

# **2010 11th International Conference on Control, Automation, Robotics and Vision**

## **(ICARCV 2010)**

**Singapore  
7 – 10 December 2010**

**Pages 1-847**



**IEEE Catalog Number: CFP10532-PRT  
ISBN: 978-1-4244-7814-9**

# TABLE OF CONTENTS

## VOLUME 1

### SESSION WA1: ADVANCES IN BIOMETRIC THEORY AND APPLICATIONS I

Sparse Representations and Random Projections for Robust and Cancelable Biometrics .....	1
<i>Vishal M. Patel, Rama Chellappa, Massimo Tistarelli</i>	
Generating Cancelable Biometric Templates Using a Projection Line .....	7
<i>Tohari Ahmad, Jiankun Hu</i>	
A Pitfall in Fingerprint Features Extraction .....	13
<i>Peng Zhang, Cai Li, Jiankun Hu</i>	
MCC: A Baseline Algorithm for Fingerprint Verification in FVC-onGoing .....	19
<i>Raffaele Cappelli, Matteo Ferrara, Davide Maltoni, Massimo Tistarelli</i>	

### SESSION WA2: NEURO-FUZZY CONTROL I

Globally Exponential Stability of Delayed Neural Networks with Impulses .....	24
<i>Jin Zhou, Quanjun Wu, Lan Xiang, Gang Zhang</i>	
Comparison of Different Subset Selection Algorithms for Learning Local Model Networks with Higher Degree Polynomials .....	30
<i>Oliver Baenfer, Benjamin Hartmann, Oliver Nelles</i>	
Linear Discrete-time Systems with Fuzzy Parametric Uncertainty .....	36
<i>Petr Husek</i>	
A Cooperative Interaction Control Methodology of a Pair Independent Control System.....	42
<i>Xiaolin Zhang</i>	
An Intelligent Fault-Tolerant Satellite Attitude Control System with-out Hardware Redundancies .....	50
<i>Sureshkumar Chandrasekar, Sundaram Suresh, Sundararajan Narasimhan, Narayanaswamy Nagarajan</i>	

### SESSION WA3: MULTIDIMENSIONAL SYSTEMS MODELING AND SIGNAL PROCESSING

Sufficient LMI Conditions for $H\infty$ Static Output Feedback Control of 2-D Systems .....	57
<i>Zhi-Yong Feng, Li Xu, Yoshihisa Anazawa</i>	
Hybrid Traffics Congestion Control Based on 2-D Hurwitz-Schur Stability.....	61
<i>Pengxuan Mao, Yang Xiao, Guangzhi Qu, Seok Woo, Kiseon Kim</i>	
Stability Analysis for 2-D Discrete Systems with Varying Delay .....	67
<i>Shuxia Ye, Weiqun Wang, Juan Yao</i>	
2-D IIR Filter Bank Design by An LMI Approach.....	73
<i>Huijing Xu, Zhiping Lin, Cishen Zhang, Anamitra Mukur</i>	
Linear Models for Plasma Current Control in Tokamak Reactors.....	78
<i>Aitor J. Garrido, Izaskun Garrido, M. Goretti Sevillano, Modesto Amundarain, Mikel Alberdi, Oscar Barambones, Manuel De La Sen</i>	

### SESSION WA4: SENSOR NETWORK SYSTEMS

Palm Size Charging Platform with Uniform Wireless Power Transfer .....	85
<i>Yun You, Boon Hee Soong, Selva Ramachandran, Wei Liu</i>	
Distributed RSSI-Sharing for Two-Way Ranging Base Station Selection .....	90
<i>Bertrand Tay, Wei Liu, Hin Fei Choi, Peter H. J. Chong</i>	
A Lower Bound on Expected Localization Error in Wireless Sensor Network .....	96
<i>Ma Di, Er Meng Joo, Lim Hock Beng, Wang Bang</i>	
Sensor Deployment Strategy for Random Field Estimation: One-Dimensional Case .....	104
<i>Yang Weng, Lihua Xie, Wendong Xiao, Sen Zhang</i>	
Real Time Implementation of Modified Repetitive Control Strategy in a DC Motor .....	109
<i>M. Vijayakarthick, S. Sathishbabu, P. K. Bhaba</i>	

### SESSION WA5: MAN-MACHINE INTERACTIONS

Intuitive Robot Tool Path Teaching using Laser and Camera in Augmented Reality Environment .....	114
<i>Chuen Leong Ng, Teck Chew Ng, Thi Anh Ngoc Nguyen, Guilin Yang, Wenjie Chen</i>	
An FSM Based GUI Test Automation Model.....	120
<i>Yuan Miao, Xuebing Yang</i>	
A Motion-based Visual Interface for 3D Visualization and Robotic Control Applications .....	127
<i>Safiuullah Hussaini, Wooi-Boon Goh</i>	
Advanced Virtual Testbeds: Robotics Know How for Virtual Worlds .....	133
<i>Juergen Rossmann</i>	

<b>Service Discovery using Software Agents in Semantic Web.....</b>	139
<i>Nandini S. Sidhal, Ravi S Malashetty, Sunilkumar S. Manvi</i>	

## **SESSION WA6: MODELING AND IDENTIFICATION**

<b>Identification of the Parameters of Robot Manipulators Dynamics about an Operating Point using Perturbed Dynamics .....</b>	144
<i>Azeddien Kinsheel, Zahari Taha</i>	
<b>Descriptor Modeling and Response Analysis of Two Rigid-Flexible Cooperative Arms .....</b>	149
<i>E. Samiei, M. Shafiee</i>	
<b>Topology Prpretension and Analysis of Carton Manipulation .....</b>	157
<i>Guowu Wei, Ruirui Zhang, Jian S. Dai</i>	
<b>Finite Element Modelling of Rolling Indentation for Tissue Adomanlity Identification .....</b>	163
<i>Kiatitsak Sangpradit, Kaspar Althoefer, Lakmal D. Seneviratne</i>	
<b>The Narcissistic Robot: Robot Calibration Using a Mirror .....</b>	169
<i>Matthias Ruther, Martin Lenz, Horst Bischof</i>	

