

Editors

Julia Griselda Ceron Breton

Joseph Quartieri

Michele Guida

Domenico Guida

Claudio Guarnaccia



Latest Trends in Energy, Environment and Development

- Proceedings of the 7th International Conference on Environmental and Geological Science and Engineering (EG '14)
- Proceedings of the 7th International Conference on Urban Planning and Transportation (UPT '14)
- Proceedings of the 3rd International Conference on Energy Systems, Environment, Entrepreneurship and Innovation (ICESEEI '14)

Salerno, Italy, June 3-5, 2014

Scientific Sponsors



University of
Salerno, Italy

Kingston
University
London

Kingston University
London, UK



International Black
Sea University, Tbilisi,
Georgia



Parco Nazionale del
Cilento Vallo di Diano e
Alburni-Geopark, Italy



LATEST TRENDS in ENERGY, ENVIRONMENT and DEVELOPMENT

**Proceedings of the 7th International Conference on Environmental and
Geological Science and Engineering (EG '14)**

**Proceedings of the 7th International Conference on Urban Planning and
Transportation (UPT '14)**

**Proceedings of the 3rd International Conference on Energy Systems,
Environment, Entrepreneurship and Innovation (ICESEEI '14)**

**Salerno, Italy
June 3-5, 2014**

Scientific Sponsors:



University of
Salerno, Italy



Kingston University
London, UK



International Black
Sea University,
Tbilisi, Georgia



Parco Nazionale del
Cilento Vallo di Diano e
Alburni- Geopark, Italy

LATEST TRENDS in ENERGY, ENVIRONMENT and DEVELOPMENT

Proceedings of the 7th International Conference on Environmental and Geological Science and Engineering (EG '14)

Proceedings of the 7th International Conference on Urban Planning and Transportation (UPT '14)

Proceedings of the 3rd International Conference on Energy Systems, Environment, Entrepreneurship and Innovation (ICESEEI '14)

**Salerno, Italy
June 3-5, 2014**

Published by WSEAS Press
www.wseas.org

Copyright © 2014, by WSEAS Press

All the copyright of the present book belongs to the World Scientific and Engineering Academy and Society Press. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Editor of World Scientific and Engineering Academy and Society Press.

All papers of the present volume were peer reviewed by no less than two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.

ISSN: 2227-4359
ISBN: 978-960-474-375-9

LATEST TRENDS in ENERGY, ENVIRONMENT and DEVELOPMENT

**Proceedings of the 7th International Conference on Environmental and
Geological Science and Engineering (EG '14)**

**Proceedings of the 7th International Conference on Urban Planning and
Transportation (UPT '14)**

**Proceedings of the 3rd International Conference on Energy Systems,
Environment, Entrepreneurship and Innovation (ICESEEI '14)**

**Salerno, Italy
June 3-5, 2014**

Editors:

Prof. Julia Griselda Ceron Breton, Autonomous University of Carmen City, Mexico

Prof. Joseph Quartieri, University of Salerno, Italy

Prof. Michele Guida, University of Salerno, Italy

Prof. Domenico Guida, University of Salerno, Italy

Dr. Claudio Guarnaccia, University of Salerno, Italy

Committee Members-Reviewers:

