

30th European Modeling and Simulation Symposium (EMSS 2018)

Held at the International Multidisciplinary Modeling and
Simulation Multiconference (I3M 2018)

Budapest, Hungary
17 – 19 September 2018

Editors:

**Michael Affenzeller
Agostino G. Bruzzone
Emilio Jiménez**

**Francesco Longo
Yuri Merkuryev
Miquel Angel Piera**

ISBN: 978-1-5108-7224-0

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



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

Copyright© (2018) by CAL-TEK S.r.l.
All rights reserved.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact CAL-TEK S.r.l.
at the address below.

CAL-TEK S.r.l.
Via Umberto Nobile 80
87036 Rende (CS)
Italy

Phone: +39 333 7042 612
Fax: +39 0984 937849

info@cal-tek.eu

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Index

Integrating weather in modelling earthmoving mining operation using distributed simulation with HLA standards M. AL-Alawi, Y. Mohamed, A. Bouferguene	1
Beyond SOI - The NOI nanotransistor -Simulations results and new challenges C. Pârulescu, C. Ravariu, E. Manea, F. Babarada, A. Popescu	7
Parallel simulation of the N-body problem using Quad-Tree HLPC M. Rossainz López, M. I. Capel, E. Álvarez Martínez, I. Pineda Torres	12
More than just chocolate: supply chain model of production of cocoa crops in Côte d'Ivoire M. Mujica Mota, A. El Makhloufi, N. De Bock, P. Scala	21
E-Health bubble: an e-health system for caregiving services dedicated to elderly M. Frascio, F. Mandolino, M. Sguanci, F. Borasi, L. Bordignon, G. Molinari	31
Model-based image processing approaches for automated person identification and authentication in online banking A. Pointner, O. Krauss, G. Freilinger, D. Strieder, G. Zwettler	36
Surrogate-assisted high-dimensional optimization on microscopic traffic simulators B. Werth, E. Pitzer, G. Ostermayer, M. Affenzeller	46
A lumped parameter model of airway/lung mechanics S. Marconi, C. De Lazzari	54
Logic-dynamic model and algorithms of operation complex planning of active mobile objects automated control system B. Sokolov, A. Kovalev, V. Kalinin, E. Minakov, D. Petrovskiy	59
Influence in tonal noise and pressure fluctuation of mechanical components placed downstream of a centrifugal blower in the refrigeration system of an induction cooktop M. Valencia Betrán, C. Pina Gadea, B. Sánchez Tabuena, C. Albero Posac, J. Lladó Paris	68
A model validation method with Bootstrap approach and Bayes estimation for small sample T. Song, P. Ma, Y. Zhou, K. Fang, M. Yang	74
State of the art for the optimization and simulation of the distribution of hydrocarbons E. Sampayo Trujillo, I. Flores De La Mota	81
Dynamic finite element modeling of metal spinning process with a stationary mandrel and a rotating tool H. Huy Nguyen, H. Champlaud, V. Ngan Lê	91
Process model for a simulation-based early warning system using Artificial Intelligence D. Weigert, T. Lippke, T. Reggelin, M. Schenk	97

Distributed simulation execution on a high-performance cluster using HeuristicLab Hive	107
J. Karder, A. Beham, S. Wagner, M. Affenzeller	
Comparing machine learning methods on concept drift detection for Predictive Maintenance	115
J. Zenisek, J. Wolfartsberger, C. Sievi, M. Affenzeller	
Complex Networks of the air passenger traffic in Culiacan's airport	123
O. Sashiko Shirai Reyna, I. Flores De La Mota	
Optimization of order picking activities in a wholesale food company	129
E. Bottani, A. Panciroli, R. Montanari, A. Volpi	
Different traffic submodels within scalable unitary hybrid simulator related to railway systems	137
R. Novotný, A. Kavička	
Including co-simulation in modeling and simulation tool for supporting risk management in industrial context	143
S. Gorecki, Y. Bouanan, J. Ribault, G. Zacharewicz, N. Perry	
On the GDPR introduction in EU and its impact on financial fraud research	150
E. A. Lopez-Rojas, D. Gultemen, E. Zoto	
Simulation of production line improvements in panelised floor manufacturing	157
J. Wang, X. Yin, Y. Tian, X. Li, M. Al-Hussein	
Use reduced track profile and discrete simulation to calculate train travel time	165
J. Fikejz, J. Merta	
Resource constrained project scheduling: a real-world extension for steel industry	172
V. A. Hauder, A. Beham, S. Raggl, M. Affenzeller	
Complex nested simulations within simulators reflecting railway traffic	178
R. Diviš, A. Kavička	
Analysis of resource management methodologies for the development of discrete event simulation models representative of the works developed in shipyards	187
A. Lamas-Rodríguez, D. Chas-Álvarez, J.A. Muiña-Dono	
BSE: A minimal simulation of a Limit-Order-Book stock exchange	194
D. Cliff	
Rapid 3D shape forming computation with piecewise heating lines using a fifth order spline formulation	204
H. Champlaud, V. Vieillot, D. Provencher, N. Van Lê	
OpenCAL simulation of the 1992 Tessina landslide	210
D. D'Ambrosio, A. De Rango, R. Rongo	
Exploitation of HPC infrastructure services for real-time critical small requests	218
J. Ševčík, M. Golasowski, J. Martinovič, D. Vojtek, J. Faltýnek	