## **SESSION WA7: ROBOT CONTROL I**

<b>A Learning Approach to Optimize Walking Cycle of a Passivity-based Biped Robot.....</b>	175
<i>Nima Fatehi, Masoud Asadpour, Adel Akbarimajd, Laila Majdi</i>	
<b>Bipedal Robot Walking Strategy on Inclined Surfaces Using Position and Orientation Based Inverse Kinematics Algorithm .....</b>	181
<i>Fariz Ali, Aliza Che Amran, Atsuo Kawamura</i>	
<b>Experimental Investigation of Fundamental Properties of Snake Robot Locomotion .....</b>	187
<i>Pal Liljeback, Kristin Y. Pettersen, Oyvind Stavdahl, Jan Tommy Gravdahl</i>	
<b>NARMA-L2 Controller for 2-DoF Underactuated Planar Manipulator .....</b>	195
<i>Adel Akbarimajd, Soltmaz Kia</i>	
<b>Cell Sorting with Combined Optical Tweezers and Microfluidic Chip Technologies .....</b>	201
<i>Xiaolin Wang, Zuankai Wang, Dong Sun</i>	

## **SESSION WA8: VISION APPLICATIONS**

<b>On Line Quality Inspection in Tailor Welded Blank Based on Laws Texture Energy and Structured Light .....</b>	207
<i>Zhang Chengning, Xu Min, Zhao Mingyang, Luo Haibo</i>	
<b>Computed Tomography Guided Laparoscopy: Proof of Concept.....</b>	213
<i>Adrian Park, Erica Sutton, Raj Shekhar</i>	
<b>Exposure Balancing and Difference Blurring to Eliminate Seam-lines in a Real-time Bird's Eye View Monitor .....</b>	216
<i>Hong Sangseok, Lee JinSoo, Choi Sang-Bok</i>	
<b>Correction of Paradoxical Vision by Simulated Depth Cue and Inverted Mirror Image for Laparoscopic Surgery .....</b>	222
<i>Takuro Ishii, Chang-Ping Ku, Tatsuo Igarashi, Harufumi Makino, Yukio Naya</i>	
<b>Retinal Blood Vessel Segmentation via Graph Cut .....</b>	225
<i>Ana G. Salazar-Gonzalez, Yongmin Li, Xiaohui Liu</i>	

## **SESSION WM2: PROCESS CONTROL**

<b>Relative Gain Array for MIMO Processes Containing Integrators and/or Differentiators .....</b>	231
<i>Wuhua Hu, Wen-Jian Cai, Gaoxi Xiao</i>	
<b>Overriding Control for Stability with Manifest Variables .....</b>	236
<i>Tri Tran</i>	
<b>Output Feedback Control for Nonlinear System based on Local Linear Model Trees (LOLIMOT) .....</b>	242
<i>Yan Zhang, Linan Zu, Peng Yang, Guolin Xing</i>	
<b>Applications of Convex Optimization in Plant-wide Control of Membrane Distillation Bio-Reactor (MDBR) Water Recycling Plant .....</b>	246
<i>Avinash Vijay, K. V. Ling, A. G. Fane</i>	
<b>First and Second Moment Control of Linear Stochastic Discrete Time Systems.....</b>	252
<i>Fateme Rohani, Hamid Khaloozadeh, Roya Amjadifard</i>	
<b>Investigation of Thermal Effect in Permanent Magnet Linear Motor Stage .....</b>	258
<i>J. H. Chow, Z. W. Zhong, W. Lin, L. P. Khoo, W. J. Lin, G. L. Yang</i>	

## **SESSION WM3: CO-OPERATIVE CONTROL**

<b>Asymptotic Synchronization and Collision Avoidance for Multi-agent Flocking.....</b>	263
<i>Zhiyong Chen, Hai-Tao Zhang, Chao Zhai</i>	
<b>Weight Balance for Directed Networks: Conditions and Algorithms .....</b>	269
<i>Yuan Fan, Gang Feng, Yong Wang</i>	

<b>Robust Cooperative Leader-Follower Formation Flight Control.....</b>	275
<i>Zhao Weihua, Tiauw Hiong Go</i>	
<b>Stability Analysis of Local Swarms .....</b>	281
<i>Liangshun Wang, Huajing Fang</i>	
<b>Asynchronously Dynamic Averaging Estimation with Communication Constraints.....</b>	286
<i>Dequan Li, Xiaofan Wang</i>	
<b>A Constrained Dynamical Systems Approach for Attitude Consensus of Multiple Rigid Bodies .....</b>	292
<i>Divya Bhatia, Kamesh Subbarao</i>	

#### **SESSION WM4: ADAPTIVE CONTROL**

<b>Well-Posedness of Two Classes of Singular Distributed Parameter Systems in Hilbert Space.....</b>	299
<i>Feng Liu, Guodong Shi, Delin Chu</i>	
<b>Feedforward Multiple Harmonic Control for Periodic Disturbance Rejection .....</b>	305
<i>Kai Zenger, Ali Altowati, Kari Tammi, Eero Vesaoja</i>	
<b>Adaptive Control of a Class of Nonlinear Systems using Support Vector Regression .....</b>	311
<i>Koshy George, Prashanth Harshangi</i>	
<b>A Sub-Region Boundary-Based Control Scheme with a Least-Squares Estimation Algorithm for an Underwater Robotic System.....</b>	317
<i>Z. H. Ismail, M. W. Dunnigan</i>	
<b>An Adaptive Region Boundary-Based Control Scheme for an Autonomous Underwater Vehicle.....</b>	324
<i>Z. H. Ismail, M. W. Dunnigan</i>	
<b>Decentralized Adaptive Practical Tracking of Nonlinear Interconnected Systems with Dynamic Input and Output Interactions.....</b>	330
<i>Lixia Han, Huijin Fan</i>	