Vitale Cardone

Leonardo Cascini

Domenico Guida

Joseph Quartieri

Stefano Riemma

Gianfranco Rizzo

Mario Vento

Yong Ding

Manijeh Razeghi

Igor Sevostianov

Daolun Chen

Chun-Hway Hsueh

Y. Baudoin

M. Dasenakis

G. E. Froudakis

R.S.R. Gorla

A. Kurbatskiy

S. Linderoth

P. Lunghi

C. Makris

S. Ozdogan

I. Poullos

Fotios Rigas

S. Sohrab

A. I. Zouboulis

Z. A. Vale

M. Heiermann

C. Helmis

I. Kazachkov

A. M.A. Kazim

G. Kiriakidis

Yoshihiro Tomita

A. Stamou

Luigi Nicolais

Peter Chang

Rui Vilar

Yuanhua Lin

Jing Zhang

Mohd Sapuan Salit

Jun Zhang

Cheng-Xian (Charlie) Lin

Kumar Tamma

Pradip Majumdar

M. Affan Badar

Olga Martin

Anastasios Lyrintzis

Cho W. Solomon To

Harris Catrakis

Gongnan Xie

Seung-Bok Choi

Jianqiao Ye

Jan Awrejcewicz

Yury A. Rossikhin

Jia-Jang Wu

Giuseppe Carbone

Kim Choon Ng

Marina Shitikova

Ahmet Selim Dalkilic

Bruno Capaccioni

Milivoje M. Kostic

Levent Yilmaz

Ernst D. Schmitter

Corina Carranca

Hing-Ho Tsang

Paolo Budetta

Rui Pedro Juliao

S. V. Dinesh

Efthimios Karymbalis

Hyung Hee Cho

Jiin-Yuh Jang

Robert Reuben

Ali K. El Wahed

Mihaela Banu

Pierre-Yves Manach

Ramanarayanan Balachandran

Sorinel Adrian Oprisan

J. Quartieri

Marcin Kaminski

ZhuangJian Liu

Abdullatif Ben-Nakhi

Ottavia Corbi

Xianwen Kong

Essam Eldin Khalil

Jose Alberto Duarte Moller

Junwu Wang

Moran Wang

Gilbert-Rainer Gillich

Thomas Panagopoulos

Jon Bryan Burley

Cyril Fleaurant

Biagio Guccione

Jose Beltrao

Ioannis Ispikoudis

Giuseppe Genon

Inga Straupe

Jose Luis Miralles

Carlos Guerrero

Giuseppe Luigi Cirelli

Francesco Ferrini
Sarma Cakula
P. Pardalos
Eduardo Mario Dias
Germano Lambert-Torres
Zhuo Li
Shuliang Li
Frangiskos V. Topalis
Vincenzo Niola
Myriam Lazard
Jiri Klima
Goricanec Darko
Ze Santos
Ehab Bayoumi
Luis Tavares Rua
Igor Kuzle
Bruce Sharky
Nikolay Djagarov
Darko Goricanec
Maria do Rosario Alves Calado
Gheorghe-Daniel Andreescu
Patricia Jota
Bharat Doshi
Gang Yao
Lu Peng
Pavel Loskot
Aida Bulucea
F. Akgun
D. Kotzias
J. Van Mierlo
F. Rigas
Claudiu Covrig
Claudiu Mereuta
Cledson Akio Sakurai
Grabara Janusz
Ioana Adrian
Jose Manuel Mesa Fernández
K.R.M. Vijaya Chandrakala
Lucija Foglar
Maria Bostenaru Dan
Mojtaba Shivaie
Noori Saady
Nubli Abdul Wahab Nubli Wahab
Rimma Shiptsova
Sunil Kumar
Suzana Yusup
Abdelnaser Omran
Alena Bumbova
Ayca Tokuc
Chandra Sekar
Cornelia Aida Bulucea
Dragos Ilie
Dumitru-Alexandru Bodislav
Farhan Abdul Rauf
Francisc Popescu
Georgios Tsantopoulos
Hugo Rodrigues

Luis Loures
Nelson Duarte
Oprita Razvan
Panida Sampranpiboon
Radulescu Mihai
Rodica Badescu
Roman Mihai Daniel
Rosli Abu Bakar
Rusu Teodor
Saad Bakkali
Santhosh Kumar.B B
Vishnu Pratap Singh Kirar
Athanasios Galanis
Bertrand Tchanche
Catalin Popescu
Lamberto Tronchin
Muntean Mihaela-Carmen
Nikolaos Eliou
Nikos Loukeris
Santoso Wibowo
Tomas Ganiron Jr
Valentina E. Balas

Table of Contents

Plenary Lecture 1: Interactive Simulation in the Field of Human–Machine Interaction in Transport Systems: Tools and Methods for Research, Training and Education <i>Petr Bouchner</i>	12
Plenary Lecture 2: Cooperative Intelligent Transport Systems <i>Sadko Mandzuka</i>	13
Plenary Lecture 3: Discrete Event Templates for Environment Sustainable Development <i>Calin I. Ciufudean</i>	14
Plenary Lecture 4: Sustainability According to the Viable Systems Approach. The Relevance of the Philosophical Values of the Kybernetes <i>Gandolfo Dominici</i>	15
Plenary Lecture 5: Innovative Energy System, Environmentally Friendly for Thermo-magnetic Appliance <i>Carmen Vasile</i>	16
Fuzzy Control of a Biomass-Fired and Solar-Powered Fluidized Bed Prototype as a Residential Cogeneration System <i>Michele Miccio, Bartolomeo Cosenza</i>	17
Atmospheric Wet and Dry Deposition of Trace Elements to a Mangrove Forest Site at the Southeast of Mexico <i>J. R. Carrillo, C. G. Carballo, R. M. Cerón, J. G. Cerón, E. Guevara, J. C. Zavala, A. Alderete, R. Brito, A. Ortinez, A. Cordova</i>	27
Preliminary Consideration on GPS Signal Reconstruction in Real Driving Cycle Analysis <i>Livia Della Ragione, Giovanni Meccariello</i>	35
Geostatistical Analyst Using the Junction Risk Factor to Analyse and Prevent Urban Traffic Accidents <i>Ismail Bulent Gundogdu</i>	42
Assessing Radon in the Karst Spring Waters: The Case-Study of the Capodifiume Spring Mixed Waters, National Park of the Cilento, Vallo di Diano and Alburni-European Geopark (Southern Italy) <i>Domenico Guida, Michele Guida, Biagio Capacchione, Albina Cuomo, Kay Knöller, Michael Schubert, Vincenzo Siervo, Aniello Aloia</i>	50
Throughfall Deposition of N and S to Mangrove Ecosystems in the Southeast of Mexico <i>R. C. Escoffie, R. M. Cerón, J. G. Ceron, E. C. Guevara, C. G. Carballo, J. A. Benitez, J. C. Zavala, F. Anguebes, M. Ramirez</i>	59
Local Emergency Works for Coastal Risk Defense <i>Michele Greco, Giovanni Martino</i>	66
Aspects of Modeling and Simulation of the Traffic Management Quality Sustainable in an Urban Intersection <i>Amelia Bucur, Liliana Georgeta Popescu, Mihai-Victor Zerbeş</i>	74

