPTIMIZATION

The Distinct Influence of various CPFR Components on overall Supply Chain Performance
Thomas Thron, Niaz Wassan and Gábor Nagy423

Line Availability and Material Synchronization in Liquid Packing Lines: A Simulation Study
Steven Moerman, Jaap Ottjes, Mitch Gorsira and Gabriel Lodewijks431

Effective Job Shop Priority Scheduling
Hans P.M. Veeke and Gabriël Lodewijks.....437

Simulation of a LIG(A) Production Line
Pascal Meyer, Markus Arendt and Joachim Schulz.....442

CONTENTS

HEALTH CARE LOGISTICS

- Business Process Management and Simulating of a Generic Health care Unit: Application on New Hospital of Estaing**
Michael Comelli, Pierre Féliès and Michel Gourgand449
- Modelling Temporal Aspects of Clinical Objects**
Peter Summons and Joël Colloc.....454
- A Decisional Model for the Performance Evaluation of the Logistic Process: Application on a Consultation Ambulatory Unit of a Hospital Supply Chain**
Christian Alexandre, Pierre Féliès and Sophie Rodier.....459

SIMULATION IN ROBOTICS

- Robust Prediction and Tracking Method for a Mobile Robot Navigation System**
Krzysztof Skrzypczyk.....467
- Applications of the Hyper-Redundant Robotic Structures to Hands of the People with Great Disabilities**
Viorel Stoian, Mircea Ivanescu, Elena Stoian and Cristina Pana.....472

VISUAL INTERACTIVE SIMULATION

- Improving the Use of Visual Interactive Simulation as a Knowledge Elicitation Tool**
Stewart Robinson, Ernie Lee and John S. Edwards479
- Position-aware Service Provision with RFID**
Alessandro Genco, Salvatore Sorce, Rossella Battaglia and Eleonora La Spina486

SIMULATION OF ECOLOGICAL SYSTEMS

- Optimizing ecology-friendly drawing of plans of buildings by means of grammatical evolution**
Arturo de Salabert, Alfonso Ortega and Manuel Alfonseca.....493
- Evaluation of Simulations with Conflicting Goals with Application to Cleaning of Young Forest Stands**
Ulla Ahonen-Jonnarth and Jan Odelstad498

CONTENTS

Modeling of Water Hammer Phenomenon in Simple Irrigation System and Comparing the Analytical to Experimental Results Ahmad Bagheri, Majid Alitavoli, Mehdi Aghakashi, Salar Basiri and Amir Hajiloo	504
A Spectral Expansion Method for the Simulation of Vertical Salinity Variations in Upper-Milford Haven Estuary, South Wales, UK Bahareh Kaveh, Naghmeh Keshavarzi-Roonizi, Rahim Ghorashi and Vahid Nassehi.....	508
 TEMPERATURE AND AIR FLOW SIMULATION	
Intelligent System of Indirect Temperature Measurement Karol Kostur and Ján Kacur	515
Aerodynamic and Heat Transfer Characteristics of two interfering Low Rise Buildings Osama E. Abdellatif	520