#### **SESSION WM5: PROCESS AUTOMATION**

<b>Basics on Stabilization of Discrete Switched Systems .....</b>	336
<i>M. De La Sen, A. Ibeas</i>	
<b>Optimization of Reclaiming Voxels for Quality Grade Target with Reclaimer Minimum Movement .....</b>	341
<i>Tien-Fu Lu, Maung Thi Rein Myo</i>	
<b>Automated Modeling and Analysis of Agent-based Simulations using the CASE Framework .....</b>	346
<i>James Declaeene, Malcolm Yoke Hean Low, Fanchao Zeng, Suiping Zhou, Wentong Cai</i>	
<b>A FDD Method by Combining Transfer Entropy and Signed Digraph and its Application to Air Separation Unit .....</b>	352
<i>Q. Hou, L. Wang, N. Y. Lu, B. Jiang, J. H. Lu</i>	
<b>A Multi-Purpose Remote Controller Based on Bluetooth Mobile Phone.....</b>	358
<i>Chih-Hung Wu, Li-Shan Ma, Yu-Jyun Cai, Ting-Fu Yeh</i>	
<b>Speed Optimization for Micropipette Motion during Zebrafish Embryo Microinjection.....</b>	364
<i>Shengfeng Zhou, Peter Chen, Zhe Lu, Nam Joo Woo, Hong Luo, Ruowen Ge, Chong Jin Ong, Wei Lin</i>	

#### **SESSION WM6: MOBILE ROBOTICS I**

<b>Experiences with Online Local Model Predictive Control for WMR Navigation.....</b>	370
<i>Lluís Pacheco, Ningyu Luo</i>	
<b>A Robust Downward-Looking Camera Based Velocity Estimation with Height Compensation for Mobile Robots .....</b>	378
<i>Xiaojing Song, Kaspar Althoefer, Lakmal Seneviratne</i>	
<b>Neuro-Fuzzy Based Autonomous Mobile Robot Navigation System.....</b>	384
<i>Maulin M. Joshi, Mukesh A. Zaveri</i>	
<b>An Effective Collaborating Algorithm for Swarm Robots Communicating by Sematectonic Stigmergy.....</b>	390
<i>Tuan A. Phan, R. Andrew Russell</i>	
<b>X-band Radar Based SLAM in Singapore's Off-shore Environment .....</b>	398
<i>John Mullane, Samuel Keller, Akshay Rao, Martin Adams, Anthony Yeo, Franz S. Hover, Nicholas M. Patrikalakis</i>	
<b>On Leader-Based Shape Coordination .....</b>	404
<i>Reza Haghighi, Chien Chern Cheah</i>	

#### **SESSION WM7: LOCALIZATION, NAVIGATION, AND MAPPING I**

<b>SLAM with Salient Line Feature Extraction in Indoor Environments.....</b>	410
<i>Su-Yong An, Jeong-Gwan Kang, Lae-Kyoung Lee, Se-Young Oh</i>	
<b>Role-Based Path Planning and Task Allocation with Exploration Tradeoff for UAVs .....</b>	417
<i>Christoph Rasche, Claudius Stern, Lisa Kleinjohann, Bernd Kleinjohann</i>	
<b>Line-based SLAM with Slow Rotating Range Sensors: Results and Evaluations.....</b>	423
<i>Damien Vivet, Paul Checchin, Roland Chapuis</i>	
<b>Large-Scale Monocular SLAM by Local Bundle Adjustment and Map Joining.....</b>	431
<i>Liang Zhao, Shoudong Huang, Lei Yan, Jack Jianguo Wang, Gibson Hu, Gamini Dissanayake</i>	

<b>Static and Dynamic Fusion for Outdoor Vehicle Localization .....</b>	437
<i>Bastien Vincke, Alain Lambert, Dominique Gruyer, Abdelhafid Elouardi, Emmanuel Seignez</i>	
<b>Optimal Transmission Power Selection under Energy Constraints for Sensor Network Localization.....</b>	443
<i>P. T. V. Bhuvaneswari, V. Vaidehi, M. Agnes Saranya</i>	

## **SESSION WM8: HUMAN CENTERED SYSTEMS**

<b>A Haptic Training Environment for the Heart Myoblast Cell Injection Procedure .....</b>	448
<i>Vu Thanh Le, Saeid Nahavandi, Doug Creighton</i>	
<b>Hierarchical Learning Approach for One-shot Action Imitation in Humanoid Robots.....</b>	453
<i>Yan Wu, Yiannis Demiris</i>	
<b>Saliency Ranking for Benthic Survey using Underwater Images .....</b>	459
<i>Matthew Johnson-Roberson, Oscar Pizarro, Stefan Williams</i>	
<b>On the Collaboration of an Automatic Path-planner and a Human User for Path-Finding in Virtual Industrial Scenes .....</b>	467
<i>N. Ladeveze, J-Y. Fourquet</i>	
<b>Automatic Gait Characterization for a Mobility Assistance System.....</b>	473
<i>Cong Zong, Mohamed Chetouani, Adriana Tapus</i>	
<b>Just-in-time Cooperative Simultaneous Localization and Mapping.....</b>	479
<i>Adrian Martin, M. Reza Emami</i>	

## **SESSION WP2: IDENTIFICATION AND ESTIMATION I**

<b>An Unscented Kalman Filtering Approach for Nonlinear Singular Systems.....</b>	485
<i>Shuwen Pan, Hongye Su, Zhitao Liu, Pu Li</i>	
<b>Identification of Wiener Systems Based on Fixed Point Theory.....</b>	491
<i>Guoqi Li, Changyun Wen</i>	
<b>Robust Tracking in Mixed LOS/NLOS Environments .....</b>	497
<i>Lili Yi, Chin-Heng Lim, Chong-Meng See, Sirajudeen Gulam Razul, Zhiping Lin</i>	
<b>Convex Formulations for Data-Based Uncertainty Minimization of Linear Uncertainty Models.....</b>	501
<i>Kurt E Haggblom</i>	
<b>Noise Covariance Estimation using Dual Estimation for Disturbance Storm Time Index Application.....</b>	506
<i>Boonsri Kaewkham-Ai, Kasemsak Uthaichana</i>	