Industrial Settlements Acoustic Noise Impact Study by Predictive Software and Computational Approach	80
<i>Claudio Guarnaccia, Joseph Quartieri, Alessandro Ruggiero, Tony L. Lenza</i>	
Gamma Distribution Function as a Tool for Monthly Precipitation Generation in the Bashkortostan Republic, Russian Federation	88
<i>Tcvetana Volkova, Antonia Longobardi, Nataliya Krasnogorskaya</i>	
Chemical Streamflow Analysis as a Support for Hydrograph Filtering in Small Size Watersheds: The Ciciriello Experimental Catchment (Cilento, Vallo di Diano and Alburni European and Global Geopark)	96
<i>Antonia Longobardi, Domenico Guida, Albina Cuomo, Paolo Villani</i>	
Indirect Growth Rates of the Information Model for the Traffic at the Service of Sustainable Development of Maritime Tourism in Croatia from 2012 to 2018	103
<i>Vinko Vidučić, Snježana Pivac, Jelena Žanić Mikuličić</i>	
Atmospheric Radon in the Surface Layer: A Box Model Constrained with Meteorological Data	109
<i>Natalia De Luca, Eleonora Coppari, Piero Di Carlo, Giovanni Pitari</i>	
Neural Network Prediction of the Electricity Consumption of Trolleybus and Tram Transport in Sofia City	116
<i>Silviya Popova, Svetoslav Iliev, Milen Trifonov</i>	
Classification of the Cilento, Vallo Diano and Alburni National Park-European Geopark Coastland	121
<i>Domenico Guida, Aniello Aloia, Alessio Valente</i>	
Additional In-Car Warning System for Safer Grade Crossings	127
<i>Petr Bouchner, Martin Leso, Arnošt Matlafus, Dmitry Rozhdestvenskiy, Stanislav Novotný, Dušan Kamenický, Jana Kadlecova, Josef Mík</i>	
Levels of BTEX and Criteria Pollutants in Ambient Air of San Nicolas de los Garza, Nuevo Leon, Mexico during Summer 2013	132
<i>Carballo-Pat C. G., Cerón-Bretón J.G., Cerón-Bretón R. M., Ramírez-Lara E., Aguilar-Ucán C. A., Montalvo-Romero C., Guevara-Carrió E., Córdova-Quiroz A. V., Gamboa-Fernández J. M., Uc-Chi M. P.</i>	
Assessment of Rating Curve through Entropy-Based Manning's Equation	141
<i>Domenica Mirauda, Michele Greco</i>	
Driver's Aggressive Behavior – Experiments on the Driving Simulator	148
<i>Petr Bouchner, Stanislav Novotný, Dmitry Rozhdestvenskiy, Jana Kadlecová, Anna Čechová, Jan Suchánek, Jan Florián</i>	
Assessment of Naturally Occurring Radioactive Materials (NORMs) in Soils from the Kuçova Oilfield, Albania	154
<i>Gerti Xhixha, Marica Baldoncini, Giampietro Bezzon, Giampaolo Buso, Ivan Callegari, Tommaso Colonna, Giovanni Fiorentini, Gazmira Gjeta, Mariola Goga, Enrico Guastaldi, Fadil Hasani, Fabio Mantovani, Liliana Mou, Carlos Rossi Alvarez, Virginia Strati, Merita Xhixha Kaçeli, Alessandro Zanon</i>	

The Right to a Healthy Environment, Fundamental Human Right, Constitutionally Enshrined	161
<i>Florin Fainisi</i>	
Monitoring and GPS Controls, over Time, of the Active Fault in Castrovillari	169
<i>Vincenzo Barrile, Giuseppe M. Meduri, Giuliana Bilotta</i>	
A Hybrid Framework for Modelling and Simulation for Deshopping Behaviour and How Companies Respond	176
<i>Shawkat Salim Rahman, Shuliang Li</i>	
Landscape Planning and Biodiversity Conservation of River Habitats Require Vegetation Analysis and Mapping: The Case of Cilento National Park (Italy)	182
<i>Maria Rita Lapenna, Leonardo Rosati, Giovanni Salerno, Mariacristina Villani, Simonetta Fascetti, Leonardo Filesi</i>	
Multifactor Productivity, Financial Performance and Economic Value Added of Agriculture in the Czech Republic after the Economic Crisis	191
<i>Ondřej Machek, Jindřich Špička</i>	
Evolutionary Kinematics and Geological Features of the Large Pisciotta Rock Slide (Cilento Geopark, Campania, Southern Italy)	197
<i>De Vita Pantaleone, La Barbera Giovanni, Carratú Maria Teresa</i>	
Land Cover Change Analysis Using CORINE Land Cover Data: A Case Study of the Peripannonian Region in Bosnia and Herzegovina	205
<i>Tatjana Popov, Marko Ivanisevic, Neda Zivak, Goran Trbic, Dejan Djordjevic</i>	
NORM Assessment at Gas and Oil Fields in Ukraine	213
<i>T. Pavlenko, M. Aksyonov, O. German, M. Friziuk, E. Fedorenko, A. Mikhajlenko</i>	
Levels of Aromatic Hydrocarbons in the Atmosphere of one Urban Site Located at the Northeast of Mexico during Winter 2013	217
<i>Ramírez-Lara E., Fernández-Delgadillo S., Cerón-Bretón J. G., Cerón-Bretón R. M., Guevara-Carrió E., Alderete-Chávez A., Carballo-Pat C. G., Anguebes-Franceschi F., Peva-Pamplona Inry, Ortínez-Álvarez J. A., López-Chuken U.</i>	
The Importance of Education and Economic Growth - Comparative Analysis Romania-Japan	226
<i>Daniela Neamt, Carmen Nastase, Ana-Maria Cozgarea, Calin Ciufudean</i>	
Using Radon as a Naturally Occurring Tracer in the Bussento River Karst Systems (National Park of the Cilento, Vallo di Diano and Alburni - European and Global Geopark, Southern Italy)	233
<i>Domenico Guida, Albina Cuomo, Michele Guida</i>	
Petrology & Geochemistry of Precambrian Metagranites and Their Enclaves from Core Series of Menderes Massif, in Buldan (Denizli, West Turkey) Area	240
<i>Kerim Kocak, Huseyin Şenol, Celalettin Uyanik</i>	
Norm and Tenorm Management and Decontamination Procedures	244
<i>Giacomo Zambelli, Davide Di Pietrantonio, Carlo Oppici, Alberto Ciarmatori, Francesco Carnaccini</i>	

