## CONTENTS

### INVITED SPEAKERS

#### KEYNOTE SPEAKERS

Formation Control and Vision based Localization of System of Mobile Robots  
*Krzysztof Kozlowski*  
(IS-5)

Controlled Magnetic Bearings for Smart Machines  
*Gerhard Schweitzer*  
(IS-7)

Mobile Manipulation - Why Are Humans so Much Better? And How Can We Change That?  
*Oliver Brock*  
(IS-9)

Rough Terrain Mobile Robotics - From Design to Motion Control and Planning  
*Faiz Ben Amar*  
(IS-11)

### INTELLIGENT CONTROL SYSTEMS AND OPTIMIZATION

#### FULL PAPERS

Implementation of Evolving Fuzzy Models of a Nonlinear Process  
*Radu-Emil Precup, Emil-Ioan Voisan, Emil M. Petriu, Mircea-Bogdan Radac and Lucian-Ovidiu Fedorovici*  
(5)

Adaptive Decision-level Fusion for Fongbe Phoneme Classification using Fuzzy Logic and Deep Belief Networks  
*Frejus A. A. Laleye, Eugene C. Ezin and Cina Motamed*  
(15)

Application of Sensory Body Schemas to Path Planning for Micro Air Vehicles (MAVs)  
*Eniko T. Enikov and Juan-Antonio Escareno*  
(25)

Genetic Algorithm based X-Ray Diffraction Analysis for Chemical Control of Aluminium Smelters Baths  
*Shakhnaz Akhmedova, Igor Yakimov, Aleksandr Zaloga, Sergey Burakov, Eugene Semenkin, Petr Dubinin, Oksana Piksina and Eugene Andryushenko*  
(32)

#### SHORT PAPERS

Robot Navigation using Velocity Potential Fields and Particle Filters for Obstacle Avoidance  
*Dan-Sorin Necsulescu, Jin Bai and Jurek Sasiadek*  
(43)

Optimal Irrigation Scheduling and Crop Production Functions Development using AquaCrop and TOMLAB  
*Ilya Ioslovich and Raphael Linker*  
(49)

Two-player Ad hoc Output-feedback Cumulant Game Control  
*Chukwuemeka Aduba and Chang-Hee Won*  
(53)

The Design of the 3-Axial Centrifuge  
*Feng Ou, Ying Chen, Hong Chen and Dongfeng Zhang*  
(60)

A Fault Detection Scheme for Time-delay Systems using Minimum-order Functional Observers  
*H. M. Tran and H. Trinh*  
(64)
MIMO Evolving Learning based on Maximum Likelihood Algorithm Applied to Black Box Fuzzy
Modeling for Systems Identification Design
Orlando Donato Rocha Filho and Ginalber Luiz de Oliveira Serra

Optimal Design of Digital Low Pass Finite Impulse Response Filter using Particle Swarm
Optimization and Bat Algorithm
Alcemy G. V. Severino, Leandro L. S. Linhares and Fábio M. U. de Araújo

Modelling and Optimization of Strictly Hierarchical Manpower System
Andrej Skraba, Eugene Semenkin, Davorin Kofijac, Maria Semenkina, Anja Znidaršič, Matjaž Maletic,
Shakhnaz Akhmedova, Crtomir Rozman and Vladimir Stanovov

A Proposal based on Frequency Response for Multi-Model Controllers
Anderson Luiz de Oliveira Cavalcanti

Unconstrained Global Optimization: A Benchmark Comparison of Population-based Algorithms
Maxim Sidorov, Eugene Semenkin and Wolfgang Minker

Can UAV and UGV Be Best Buddies? - Towards Heterogeneous Aerial-ground Cooperative Robot
System for Complex Aerial Manipulation Tasks
Tamara Petrovic, Tomislav Haus, Barbara Arbanas, Matko Orsag and Stjepan Bogdan

Detecting and Isolating Inconsistently Behaving Agents using an Intelligent Control Loop
Jan Kantert, Sarah Edenhofer, Sven Tomforde, Jörg Hähner and Christian Müller-Schloer

Neural Modeling and Control of a $^{13}$C Isotope Separation Process
Vlad Muresan, Mihail Abrudean, Honoriu Valeanu, Tiberiu Coloș, Mihaela-Ligia Unguresan, Valentin Sita,
Iulia Clitan and Daniel Moga

Addressing Challenges Beyond Classic Control with Organic Computing
Jan Kantert, Sven Tomforde and Christian Müller-Schloer

Revisiting Gradient Methods in Function Space - With Application to Rocket Trajectories
Joseph Z. Ben-Asher

A New Inverse Optimal Control Method for Discrete-time Systems
Moayed Almobaied, Ibrahim Eksin and Mujde Guzelkaya

Consensus of Nonlinear Multi-Agent Systems with Exogenous Disturbances
Xiaozhi Yu, Zhen He and Feng Yu

Option-based Motion Planning and ANFIS-based Tracking Control for Wheeled Robot in Cluttered
Environment
Yangyang Feng, Weiwei Yu, Yasheng Chen, Xiaoqun Tan, Runxiao Wang and Kurosh Madani

Integrating Particle Swarm Optimization with Analytical Nonlinear Model Predictive Control for
Nonlinear Hybrid Systems
Jean Thomas