## **SESSION WP3: COMPLEX SYSTEMS**

<b>Stability of Complex Systems with Mixed Connection Configurations under Shared Control .....</b>	512
<i>Tri Tran, Hung T. Nguyen, Q. P. Ha</i>	
<b>Controllability of Fractional Impulsive Neutral Functional Integrodifferential Inclusions with Infinite Delay in Banach Spaces .....</b>	518
<i>Zhixin Tai, Xingcheng Wang</i>	
<b>Routing Strategy with Waiting Time on Scale-free Network .....</b>	523
<i>Dan Wang, Yanping Li, Wenwei Liu, Liang Dong, Lin Li</i>	
<b>Static Output Feedback Control for Continuous Descriptor Systems .....</b>	527
<i>Yu Zheng, Jun-e Feng, Lin Sun, Juan Yao</i>	
<b>Active Sway Control of a Single Pendulum Gantry Crane System using Output-Delayed Feedback Control Technique .....</b>	532
<i>Rajeeb Dey, Nishant Sinha, Priyanka Chaubey, S. Ghosh, G. Ray</i>	

## **SESSION WP4: NETWORKED SYSTEMS**

<b>Sensor Scheduling with Limited Communication Energy and Bandwidth .....</b>	537
<i>Ling Shi, Peng Cheng, Jiming Chen</i>	
<b>Feedback Stabilization over Stochastic Multiplicative Input Channels: Continuous-Time Case.....</b>	543
<i>Nan Xiao, Lihua Xie</i>	
<b>Graphic Interpretations of Structural Controllability for Switched Linear Systems .....</b>	549
<i>Xiaomeng Liu, Hai Lin, Ben M. Chen</i>	
<b>Particle Filter Based Human Motion Tracking .....</b>	555
<i>Zhenning Li, Dana Kulic</i>	
<b>Convergence and Mean Square Stability of Optimal Estimators for Systems with Measurement Packet Dropping .....</b>	561
<i>Huanshu Zhang, Xinmin Song, Ling Shi</i>	

## **SESSION WP5: SEARCH, RESCUE, AND FIELD ROBOTICS**

<b>Autonomous Marine Craft Navigation: On the Study of Radar Obstacle Detection .....</b>	567
<i>Chiemela Onunkwa, Glen Bright</i>	

<b>A Development Project of Autonomous Marine Surface Vehicles for Sea Demining .....</b>	573
<i>Fernando J. Pereda, Hector Garcia de Marina, Juan Francisco Jimenez, Jose M. Giron-Sierra</i>	
<b>Single-Human Multiple-Robot Systems for Urban Search and Rescue - Justifications, Design and Testing.....</b>	579
<i>Choon Yue Wong, Gerald Seet, Siang Kok Sim, Wee Ching Pang</i>	
<b>A Motion Controller for a Pan-tilt Camera on an Autonomous Helicopter.....</b>	585
<i>Haibo Deng, Xiaoguang Zhao, Zengguang Hou</i>	
<b>The Use of Area Extended Particle Swarm Optimization (AEPSO) in Swarm Robotics .....</b>	591
<i>Adham Atyabi, David M. W. Powers</i>	

## **SESSION WP6: MOBILE ROBOTICS II**

<b>Towards A Fully-Autonomous Vision-based Vehicle Navigation System in Outdoor Environments .....</b>	597
<i>Peyman Moghadam, Wijerupage Sardha Wijesoma, Moratuwage M. D. P.</i>	
<b>Jumping Patterns Analysis for 1-DOF Two-legged Robot .....</b>	603
<i>Taku Senoo, Yuichi Tanno, Masatoshi Ishikawa</i>	
<b>Complete Coverage Algorithm based on Linked Smooth Spiral Paths for Mobile Robots .....</b>	609
<i>Tae-Kyeong Lee, Sang-Hoon Baek, Se-Young Oh, Young-Ho Choi</i>	
<b>Neuro-adaptive Virtual Leader Based Formation Control of Multi-Unmanned Ground Vehicles.....</b>	615
<i>Zan Yao, Y. D. Song, Wenchuan Cai</i>	
<b>Survey Results on Status, Needs and Perspectives for using Mobile Service Robots in Industrial Applications.....</b>	621
<i>Andreas Kroll, Samuel Soldan</i>	

## **SESSION WP7: ADVANCES IN BIOMETRIC THEORY AND APPLICATIONS II**

<b>Face Occlusion Detection by using B-spline Active Contour and Skin Color Information .....</b>	627
<i>Gahyun Kim, Jae Kyu Suhr, Ho Gi Jung, Jaihie Kim</i>	
<b>Eye Feature Extraction using K-means Clustering for Low Illumination and Iris Color Variety .....</b>	633
<i>Nguyen Van Huan, Nguyen Thi Hai Binh, Hakil Kim</i>	
<b>A Comprehensive Sclera Image Quality Measure .....</b>	638
<i>Zhi Zhou, Eliza Y. Du, N. Luke Thomas</i>	
<b>Effects of Facial Alignment for Age Estimation.....</b>	644
<i>Hee Lin Wang, Jian-Gang Wang, Wei-Yun Yau, Xing Lun Chua, Yap Peng Tan</i>	
<b>Speaker Gender Recognition using Score Level Fusion by AdaBoost .....</b>	648
<i>Masatsugu Ichino, Naohisa Komatsu, Wang Jian-Gang, Yau Wei Yun</i>	

## **SESSION WP8: ADVANCED CONCEPT FOR EMERGING COMPUTER VISION**

<b>Two-tier Emergent Self-Organizing (TtEsom) Approach of Understanding Emotions.....</b>	654
<i>Nguwi Yok Yen, Teoh Teik Toe</i>	
<b>A Segmentation based Approach for Shape Recovery from Multi-color Images .....</b>	659
<i>M. K. M. Rahman, Tommy W. S. Chow, Siu-Yeung Cho</i>	
<b>A Color-based Approach for Disparity Refinement.....</b>	664
<i>Raj Kumar Gupta, Siu Yeung Cho</i>	
<b>Emotion Indexing using Hidden Markov Expert Rule Model (HMER) for Autism Children.....</b>	668
<i>Teoh Teik Toe, Nguwi Yok Yen</i>	
<b>Fast Polar Harmonic Transforms.....</b>	673
<i>Zhuo Yang, Sei-Ichiro Kamata</i>	