Driver Vigilance Monitoring – Impact of the Long Tunnels	251
<i>Akshaya Jayakumar, Mirko Novak, Josef Faber, Petr Bouchner</i>	
Natural Radioactivity in Dust Storm Samples from Al-Najaf, Iraq	257
<i>Ali Abid Abojassim Al-Hamidawi</i>	
Levels of Carbonyls, CO, O₃, NO, NO₂, NO_x and SO₂ in Ambient air of Monterrey, Mexico during Winter 2013	262
<i>Cerón-Bretón J. G., Cerón-Bretón R. M., Ramírez-Lara E., Aguilar-Ucán C. A., Zavala-Loría J. C., López-Chuken U., Montalvo-Romero C., Anguebes-Franceschi F., Carballo-Pat C. G., Durán-Díaz M., López-Gil L.</i>	
The Impact of Structural Changes on Tourism Market on Business Specialization of Subjects of Tourist Offer in Destination	269
<i>Iris Mihajlović</i>	
Bioremediation of Ni²⁺ Polluted Soils by Plant-Associated Bacteria in Heavy Metal Phytoremediation Process	281
<i>Corneliu Mihaita Pohontu, Ioan Gontariu</i>	
Assessing Radon-in-Air from Streamflow, Comparing Two Study Cases: Labso-Laura and Capodifiume Springs (Campania Region, Southern Italy)	287
<i>Domenico Guida, Michele Guida, Maria Lettieri, Vincenza Tirri, Biagio Capacchione</i>	
Geochemical Characteristics of Oceanic Plagiogranite and Basic Dikes at the Sheeted Dike Complex of Central Anatolian Ophiolites at Bozkır (Ortakoy-Aksaray/TURKEY) Dam	296
<i>Kerim Kocak, Bernard E. Leake, Riza Sogut</i>	
Contribution to the Development of the Simulation Model of the Port-Transshipment System	300
<i>Josko Dvornik, Srđan Dvornik, Vinko Vidučić</i>	
Simulation of ¹³⁷CS Radioactive Contamination Due to an Accident in a Biomass Plant for Energy Production: The Importance of Decision Support System (DSS) in the Emergency Planning	308
<i>Andrea Malizia, Claudio Cafarelli, Laura Milanese, Simona Pagannone, Amedeo Pappalardo, Massimo Pedemonte, Daniele Di Giovanni, Mariachiara Carestia, Orlando Cenciarelli, Fabrizio D'amico, Leonardo Palombi, Carlo Bellecci, Pasqualino Gaudio</i>	
Productivity Benchmarking in Incentive Regulation of Public Utilities: Evidence from Czech Gas Utilities and Implications for Post-Communist Countries	315
<i>Ondřej Machek, Jiří Hnilica</i>	
Variations in Criteria Pollutants and Deposition Fluxes of Trace Elements in Metropolitan Area of Monterrey, Mexico	321
<i>R. M. Cerón, J. G. Cerón, E. Ramírez, C. A. Aguilar, C. Montalvo, U. López, C. G. Carballo, J. A. Benítez, J. R. Carrillo</i>	
Spatial Interpolation of Average Long-Term Annual Precipitation in the Republic of Bashkortostan, Russian Federation	329
<i>Ivan Afanasev, Tsvetana Volkova, Alexey Elizaryev, Antonia Longobardi</i>	

