

Contents

Invited Papers

Toward Human-Machine Cooperation <i>Patrick Millot</i>	3
---	---

Part I: Intelligent Control Systems and Optimization

Planning of Maintenance Operations for a Motorway Operator based upon Multicriteria Evaluations over a Finite Scale and Sensitivity Analyses <i>Céline Sanchez, Jacky Montmain, Marc Vinches and Brigitte Mahieu</i>	23
--	----

A Multiple Sensor Fault Detection Method based on Fuzzy Parametric Approach <i>Frederic Lafont, Nathalie Pessel and Jean-Francois Balmat</i>	37
--	----

The Shape of a Local Minimum and the Probability of its Detection in Random Search <i>Boris Kryzhanovsky, Vladimir Kryzhanovsky and Andrey Mikaelian</i>	51
--	----

Rapidly-exploring Sorted Random Tree: A Self Adaptive Random Motion Planning Algorithm <i>Nicolas Jouandeau</i>	63
---	----

Applying an Intensification Strategy on Vehicle Routing Problem <i>Etiene P. L. Simas and Arthur Tórgo Gómez</i>	75
---	----

Detection of Correct Moment to Model Update <i>Heli Koskimäki, Ilmari Juutilainen, Perttu Laurinen and Juha Röning</i>	87
---	----

Robust Optimizers for Nonlinear Programming in Approximate Dynamic Programming <i>Olivier Teytaud and Sylvain Gelly</i>	95
---	----

Part II: Robotics and Automation

Improved Positional Accuracy of Robots with High Nonlinear Friction using a Modified Impulse Controller <i>Stephen van Duin, Christopher D. Cook, Zheng Li and Gursel Alici</i>	109
---	-----

An Estimation Process for Tire-Road Forces and Sideslip Angle for Automotive Safety Systems
Guillaume Baffet, Ali Charara, Daniel Lechner and Damien Thomas..... 125

SMARTMOBILE and its Applications to Guaranteed Modeling and Simulation of Mechanical Systems
Ekaterina Auer and Wolfram Luther 139

Path Planning for Cooperating Unmanned Vehicles over 3-D Terrain
Ioannis K. Nikolos and Nikos C. Tsourveloudis 153

Tracking of Manoeuvring Visual Targets
C. Pérez, N. García, J. M. Sabater, J. M. Azorín and L. Gracia 169

Motion Control of an Omnidirectional Mobile Robot
Xiang Li and Andreas Zell..... 181

A Strategy for Exploration with a Multi-robot System
Jonathan A. Rogge and Dirk Aeyels 195

Tracking of Constrained Submarine Robot Arms
Ernesto Olguín-Díaz and Vicente Parra-Vega 207

Part III: Signal Processing, Systems Modeling and Control

Modelling Robot Dynamics with Masses and Pulleys
Leo J. Stocco and Matt J. Yedlin 225

Stochastic Nonlinear Model Predictive Control based on Gaussian Mixture Approximations
Florian Weissel, Marco F. Huber and Uwe D. Hanebeck..... 239

The Conjugate Gradient Partitioned Block Frequency-Domain for Multichannel Adaptive Filtering
Lino García Morales 253

Guaranteed Characterization of Capture Basins of Nonlinear State-Space Systems
Nicolas Delanoue, Luc Jaulin, Laurent Hardouin and Mehdi Lhommeau..... 265

In Situ Two-Thermocouple Sensor Characterisation using Cross-Relation Blind Deconvolution with Signal Conditioning for Improved Robustness
Peter Hung, Seán McLoone, George Irwin, Robert Kee and Colin Brown..... 273

Dirac Mixture Approximation for Nonlinear Stochastic Filtering
Oliver C. Schrempf and Uwe D. Hanebeck 287

On the Geometry of Predictive Control with Nonlinear Constraints
Sorin Olaru, Didier Dumur and Simona Dobre 301

Author Index..... 315