## **SESSION WI: INTERACTIVE SESSION I**

<b>Development and Application of Automation Control System to Plate Production Line.....</b>	678
<i>Jiao Zhi-Jie, He Chun-Yu, Wang Jun, Zhao Zhong</i>	
<b>Passive Tracking Using TDOA for Super-low-altitude Target .....</b>	682
<i>Panlong Wu, Yuming Bo, Jianshou Kong, Xingxiu Li</i>	
<b>Improvements of Flashing Mode by Programmed Control for Multiple Colors in LED Optical Stimulus System.....</b>	686
<i>Ken Ishii, Go Takayama, Hiroshi Inada, Tomohiro Miki, Makoto Narumi, Yasunori Sakurai</i>	
<b>Artificial Neural Network Based E-Nose and their Analytical Applications in Various Field.....</b>	691
<i>Maria Jamal, M. R. Khan, S. A. Imam, Arif Jamal</i>	
<b>Dynamic Fuzzy Neural Network Based Predictive Control for Alternating Current Excitation Generators.....</b>	699
<i>Zhang Zhi-fei , Wang Xuan</i>	
<b>Equivalence and Stability of Two-layer Cellular Neural Network Solving Saint Venant 1D Equation .....</b>	704
<i>Vu Duc Thai, Pham Thuong Cat</i>	
<b>Interval Type-2 Non-Singleton Type-2 Takagi-Sugeno-Kang Fuzzy Logic Systems using the Hybrid Learning Mechanism Recursive-Least-Square and Back-Propagation Methods .....</b>	710
<i>Gerardo M. Mendez, Maria de los Angeles Hernandez</i>	
<b>A Research on Parabolic Trough Solar Collector System Control based on Hedge Algebra.....</b>	715
<i>Cong Nguyen Huu, Trung Ngo Kien, Duy Nguyen Tien, Ha Le Thi Thu</i>	

<b>A Study on Tracking Position Control of an Pneumatic System by Backstepping Design</b>	721
<i>Chia-Hua Lu, Yean-Ren Hwang</i>	
<b>Reactive Power-Voltage Integrated Control Method based on MCR</b>	727
<i>Jing Dai, Jun Wang, Li Wan, Dan Chen, Xiaosheng Huang, Wenjun Zeng</i>	
<b>A Generic Procedure for Troubleshooting of PLC Based Control Systems</b>	732
<i>Arshad Hussain Malik, Muhammad Ahmad Choudhry, Tahir Mehmood, Aamir Hanif</i>	
<b>Impulsive Disturbance Rejection in Hard Disk Drives</b>	738
<i>Tingting Gao, Chunling Du, Lihua Xie, Wenjian Cai</i>	
<b>Optimal Control for EHA-VPVM System Based on Feedback Linearization Theory</b>	744
<i>Ye Zhang, Yongling Fu, Weixing Zhou</i>	
<b>Subspace Identification and Model Predictive Control for Buildings</b>	750
<i>Jiri Cigler, Samuel Privara</i>	
<b>Modeling Method based on Signal Flow Graph Correlation Matrix and its Application</b>	756
<i>Bingxin Han, Lixian Liu, Zhanfeng Gao, Liqiang Du</i>	
<b>Laboratory Demonstration for Model Predictive Multivariable Control with a Coupled Drive System</b>	762
<i>Steven W. Su, Hung T. Nguyen, Q. P. Ha</i>	
<b>Stability Analysis of Practical Anisotropic Swarms</b>	768
<i>Liangshun Wang, Huajing Fang</i>	
<b>Instantaneous Availability Model with 2-D Discrete Characteristics of One-unit Repairable Systems</b>	773
<i>Yang Yi, Yu Yongli, Wang Lichao, Kang Rui</i>	
<b>Design of Signal Control Structures using Formal Methods for Railway Interlocking Systems</b>	776
<i>Oytun Eris, Ilhan Mutlu</i>	
<b>Haptic Microrobotic Intracellular Injection Assistance using Virtual Fixtures</b>	781
<i>Ali Ghazbari, Xiaoqi Chen, Wenhui Wang, Ben Horan, Hamid Abdi, Saeid Nahavandi</i>	
<b>Non-cooperative Target Assignment using Regret Matching</b>	787
<i>Shemin Kalam, Mahbub Gani</i>	
<b>3D Hydrodynamic Analysis of Biomimetic Robot Fish</b>	793
<i>Zhenying Guan, Weimin Gao, Nong Gu, Saeid Nahavandi</i>	
<b>6 Degrees of Freedom (DOF) Maritime Robotic Simulation Framework</b>	799
<i>Kuan Meng Tan, Amir Anvar, Tien-Fu Lu</i>	
<b>A Consistent Kinematic Modeling Method for Mobile Manipulators</b>	805
<i>Joono Cheong</i>	
<b>Dynamic Analysis of a Flexure-based Mechanism for Precision Machining Operation</b>	811
<i>Yanling Tian, Dawei Zhang, Bijan Shirinzadeh</i>	
<b>Parallel Implementation of 3D Object Reconstruction in a Robotic Navigational Environment</b>	816
<i>Vijay S. Rajpurohit, Manohara Pai M. M.</i>	
<b>Optimal Distribution of Propulsion for an Amphibious Robot based on Wheel-Propeller-Leg Mixed Thrusters</b>	822
<i>Yuangu Tang, Chongjie Liu, Aiqun Zhang, Jiancheng Yu</i>	
<b>Random Force based Algorithm for Local Minima Escape of Potential Field Method</b>	827
<i>Jinseok Lee, Yunyoung Nam, Sangjin Hong</i>	
<b>Development of Human-friendly Robot Arm with Adjustable Joint Compliance</b>	833
<i>Shinya Kajikawa, Masashi Nasuno, Kazuto Hayasaka</i>	
<b>Analysis of Real-time Velocity Compensation for Outdoor Optical Mouse Sensor Odometry</b>	839
<i>Robert Ross, John Devlin</i>	
<b>IVFH* : Real-time Dynamic Obstacle Avoidance for Mobile Robots</b>	844
<i>Dong Jie, Ma Xuemin, Peng Kaixiang</i>	