"Intelligent Cities" - Interdependent Time Series Graphically Analyzed. Strategies in Traffic Control and Street Lighting <i>Claudiu Silvasan, Ioan Borza</i>	337
Application of ²²²Rn as Partition Radiotracer in Petroleum Reservoirs <i>Jaqueline Martins De Paulo, Rubens Martins Moreira</i>	344
Energy Consumption and Economic growth in Iran: Cointegration and Causality Analysis <i>Soheila Khoshnevis Yazdi, Nikos Mastorakis</i>	348
Laboratory Combustion of Coal with Admixture of Limestone: Effect on Elemental Volatility <i>Lucie Bartoňová</i>	355
Renewable, CO2 emissions, Trade Openness, and Economic Growth in Iran <i>Soheila Khoshnevis Yazdi, Nikos Mastorakis</i>	360
Investigating Relative Contributions of Various Precursors' Ratio in TTHMs Profiling in a Proto-Type Distribution Rig Using Central Composite Design (CCD) <i>Sajida Rasheed, Imran Hashmi, Luiza Campos, Qizhi Zhou, Jong K. Kim</i>	371
Groundwater Evaluation by Using Environmental Isotopes in the Northeast Missan Governorate, South of Iraq <i>Ali Riza Sögüt, Hussein B. Ghalibal-Hawash</i>	382
Infrared Spectral Measurements in Remotes Sensing and GIS to Asses Factors Controlling Flora Diseases in Jabal Al Akhdar, Libya <i>B. M. Suleiman, S. I. Elmehdy, M. Mohamed, S. Hamad, R. Alhendaw</i>	385
An Investigation of VARMA Modeling for the Representation of Feed-In Tariff Revenue of Wind-Based Microgrids <i>Guzman Diaz, Blanca Moreno, Jose Coto, Javier Gomez-Aleixandre</i>	393
Assessing and Modeling the Contribution to Indoor Radon from the Building Materials: The S.I.R.E.M.® Model <i>Simona Mancini, Michele Guida, Domenico Guida, Albina Cuomo, Pierfrancesco Fiore, Enrico Sicignano</i>	398
Authors Index	408

Plenary Lecture 1

Interactive Simulation in the Field of Human–Machine Interaction in Transport Systems: Tools and Methods for Research, Training and Education



Associate Professor Petr Bouchner

Head of Department of Vehicles at Faculty of Transportation Sciences

Driving Simulation Research Group

Czech Technical University in Prague

Czech Republic

E-mail: bouchner@lss.fd.cvut.cz

Abstract: Problems of reliability and safety of interaction between the human operator (driver) and him/her controlled artificial system (machine, vehicle) are the crucial research tasks within the scope of safety in transport. Most of the accidents happened due to the failure of a human factor. It can either happen when controlling (driving) the machine (vehicle) but also when maintaining it or even sooner when it is manufactured or designed. A failure is often caused either by a bad design of the system or an insufficient or unsuitable training of the human operators. Since the only communication between the operator and artificial systems is realized via the interfaces, just the field of interfaces is the topic of our contemporary research performed in our laboratories.

The lecture introduces problems of the Human-Machine Interaction (HMI) research field as well as problems of user interfaces in systemic point of view. These will be discussed in general, seamlessly moving towards the field of driver-vehicle interaction reliability and safety. The objective approaches and measures to investigate in the reliability of operator-machine interaction are discussed as well as mathematical modeling tools. Beside those general approaches, the lecture introduces in more detail our main research focus - ergonomics and human factors in vehicle control.

The presentation shows and explains main principles of the research tools – the advanced interactive ground vehicle simulators, which are continuously being developed by the Driving Simulation Research Group at Czech Tech Univ. It encompasses passenger cars, two-wheelers, trucks and/or rail engines. This field of R&D deals with simulation technology but also scenario and experiment design and mainly measurement tools and methods, which are fitted for particular experiment types. Indisputable role in this area is played by measuring devices, especially those which work with so called psychophysiological measures. The data measured during the experiments are usually hard to be interpreted in a straightforward way, mainly those which have biological nature - therefore also some advanced analytical and classification tools are discussed.

At the end of the presentation most recent and/or most valuable results and conclusions, which presents outputs of almost 15 years research effort in this area, will be shown. The lecture is accompanied with vivid videos.

Brief Biography of the Speaker: Academic career: 2003 - Master Degree at CTU Prague (Faculty of Electro-engineering), specialization in computer engineering, 2007 - Doctoral Degree at CTU Prague (Faculty of Transportation Sciences) “Driving simulators for HIM research”, 2011 degree of associate prof. (doc.) at CTU Prague. Since 2003 researcher and university teacher, since 2007 Head of Driving Simulation Research Group, since 2008 deputy head of Laboratory of Systems Reliability of FTS, CTU and Institute of Informatics of Academy of Sciences of Czech Republic, since 2011 head of Department of Transporting Technologies.

Scientific activities: research activities in interactive and driving simulator construction and development, HMI in vehicles, human factors in transportation, measurements and analysis of complex data, implementation of virtual reality tools into the experiments, design of experiments and their analysis, member of editorial board of scientific journal Neural Network World.

Since 2003 wrote several tens of papers, chapters in journals, book chapters, research report with topics on interactive simulators, human factors in transportation, ergonomics, driver’s attention and fatigue, worked in expert groups of PIARC and European Committee. Main solver of several national scientific and applied research projects (grants).