Periodic Takagi-Sugeno Observers for Individual Cylinder Spark Imbalance in Idle Speed Control
Context
Thomas Laurain, Jimmy Lauber and Reinaldo Palhares

ANN-based Classifiers Automatically Generated by New Multi-objective Bionic Algorithm
Shakhnaz Akhmedova and Eugene Semenkin

Temporal-Difference Learning - An Online Support Vector Regression Approach
Hugo Tanzarella Teixeira and Celso Pascoli Bottura

XVII
Hybrid Algorithm for Solving the Multi-compartment Vehicle Routing Problem with Time Windows and Profit
Hadhami Kaabi and Khaled Jabeur

A Diagnosis Scheme for Dynamical Systems: Approach by Guaranteed Parameter Estimation
Qiaochu Li, Carine Jauberthie, Lilianne Denis-Vidal and Zohra Cherfi

Off-line State-dependent Parameter Models Identification using Simple Fixed Interval Smoothing
Elvis Omar Jara Alegria, Hugo Tanzarella Teixeira and Celso Pascoli Bottura

State-parameter Dependency Estimation of Stochastic Time Series using Data Transformation and Parameterization by Support Vector Regression
Elvis Omar Jara Alegria, Hugo Tanzarella Teixeira and Celso Pascoli Bottura

SIGNAL PROCESSING, SENSORS, SYSTEMS MODELLING AND CONTROL

FULL PAPERS

Freezing Method Approach to an Asymptotic Stability of the Discrete-time Oscillator Equation
Artur Babiarz, Adam Czornik and Michal Niezabitowski

Inferential Active Disturbance Rejection Control of a Distillation Column using Dynamic Principal Component Regression Models
Fahad Al Kalbani and Jie Zhang

Comparison of Two Radar-based Scanning-techniques for the Use in Robotic Mapping
Paul Fritsche and Bernardo Wagner

Trajectory Tracking Control of Robot Manipulators using Discrete Time-varying Pole Placement Technique
Yasuhiyo Mutoh, Masakatsu Kemmotsu and Lisa Awatsu

Bayesian Quadrature in Nonlinear Filtering
Jakub Prüher and Miroslav Šimandl

LQG/LTR Versus Smith Predictor Control for Discrete-time Systems with Delay
Dariusz Horla and Andrzej Krolikowski

Multiple Sensor Fusion using Adaptive Divided Difference Information Filter
Aritro Dey, Smita Sadhu and Tapan Kumar Ghoshal

Sign Subband Adaptive Filter with Selection of Number of Subbands
Jae Jin Jeong, Seung Hun Kim, Gyogwon Koo and Sang Woo Kim

Application of Sliding Mode Control to the Ball and Plate Problem
David Debono and Marvin Bugeja

Coupling Analysis and Control of a Turboprop Engine
C. Le Brun, E. Godoy, D. Beauvois, B. Liacu and R. Noguera

SHORT PAPERS

A Comparison of Robust Model Predictive Control Techniques for a Continuous Bioreactor
V. E. Ntampasi and O. I. Kosmidou

Experimental Modal Analysis based on a Gray-box Model of Flexible Structures
Alberto Cavallo, Giuseppe De Maria, Michele Iadevaia, Ciro Natale and Salvatore Pirozzi
Predictor-based Control of Human Emotions When Reacting to a Dynamic Virtual 3D Face Stimulus
Vytautas Kaminskas, Edgaras Ščiglinskas and Aušra Vidugiriene

Nonlinear System Identification based on Modified ANFIS
José Kleiton Ewerton da Costa Martins and Fábio Meneghetti Ugulino de Araújo

Nonlinear Control Design of VSC-MTDC Systems based on Backstepping Approach
Mohamed Ayari, Mohamed Moez Belhaouane, Xavier Guillaud and Naceur Benhadj Braiek

Estimation of Uniform Static Regression Model with Abruptly Varying Parameters
Ladislav Jirsa and Lenka Pavelková

Intelligent Fall Prevention for Parkinson’s Disease Patients based on Detecting Posture Instability and Freezing of Gait
Jiann-I Pan and Yi-Chi Huang

Adaptive Unscented Kalman Filter at the Presence of Non-additive Measurement Noise
Manasi Das, Aritro Dey, Smita Sadhu and T. K. Ghoshal

Multicriteria Neural Network Design in the Speech-based Emotion Recognition Problem
Christina Brester, Eugene Semenkina, Maxim Sidorov and Olga Semenkina

A Study on Several Machine Learning Methods for Estimating Cabin Occupant Equivalent Temperature
Diana Hintea, James Brusey and Elena Gaura

Dictionary Learning: From Data to Sparsity Via Clustering
Rajesh Bhatt and Venkatesh K. Subramanian

INTERNATIONAL SPECIAL SESSION ON ARTIFICIAL NEURAL NETWORKS AND INTELLIGENT INFORMATION PROCESSING

SHORT PAPERS

Aj Bieszczad

Grey Relational Analysis based Artificial Neural Networks for Product Design: A Comparative Study
Yang-Cheng Lin and Chung-Hsing Yeh

An Experimentation Line for Underlying Graphemic Properties - Acquiring Knowledge from Text Data with Self Organizing Maps
Gilles Bernard, Nourredine Aliane and Otman Manad

Evaluation of Processor Health within Hierarchical Condition Monitoring System
Lenka Pavelková and Ladislav Jirsa

AUTHOR INDEX