## VOLUME 2

<b>Complex Event Processing for Object Tracking and Intrusion Detection in Wireless Sensor Networks</b>	848
<i>R. Bhargavi, V. Vaidehi, P. T. V. Bhuvaneswari, P. Balamuralidhar, M. Girish Chandra</i>	
<b>Multi-1D Block Matching Algorithm Based Motion Estimation Processor using Mixed-Signal Approach</b>	854
<i>Shin-Yeu Lin, Chong-Wei Su, Jung-Shou Huang</i>	
<b>Vehicle Combustion Quality Monitoring: A Scene Visibility-level Based Non-invasive Approach</b>	860
<i>Masood Mehmood Khan</i>	
<b>Primitive-based 3D Structure Inference from a Single 2D Image for Insect Modeling: Towards an Electronic Field Guide for Insect Identification</b>	866
<i>Xiaozheng Zhang, Yongsheng Gao, Terry Caelli</i>	
<b>An Approach for Raising the Accuracy of One-class Classifiers</b>	872
<i>Chi-Kai Wang, Yung Ting, Yi-Hung Liu</i>	
<b>An Affine Invariant Interest Point and Region Detector based on Gabor Filters</b>	878
<i>Wanying Xu, Xinsheng Huang, Xingwei Li, Ying Zhang, Jie Zhang, Wei Zhang</i>	
<b>An Efficient Illumination Normalization Method in a Transformed Domain</b>	884
<i>Lian Zhichao, Er Meng Joo</i>	
<b>A Comparative Study of Age-Invariant Face Recognition with Different Feature Representations</b>	890
<i>Cui Meng, Lu Jiwen, Yap-Peng Tan</i>	
<b>A Weighted Voting Scheme for Recognition of Faces with Illumination Variation</b>	896
<i>A. Nabatchian, E. Abdel-Raheem, M. Ahmadi</i>	

<b>Combined Local and Holistic Facial Features for Age-Determination .....</b>	900
<i>Khoa Luu, Tien Dai Bui, Ching Y. Suen, Karl Ricanek</i>	
<b>Low Level Data Fusion of Laser and Monocular Color Camera using Occupancy Grid Framework .....</b>	905
<i>Qadeer Baig, Olivier Aycard</i>	

## **SESSION TA1: ROBUST CONTROL I**

<b>Extended Blending Techniques with Applications in Robust Tracking Control and Fault-tolerant Control.....</b>	911
<i>Jun Xu, Lihua Xie, Kai Yew Lum</i>	
<b>Nonsmooth <math>\mu</math> Synthesis .....</b>	917
<i>Pierre Apkarian, Hoang Duong Tuan</i>	
<b>Characterizing Approximated Differentiators in Digital Control .....</b>	923
<i>Hisaya Fujioka</i>	
<b>Mixed Nonlinear-Sliding Mode Control of an Unmanned Farm Tractor in the Presence of Sliding.....</b>	927
<i>Alexey S. Matveev, Michael Hoy, Andrey V. Savkin</i>	
<b>An Integral SMC Based Approach to Time-delay System Tracking .....</b>	933
<i>Gang Liu, Alan Zinober, Yuri Shtessel</i>	
<b>Navigation of an Unmanned Helicopter in Urban Environments.....</b>	939
<i>Michael Hoy, Andrey Savkin, Matt Garratt</i>	

## **SESSION TA2: INTELLIGENT SYSTEMS**

<b>Conditioned Switching between Two-Degree-of-Freedom Controllers for Plants with Changing Dynamics .....</b>	945
<i>Joseph J. Yane, Qiao Hanping</i>	
<b>Estimation of Next Human Behavior and its Timing for Human Behavior Support .....</b>	952
<i>Kae Doki, Kohjiro Hashimoto, Shinji Doki, Shigeru Okuma, Akihiro Torii</i>	
<b>A Metamodel for Background Ozone Level using Radial Basis Function Neural Networks .....</b>	958
<i>Heran Wahid, Q. P. Ha, Hiep Nguyen-Duc</i>	
<b>Hardware-in-the-Loop Simulation of Automatic Steering Control: Outer-Loop and Inner-loop Control Design .....</b>	964
<i>Em Poh Ping, Khisullah Hudha, Mohd Hanif Bin Harun, Hishamuddin Jamaluddin</i>	
<b>Automatic Synthesis of Reactive Agents .....</b>	970
<i>Insu Song, Guido Governatori, Joachim Diederich</i>	
<b>Generating Scenarios for a Mobile Robot with an Arm - Case Study: Assistance for Handicapped Persons .....</b>	976
<i>P. Morignot, M. Soury, C. Leroux, H. Vorobieva, P. Hede</i>	

## **SESSION TA3: LOCALIZATION, NAVIGATION, AND MAPPING II**

<b>Maintaining Visibility of a Moving Target: Maximizing Escape Time vs. Exposure Time .....</b>	982
<i>Ibrahim Al-Bluwi, Ashraf Elnagar</i>	
<b>An Omnidirectional Time-of-Flight Camera and its Application to Indoor SLAM.....</b>	988
<i>Katrin Pirker, Matthias Ruther, Horst Bischof, Gerald Schweighofer, Heinz Mayer</i>	
<b>Ground-Plane Classification for Robot Navigation - Combining Multiple Cues Toward a Visual-Based Learning System .....</b>	994
<i>Tobias Low, Antoine Manzanera</i>	
<b>Mapping Large Scale Environments by Combining Particle Filter and Information Filter .....</b>	1000
<i>Maheesh Mohan, K. Madhava Krishna</i>	
<b>Map-aided 6-DOF Relative Pose Estimation for Monocular SLAM using Sparse Information Filters.....</b>	1006
<i>Zhan Wang, Gaminli Dissanayake</i>	
<b>Robotic Mapping with Simple Sensing and Processing Hardware - Algorithm and Architecture .....</b>	1012
<i>Leena Vachhani, K. Sridharan</i>	