Plenary Lecture 2

Cooperative Intelligent Transport Systems



Professor Sadko Mandzuka

Faculty of Traffic Science

Department of Intelligent Transport System

University of Zagreb

Croatia

E-mail: mandzukas@fpz.hr

Abstract: Intelligent Transport System (ITS) is an holistic, control and ICT upgrade of classic transportation and traffic systems which significantly improves system performance, traffic safety, efficiency in transportation of goods and passengers, increases passenger protection and comfort, reduces pollution, etc. A particularly potent approach was recognized in the possibility of application of cooperative systems in traffic. The main characteristics of a cooperative approach are: a) Considers the driver, vehicle, infrastructure and other road users as a unique system, b) Considers operational and management needs of the entire system, c) Integrated approach to safety of traffic and all participants, d) Applies technology in a coherent manner in order to support overall integration of system parts. Currently we recognize next systems onto which the cooperative approach can be successfully applied: navigation systems and travel information systems, warning systems, emergency services' vehicle management, priority management in urban public transport, intelligent systems for speed management, support systems for endangered transport users and others. In the narrow sense of the cooperation definition, the following communications were recognized: V2V – vehicle to vehicle, V2I – vehicle to infrastructure, V2P – vehicle to pedestrian, I2P – infrastructure to pedestrian etc.

Brief Biography of the Speaker: Prof. Sadko Mandzuka is currently Head of Transportation Telematics Chair at the Department of Intelligent Transportation System, Faculty of Traffic Science, University of Zagreb. He has wide experience in the area of floating vessels control theory, Intelligent Transport System, artificial intelligence, traffic incident management system etc. He had the opportunity to work both in academic and industrial environments including Brodarski Institute, Consulting in the Innovation Area for SME's, etc. He is currently setting up a spin-off company providing consulting services for Intelligent Transport System (Incident Management System and other) while at the same time advancing his academic career. He is a founding member of Croatian Robotic Association, President of ITS-Croatia, and Collaborating member of Croatian Academy of Engineering. He is a member of Technical Committee on Marine Systems (Coordinating Committee on Transportation and Vehicle Systems - IFAC (International Federation of Automatic Control). Finally he has served in the program committees and as reviewer at several international Congress and Conferences. He is author of more than 100 internationally reviewed publications.

Plenary Lecture 3

Discrete Event Templates for Environment Sustainable Development



Associate Professor Calin I. Ciufudean
“Stefan Cel Mare” University of Suceava
Faculty of Electrical Engineering and Computer Science
Department of Automatics and Computers
ROMANIA
E-mail: calin@eed.usv.ro

Abstract: Discrete Event Templates for Environment Sustainable Development expounds upon an important chapter of artificial intelligence; respectively, discrete event systems applied for modeling and simulation of control, logistic supply, chart positioning, conservation and protection of natural resources in order to have a clean and healthy environment capable to ensure a sustainable development of modern global society.

All these factors allow for a new design of artificial social systems dotted with intelligence, autonomous decision-making capabilities, and self-diagnosing properties.

Artificial social systems were defined by Y. Moses and M. Tennenholtz in their work "Artificial Social Systems," www.home.cs.utwente.nl: "An artificial social system is a set of restrictions on agents' behaviors in a multi-agent environment. Its role is to allow agents to coexist in a shared environment and pursue their respective goals in the presence of other agents."

Heuristics techniques, data mining planning activities, scheduling algorithms, automatic data identification, processing, and control represent as many trumps for these new systems' analyzing formalism.

This lecture aims to provide relevant theoretical frameworks and the latest empirical research findings. Social simulations grounded on solid conceptual models from the social sciences, such as discrete event social simulations, provide a fully traceable implementation of these concepts that readily accommodate the varying timescales in gaining a better understanding of the complex, adaptive system that is society.

The tutorial introduces real, e.g. implemented by the author, approaches and frameworks for modeling and simulation process, kinematic constraints of the trophic closed loop chains as well as modern issues for automatic control of diverse pollution systems.

We challenge the reader to reveal the development stage of social networks appliance upon environmental issues and to anticipate their future evolution in respect to technological and climatic changes.

Brief Biography of the Speaker:

- Academic Positions: Assoc. Professor Ph.D. Eng., Dept. of Automatics and Computers, Faculty of Electrical Engineering and Computer Science, "Stefan cel Mare" University of Suceava, Romania.
- Fields of Scientific Activities: Discrete Event Systems, Complex Measurement Systems, Reliability and Diagnosis of Control Systems, Environmental Management.
- He published 11 books, 14 patents and over 170 scientific papers in conference proceedings and journals.
- Honor Member of the Romanian Society of Electrical & Control Engineering - Member of the Romanian Technical Experts Corp.
- Technical Expert of the Romanian Ministry of Justice.
- President of the Romanian Society of Electrical & Control Engineering, Suceava Branch.
- He is a member of the editorial boards of several international scientific journals and conferences of control systems and electric engineering science. He was designated chairmen at 27 international conferences.

Plenary Lecture 4

Sustainability According to the Viable Systems Approach. The Relevance of the Philosophical Values of the Kybernetes



Professor Gandolfo Dominici

Vice President and Scientific Director
Business Systems Laboratory (Italy)

Tenured Assis. Professor of Business Management
Dep. SEAS – University of Palermo
Italy

E-mail: gandolfo.dominici@libero.it

Abstract: An organization is viable if it survives, remains united and is complete; it is homeostatically balanced both internally and externally and furthermore has mechanisms that allow it to grow, learn, develop, and adapt, and thus become increasingly more effective in its environment. The more the organization is able to preserve and regenerate, the more possibilities it has to maintain viability in the long term.