Performance of industrial sensor data persistence in data vault F. Bachinger, J. Zenisek, L. Kammerer, M. Stimpfl, G. Kronberger	226
An efficient global sensitivity analysis method based on sequential Latin hypercube sampling L. Lu, W. Li, P. Ma, M. Yang	234
Processability analysis of an injected part in virgin or recycled polypropylene J. Galve, D. Elduque, C. Pina, I. Clavería, C. Javierre	241
Agent-based model for tumor-analysis using Python+Mesa G. Tashakor, R. Suppi	248
An agent based modelling approach for the Office Space Allocation problem A. Dediu, D. Landa Silva, P. Siebers	255
Ultra-wideband radio-beam direction finder based on microwave photonics and all-optical processing M.E. Belkin, T. N. Bakhvalova, I.V. Gladyshev, A.S. Sigov	265
Modeling multi-core fiber-optic waveguide M.E. Belkin, V. Golovin, Y. Tyschuk, A.S. Sigov	269
Real time traffic simulator for self-adaptive navigation system validation V. Ptošek, J. Ševčík, J. Martinovič, K. Slaninová, L. Rapant, R. Cmar	274
Modeling of waveguide modes excitation in thin-film multilayer structures by TM-polarized Gaussian light beam V.I. Sokolov, A.S. Akhmanov, I.O. Goriachuk	284
Analysis of multilayer metal-dielectric thin-film structures using prism coupling technique I.O. Goriachuk, V.N. Glebov, A.M. Maliutin, V.I. Sokolov	289
Simulation of an automotive Supply Chain in Simio: data model validation A. AC Vieira, L. MS Dias, M.Y Santos, G. AB Pereira, J. A Oliveira	294
Assessing the performance of a restaurant through discrete simulation in Simio A. AC Vieira, L. MS Dias, G. AB Pereira, J. A Oliveira	302
Data modelling approach for physical systems S. Winkler, A. Körner, F. Breiteneker	310
A comparison of various biomechanical modelling approaches for anatomic joints included in a closed simulation loop R. Leskovar, A. Körner, Felix Breiteneker	316
Sensor-based modeling of radial fans F. Holzinger, M. Kommenda, E. Strumpf, J. Langer, J. Zenisek, M. Affenzeller	322
Modeling and environmental assessment of structural solutions for a single-family home E. Fraile-Garcia, J. Ferreiro-Cabello, M. del Mar Villamil, E. Jimenez Macias	331
Uncertainty in two-stage measurement: explanation using simulation studies J. Marek, M. Nedvědová	336

Fuzzy adaptation of intelligent control for solar thermal power plants E.K. Juuso	343
Web-based optimization with JavaScript frameworks and a GraphQL-API-interface Y. Xingyue, T. Wiedemann, W. Krug	349
Automatic detection of sentiments in tourist reviews by using Long Short-Term Memory recurrent neural networks C.A. Martin, R.M. Aguilar, J.M. Torres, S. Díaz	356
How do travellers decide: a stochastic modelling approach to determine decision factor significance F.T. Olusola, P. Siebers, B. Ryan, G. P. Figueredo	361
A simulation approach for Human Reliability Analysis in an orthopaedic operating room V. Di Pasquale, R. Iannone, N. Maffulli, S. Miranda, S. Riemma	371
Longwall technology simulation V. V. Okolnishnikov, A. A. Ordin, S.V. Rudometov	381
A multivariate model validation method based on kernel principal components analysis Y. Zhou, K. Fang, P. Ma, M. Yang	386
A collaboration and asset sharing platform in perishable product supply chain F. Longo, A. Padovano, J.L. Frangella, M. Massei	394
Population behavior, social networks, transportations, infrastructures, industrial and urban simulation A.G. Bruzzone, M. Massei, K. Sinelshchikov, R. di Matteo	401
MS2G as pillar for developing strategic engineering as a new discipline for complex problem solving A.G. Bruzzone	405
<i>Author's Index</i>	412