## **SESSION TA4: INSTRUMENTATION SYSTEMS**

<b>A New Methodology of Continuous and Noninvasive Blood Pressure Measurement by Pulse Wave Velocity.....</b>	1018
<i>Yan Chen, Changyun Wen, Guocai Tao, Min Bi</i>	
<b>Mechanoinduction of Reduction in the Stiffness of Zebrafish Chorion .....</b>	1024
<i>Joo Hoo Nam, Peter C. Y. Chen, Zhe Lu, Hong Luo, Ruowen Ge, Wei Lin</i>	
<b>Approximate Entropy-based Leak Detection using Artificial Neural Network in Water Distribution Pipelines .....</b>	1029
<i>Yang Jin, Wen Yumei, Li Ping</i>	
<b>Service Provider Architecture for Dynamically Reconfigurable Virtual Instruments in Networked Environments.....</b>	1035
<i>R. Sundaramurthy, P. Dananjayam</i>	
<b>Unsteady Flow Rate Generating System for Gas using Isothermal Tank based on Disturbance Observer .....</b>	1040
<i>Xiaoxin Wang, Tao Wang, Guangzheng Peng, Yanbing Tian</i>	
<b>Prototype Development of Hybrid Temperature Recorder Monitoring System.....</b>	1045
<i>Olarn Wongwirat, Keelati Oonchom, Benjaporn Arnuttinanon</i>	

## **SESSION TA5: COLLABORATIVE UAV AND UGV SYSTEMS**

<b>Cooperative Ground Target Tracking with Input Constraints .....</b>	1051
<i>Senqiang Zhu, Danwei Wang</i>	
<b>Formation Control of Multi-robot Systems.....</b>	1057
<i>Shuai Liu, Chunlin Chen, Lihua Xie, Yeong-Hwa Chang</i>	
<b>Federated DyKnow, a Distributed Information Fusion System for Collaborative UAVs.....</b>	1063
<i>Fredrik Heintz, Patrick Doherty</i>	
<b>Generating UAV Communication Networks for Monitoring and Surveillance .....</b>	1070
<i>Per-Magnus Olsson, Jonas Kvarnstrom, Patrick Doherty, Oleg Burdakov, Kaj Holmberg</i>	
<b>Automated Planning for Collaborative UAV Systems .....</b>	1078
<i>Jonas Kvarnstrom, Patrick Doherty</i>	

## **SESSION TA6: IMAGE/VIDEO ANALYSIS I**

<b>Focus Measure in a Liquid-Filled Diaphragm (LFD) Lens using Passive Auto-focus Method .....</b>	1086
<i>S. J. Abdullah, M. M. Ratnam, Z. Samad</i>	
<b>Online Background Learning for Illumination-robust Foreground Detection .....</b>	1093
<i>Dawei Li, Lihong Xu, Erik Goodman</i>	
<b>An Automatic System for Multi-View Face Detection and Pose Estimation .....</b>	1101
<i>Ying Ying, Han Wang, Jian Xu</i>	
<b>Nonuniformity Correction of Infrared Images based on Bivariate Quadratic Model .....</b>	1109
<i>Xiubao Sui, Qian Chen, Guohua Gu, Ning Liu</i>	
<b>Preliminary Investigation of Thermal Hartmann Wavefront Sensing.....</b>	1116
<i>Liping Zhao, Kelvin Jian Aun Ooi, Xiang Li, Lay Kee Ang</i>	
<b>A Novel Fractional-order Signal Processing Based Edge Detection Method.....</b>	1122
<i>Haibo Yang, Yongqiang Ye, Danwei Wang, Bin Jiang</i>	

## **SESSION TA7: COMPUTER VISION & PATTERN RECOGNITION**

<b>License Plate Localisation based on Morphological Operations.....</b>	1128
<i>Xiaojun Zhai, Faycal Bensaali, Soodamani Ramalingam</i>	
<b>Edge Detection Comparison for License Plate Detection.....</b>	1133
<i>Zuwena Musoromy, Soodamani Ramalingam, Nico Bekooij</i>	
<b>Efficient Character Segmentation on Car License Plates.....</b>	1139
<i>Lihong Zheng, Junbin Gao, Xiangjian He</i>	
<b>Human Detection Using Local Shape and Non-Redundant Binary Patterns .....</b>	1145
<i>Duc Thanh Nguyen, Wanqing Li, Philip Ogundabola</i>	
<b>Graph Matching Based Hand Posture Recognition using Neuro-Biologically Inspired Features .....</b>	1151
<i>P. Pramod Kumar, Prahlad Vadakepat, Loh Ai Poh</i>	
<b>Face Recognition using Discrete Cosine Transform and Fisher Linear Discriminant.....</b>	1157
<i>V. Vaidehi, N. T. Naresh Babu, H. Avinash, M. D. Vimal, A. Sumitra, P. Balmuralidhar, Girish Chandra</i>	

## **SESSION TM2: FEATURE EXTRACTION, GROUPING AND SEGMENTATION I**

<b>Detection and Segmentation of Near-duplicate Fragments in Random Images.....</b>	1161
<i>Andrzej Sluzek, Mariusz Paradowski, Yang Duanduan</i>	
<b>A Systematic Approach for Rapid 3D Reconstruction from Photosets.....</b>	1167
<i>Hoai Nam Le Tran, Kabilen Sornum, Hock Soon Seah, Wentong Cai, Malcolm Yoke Hean Low, Suiping Zhou, Michael Lees</i>	
<b>Image Segmentation of UV Pattern for Automatic Paper-Money Inspection.....</b>	1175
<i>Keon-Ho Lee, Tae-Hyoun Park</i>	
<b>Fruit Detection, Tracking, and 3D Reconstruction for Crop Mapping and Yield Estimation.....</b>	1181
<i>Jednipat Moonrinta, Supawadee Chaivivatrakul, Matthew N. Dailey, Mongkol Ekpanyapong</i>	
<b>Applying Training Hidden Features to Joint Curve Evolution for Brain MRI Segmentation.....</b>	1187
<i>Mahshid Farzinfar, Eam Khwang Teoh, Zhong Xue</i>	
<b>Designing Compact Gabor Filter Banks for Efficient Texture Feature Extraction .....</b>	1193
<i>Weitao Li, KeZhi Mao, Hong Zhang, Tianyou Chai</i>	