Therefore viability assumes the relevance of "time" as an important factor in decision-making and action. If we consider the organization to be a dissipative system, then in order to counterbalance the consumption of relevant resources, it is necessary to think ahead to a time horizon that extends beyond the mere achievement of functioning resources in the short to middle term.

Therefore, we can consider sustainability as systemic viability in the long term. This broader time horizon entails that the role of the "kybernetes" not be limited to the quest for functioning resources within a limited timeframe but rather must be developed in a more general way as a philosophy guiding the kybernetes in every decision and action.

This implies that it is essential to involve "values" in the decision-making and action-taking processes. For these reasons, the kybernetes' role, values and education are of extreme importance to the sustainability –and thus the long-term viability – of human organizations.

Brief Biography of the Speaker: Gandolfo Dominici is a Ph.D. in Business Management at "Sapienza" University of Rome in 2004. In 2003 he was visiting researcher at the Faculty of Economics of Nagasaki University, Japan developing a research about the cultural roots of Japanese Toyota Production Systems.

Since 2005 he is Assistant Professor of Business Management at the University of Palermo (Italy), where from 2006 he holds the Chair of Marketing and from 2008 of Systems and Organizational Processes. He got his tenure at University of Palermo in 2008.

He is co-founder, Vice President and Scientific Director of the scientific nonprofit association Business Systems Laboratory (B.S.Lab - www.bslaboratory.net), board member of the World Organisation of Systems and Cybernetics (WOSC- <http://wosc.co/>) and the Consorzio Universitario di Economia Industriale e Manageriale (CUEIM - www.cueim.com). He is author of about 50 published articles and books and member of the editorial board of 14 international peer reviewed journals.

His main research interests are: Systems Thinking, Managerial Cybernetics, Marketing, Consumer ethnography, SCM and Innovation Management.

For further information: www.unipa.it/gandolfodominici/

Plenary Lecture 5

Innovative Energy System, Environmentally Friendly for Thermo-magnetic Appliance



Associate Professor Carmen Vasile

LGECO - Design Engineering Laboratory

INSA - National Institute of Applied Sciences

Strasbourg, France

E-mail: carmen.vasile-muller@insa-strasbourg.fr

Abstract: Our aim and the goal of this innovative thermo-magnetic technology is to improve the energy efficiency of our equipments and to preserve our quality of life, by having access to all refrigeration and heating technologies, without damaging the planet.

This innovative energy system is based on the concept of the thermo-magneto effect which will be presented. The description of the prototypes design and the results for temperature span between negative -20°C up to $+60^{\circ}\text{C}$, will be presented as well.

Energy conversion and thermal exchanges are in the heart of our daily life through the household appliances as fridges, freezers; at home: the air conditioner; in shops: the refrigerated show cases, beverage dispensers, cold room; in the food-processing industry: storage of foodstuffs, cold chain; in companies: industrial process; in motor cars: 90 % of new vehicles integrate an air conditioning system, etc...

For all these applications it is possible to completely eliminate the refrigerant gas system and to use instead the thermo-magnetic system, which is already in the pre-industrialization phase.

The presentation will show that the thermo-magnetic technology meets all the needs for versatile next-generation equipment for cooling and heating, because it is environmentally friendly; because it emits no greenhouse gasses and no toxic fluids (using a water/glycol mix for cooling circuits); because is energy efficient: 40% to 60% less energy consumption compared to classical systems; and also for economical reasons: initial costs are similar to existing systems, maintenance costs are lower.

We are convinced the energy is clearly one of the critical global challenges facing humankind, and we must put in work all our forces in order to find efficient sustainable solutions.

Brief Biography of the Speaker: Carmen VASILE MULLER is Associate Professor at INSA (Graduate School of Science and Technology) the Department of Energy, Heating & Air Conditioning and researcher at LGeCo (Design Engineering Laboratory) in Strasbourg, France.

She has a PhD in Energy Engineering (expertise in Systems and Heat & Mass Transfer).

She performs since 1990 research activities and academic teaching in the field of heat and mass transfer, fluid dynamics, energy efficiency, magnetic cooling, renewable energies.

Her research work is visible in an important number of international scientific journals and in national and international conferences all over the world. She is member of different scientific societies and she leads the subgroup of machines inside the Standardisation Group for Magnetic Refrigeration Working Party of the International Institute of Refrigeration (IIF-IIR).

