6th International Conference on Integrated Modeling and Analysis in Applied Control and Automation

(IMAACA 2012)

Held at the International Multidisciplinary Modeling and Simulation Multiconference

Vienna, Austria
19-21 September 2012

Editors:

Agostino Bruzzone
Genevieve Dauphin-Tanguy
Sergio Junco
Yuri Merkuryev

ISBN: 978-1-62993-483-9

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© (2012) by CAL-TEK S.r.l.
All rights reserved.

Printed by Curran Associates, Inc. (2014)

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

CAL-TEK S.r.l.
Via Spagna 240-242
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: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

Index

Finite horizon h_infinity cheap control problem for a class of linear systems with state delays 1
Valery Y. Glizer

Robust controllability sets of linear and saturated linear strategies with discontinuous gains 11
Valery Glizer, Vladimir Turetsky, Josef Shinar

Model predictive control for formation keeping in an orbit 21
Adel Abdulrahman, Mohamad Bagash, Osama Abdelkhalik

Modal analysis reduction of multi-body systems with generic damping 26
Loucas S. Louca

Review of "fault detection, diagnosis and decision support methods" in industry 36
Rambabu Kandepu, Tor Inge Waag, Karl Magnus Laundal, Anis Yazidi

Air-heating set control via direct search method and structured singular value 44
Marek Dlapa

Modeling and simulation of severe slugging in air-water systems including inertial effects 50
Jorge Luis Baliño

Robust model matching control applied to a crane 60
Eduardo L. Lozano De Campos, Fabrizio Leonardi

Fault diagnosis in ncs under communication constraints: a quadrotor helicopter application 66
Karim Chabir, Mohamed Amine Sid, Dominique Sauter

Integrated management and optimization of the sanitation cycle by the combined use of expert systems and supervisory systems in real time operation 76
Marcelo De Souza, Alexandre Acácio De Andrade, Sergio Luiz Pereira

Voltage envelope, noise and hilbert transform 86
Federico Muiño, Maximiliano Carabajal, Marcela Morvidone, Carlos D'attellis, Matías Fabbro

QFT control applied to a drive by wire (dbw) system 91
Fabio Delatore, Fabrizio Leonardi, Alexsander T. Carvalho, Carlos A. Morioka

Mechanical analysis of 2d-brazed joint using a new hybrid "max-fem" model 96
Abderrazzaq Ifis, François Bilteryst, Mohammed Nouari

A study on the ecms parameter adaptation for the driver characteristic variation 103
Joohee Son, Taeho Park, Kanghee Won, Hyeongcheol Lee

Towards a methodology for modelling and validation of an agricultural vehicle's dynamics and control 112

Martin Peter Christiansen, Kim Bjerge, Gareth Edwards, Peter Gorm Larsen

Mathematical modeling of a 500 W_e power module composed by a PEM fuel cell combined with a DC-DC enhanced potential output converter 120
Roque Machado de Senna, Marcelo Linardi, Douglas Alves Cassiano, Ivan Santos, Edgar Ferrari da Cunha, Henrique de Senna Mota, Rosimeire Aparecida Jerônimo

A method predicting temperature rise of oil-hydraulic system considering heat balance between oil-passage and housing 128
Kohki Tomioka, Kazuhiro Tanaka, Hiroshi Higo, Fumio Shimizu

Dynamics of torque converter with lock-up clutch 137
Takeshi Yamaguchi, Kazuhiro Tanaka, Katsuya Suzuki

Operation strategies to minimize methanol recovery in batch distillation of hydroalcoholic mixtures 145
Franco De Luca, Raúl Munizaga-Miranda, Claudio Gelmi, José Ricardo Pérez-Correa

CFD modeling of thermal distribution in industrial server centers for configuration optimisation and control 151
Pierre-Luc Paradis, Drishtysingh Ramdenee, Adrian Ilinca, Hussein Ibrahim, Abderrazak El-Ouafi, Jean-Sébastien Deschênes, Alexandre Boudreau, Daniel Rousse

Neural network simulation of simple biological systems including optimal control problems 161
Tibor Kmet, Maria Kmetova

Jacobian based control of walking robot with compliant legs 171
M. M. Gor, P. M. Pathak, A. K. Samantaray, Jung-Ming Yang, Seong Woo Kwak

ARMA model based GPC 178
Yuchen Zhao, Anibal Zanini

Diagnosis of PEMFC by using statistical analysis 191
Zhongliang Li, Rachid Outbib, Daniel Hissel, Stefan Giurgea

Generalized controlled switched bond graph structures with applications to abrupt fault modeling 199
Matías Nacusse, Sergio Junco

Unknown input observer for detecting current sensor faults for a DFIG in wind turbine 209
Hakim Ouyessaad, Houcine Chafouk

Unknown input observer: a physical approach 215
Dapeng Yang, Christophe Sueur

Reducing vibrations on flexible rotating arms through the movement of sliding masses: modeling, optimal control and simulation 221
Eder Terceiro, Agenor de Toledo Fleury

On the partial guidance of an autonomous blimp by various feedback laws 229
Chaker Jammazi, Adel Khadaraoui, Maali Zaghdoudi

Interval approach for robust fault diagnosis 239

Mayank Shekhar Jha, Genevieve Dauphin-Tanguy, Belkacem Ould Bouamama

Dynamic modelling of multi section bionic manipulator: application to Robotino-XT **247**
Sonam Behl, Coralie Escande, Pushpraj Mani Pathak, Rochdi Merzouki, Bhanu Mishra

Authors' Index **253**