Authors Index

Afanasev, I.	329	Cosenza, B.	17	Guida, M.	50, 233
Aguilar, C. A.	321	Coto, J.	393	Guida, M.	287, 398
Aguilar-Ucán, C. A.	132, 262	Cozgarea, A.-M.	226	Gundogdu, I. B.	42
Aksyonov, M.	213	Cuomo, A.	50, 96	Hamad, S.	385
Alderete, A.	27	Cuomo, A.	233, 398	Hasani, F.	154
Alderete-Chávez, A.	217	D'Amico, F.	308	Hashmi, I.	371
Al-Hamidawi, A. A. A.	257	De Luca, N.	109	Hnilica, J.	315
Alhendaw, R.	385	De Paulo, J. M.	344	Iliev, S.	116
Aloia, A.	50, 121	Della Ragione, L.	35	Ivanisevic, M.	205
Anguebes, F.	59	Di Carlo, P.	109	Jayakumar, A.	251
Anguebes-Franseschi, F.	217, 262	Di Giovanni, D.	308	Kaçeli, M. X.	154
Baldoncini, M.	154	Di Pietrantonio, D.	244	Kadlecova, J.	127, 148
Barrile, V.	169	Diaz, G.	393	Kamenický, D.	127
Bartoňová, L.	355	Djordjevic, D.	205	Kim, J. K.	371
Bellecci, C.	308	Durán-Díaz, M.	262	Knöller, K.	50
Benitez, J. A.	59, 321	Dvornik, J.	300	Kocak, K.	240, 296
Bezzon, G.	154	Dvornik, S.	300	Krasnogorskaya, N.	88
Bilotta, G.	169	Elizaryev, A.	329	La Barbera, G.	197
Borza, I.	337	Elmehdy, S. I.	385	Lapenna, M. R.	182
Bouchner, P.	127, 148, 251	Escoffie, R. C.	59	Leake, B. E.	296
Brito, R.	27	Faber, J.	251	Lenza, T. L.	80
Bucur, A.	74	Fainisi, F.	161	Leso, M.	127
Buso, G.	154	Fascetti, S.	182	Lettieri, M.	287
Cafarelli, C.	308	Fedorenko, E.	213	Li, S.	176
Callegari, I.	154	Fernández-Delgadillo, S.	217	Longobardi, A.	88, 96, 329
Campos, L.	371	Files, L.	182	López, U.	321
Capacchione, B.	50, 287	Fiore, P.	398	López-Chuken, U.	217, 262
Carballo, C. G.	27, 59, 321	Fiorentini, G.	154	López-Gil, L.	262
Carballo-Pat, C. G.	132, 217, 262	Florián, J.	148	Machek, O.	191, 315
Carestia, M.	308	Friziuk, M.	213	Malizia, A.	308
Carnaccini, F.	244	Gamboa-Fernández, J. M.	132	Mancini, S.	398
Carratú, Maria Teresa	197	Gaudio, P.	308	Mantovani, F.	154
Carrillo, J. R.	27, 321	German, O.	213	Martino, G.	66
Čechová, A.	148	Ghalibal-Hawash, H. B.	382	Mastorakis, N.	348, 360
Cenciarelli, O.	308	Gjeta, G.	154	Matlafus, A.	127
Ceron, J. G.	27, 59, 321	Goga, M.	154	Meccariello, G.	35
Cerón, R. M.	27, 59, 321	Gomez-Aleixandre, J.	393	Meduri, G. M.	169
Cerón-Bretón, J. G.	132, 217, 262	Gontariu, I.	281	Miccio, M.	17
Cerón-Bretón, R. M.	132, 217, 262	Greco, M.	66, 141	Mihajlović, I.	269
Ciarmatori, A.	244	Guarnaccia, C.	80	Mík, J.	127
Ciufudean, C.	226	Guastaldi, E.	154	Mikhajlenko, A.	213
Colonna, T.	154	Guevara, E.	27, 59	Milanese, L.	308
Coppari, E.	109	Guevara-Carrió, E.	132, 217	Mirauda, D.	141
Cordova, A.	27	Guida, D.	50, 96, 121	Mohamed, M.	385
Córdova-Quiroz, A. V.	132	Guida, D.	233, 287, 398	Montalvo, C.	321

Montalvo-Romero, C.	132, 262	Popov, T.	205	Suchánek, J.	148
Moreira, R. M.	344	Popova, S.	116	Suleiman, B. M.	385
Moreno, B.	393	Quartieri, J.	80	Tirri, V.	287
Mou, L.	154	Rahman, S. S.	176	Trbic, G.	205
Nastase, C.	226	Ramírez, E.	321	Trifonov, M.	116
Neamt, D.	226	Ramirez, M.	59	Uc-Chi, M. P.	132
Novak, M.	251	Ramírez-Lara, E.	132, 217, 262	Uyanik, C.	240
Novotný, S.	127, 148	Rasheed, S.	371	Valente, A.	121
Oppici, C.	244	Rosati, L.	182	Vidučić, V.	103, 300
Ortinez, A.	27	Rossi Alvarez, C.	154	Villani, M.	182
Ortínez-Álvarez, J. A.	217	Rozhdestvenskiy, D.	127, 148	Villani, P.	96
Pagannone, S.	308	Ruggiero, A.	80	Volkova, T.	88, 329
Palombi, L.	308	Salerno, G.	182	Xhixha, G.	154
Pantaleone, D. V.	197	Schubert, M.	50	Yazdi, S. K.	348, 360
Pappalardo, A.	308	Şenol, H.	240	Zambelli, G.	244
Pavlenko, T.	213	Sicignano, E.	398	Žanić Mikuličić, J.	103
Pedemonte, M.	308	Siervo, V.	50	Zanon, A.	154
Peva-Pamplona, I.	217	Silvasan, C.	337	Zavala, J. C.	27, 59
Pitari, G.	109	Söğüt, A. R.	382	Zavala-Loría, J. C.	262
Pivac, S.	103	Sogut, R.	296	Zerbeş, M.-V.	74
Pohontu, C. M.	281	Špička, J.	191	Zhou, Q.	371
Popescu, L. G.	74	Strati, V.	154	Zivak, N.	205