## **SESSION TM6: COMPUTATIONAL INTELLIGENCE IN VISION**

<b>Profit of Extending Standard Relational Databases with the Intelligent Cluster Index (ICIx).....</b>	1198
<i>Sebastian Leuoht, Alexander Adam, Wolfgang Benn</i>	
<b>Ensembles of Novel Visual Keywords Descriptors for Image Categorization .....</b>	1206
<i>Azizi Abdullah, Remco C. Veltkamp, Marco A. Wiering</i>	
<b>Real-Time Dense Digital Elevation Map Estimation using Laserscanner and Camera SLAM Process .....</b>	1212
<i>Florent Malartre, Pierre Delmas, Roland Chapuis, Christophe Debain</i>	

<b>A New SOM-based Active Contour Model using Conscience and Archiving Mechanisms .....</b>	1219
<i>Fereshteh Sadeghi, Hamid Izadinia, Reza Safabakhsh</i>	
<b>Color Rank and Census Transforms using Perceptual Color Contrast.....</b>	1225
<i>Guangming Xiong, Xin Li, Jianwei Gong, Huiyan Chen, Dah-Jye Lee</i>	
<b>Stereo for Robots: Quantitative Evaluation of Efficient and Low-memory Dense Stereo Algorithms .....</b>	1231
<i>Federico Tombari, Stefano Mattoccia, Luigi Di Stefano</i>	

### **SESSION TP1: SENSOR NETWORKS**

<b>Consensusability of Discrete-time Multi-agent Systems via Relative Output Feedback.....</b>	1239
<i>Keyou You, Lihua Xie</i>	
<b>Analysis of Mutual Information for Informative Forecasting Using Mobile Sensors .....</b>	1245
<i>Han-Lim Choi, Jonathan P. How</i>	
<b>Scalable Fusion with Mixture Distributions in Sensor Networks .....</b>	1251
<i>K. C. Chang, Wei Sun</i>	
<b>Framework of WSN Based Human Centric Cyber Physical In-pipe Water Monitoring System .....</b>	1257
<i>Adnan Nasir, Boon-Hee Soong, Selvakumaran Ramachandran</i>	

### **SESSION TP2: ADVANCES IN BIOMETRIC THEORY AND APPLICATIONS III**

<b>A Projection Framework for Biometric Scores Fusion .....</b>	1262
<i>Kar-Ann Toh</i>	
<b>Design and Implementation of a Contactless Palm Print and Palm Vein Sensor .....</b>	1268
<i>Goh Kah Ong Michael, Tee Connie, Andrew Teoh Beng Jin</i>	
<b>A Metric of Identification Performance of Biometrics based on Information Content .....</b>	1274
<i>Seira Hidano, Tetsushi Ohki, Naohisa Komatsu, Kenta Takahashi</i>	
<b>A Comparative Study of Local Feature Extraction for Age Estimation .....</b>	1280
<i>Sung Eun Choi, Youn Joo Lee, Sung Joo Lee, Kang Ryoung Park, Jaihie Kim</i>	
<b>Dynamic Detection Rate-based Bit Allocation for Biometric Discretization .....</b>	1285
<i>Meng-Hui Lim, Andrew Beng Jin Teoh</i>	

### **SESSION TP3: ROBUST CONTROL II**

<b>Reaching Law Based Sliding Mode Control for Discrete MIMO Systems .....</b>	1291
<i>S. J. Mija, Susy Thomas</i>	
<b>Design of Multirate Output Sampling based Linear Functional Observer and State Feedback.....</b>	1297
<i>S. Janardhanan, N. Satyanarayana</i>	
<b>Right/Left Inverses of Polynomial Matrices for Control, Communications and Vision .....</b>	1302
<i>Wojciech P. Hunek, Krzysztof J. Latawiec, Marian Lukaszyn</i>	
<b>Passivity-Preserving Frequency Weighted Model Order Reduction Techniques for General Large-Scale RLC Systems.....</b>	1310
<i>Wan Marian Wan Muda, Victor Sreeram, Herbert Ho-Ching Iu</i>	
<b>Automotive Driveline Control by a Nonlinear Nonparametric QFT Method .....</b>	1316
<i>A. Abass, A. T. Shenton</i>	
<b>A Slightly Improved Robust Adaptive Observer for Actuator Fault Detection.....</b>	1322
<i>Kamel Menighed, Joseph J. Yame, Christophe Aubrun</i>	

### **SESSION TP4: INTELLIGENT DIAGNOSIS AND PROGNOSIS**

<b>An exTS based Neuro-Fuzzy Algorithm for Prognostics and Tool Condition Monitoring.....</b>	1329
<i>O. Massol, X. Li, R. Gouriveau, J. H. Zhou, O. P. Gan</i>	
<b>A Knowledge Base System for Rotary Equipment Fault Detection and Diagnosis .....</b>	1335
<i>J.-H. Zhou, Louis Wee, Z.-W. Zhong</i>	
<b>FDI and Fault Estimation based on Differential Evolution and Analytical Redundancy Relations.....</b>	1341
<i>Ming Yu, Danwei Wang, Ming Luo, Danhong Zhang</i>	
<b>Continuous Health Assessment using a Single Hidden Markov Model .....</b>	1347
<i>O. Geramifard, J.-X. Xu, J.-H. Zhou, X. Li</i>	
<b>Towards Machine Diagnostics on Chip.....</b>	1353
<i>S.H. Ong, K. M. Goh, H. L. Chan, T. Y. Lim, K. V. Ling</i>	
<b>Flute based Analysis of Ball-Nose Milling Signals Using Continuous Wavelet Analysis Features .....</b>	1359
<i>Amin J. Torabi, Olivier Massol, Er Meng Joo, Li Xiang , Lim Beng Siong, Gan Oon Peen, Huang Sheng, Sudhan Raj Gopikrishnan, Zhai Lianyin, San Linn</i>	

### **SESSION TP5: VARIABLE STRUCTURE CONTROL SYSTEMS**

<b>Natural Logarithm Sliding Mode Control (In-SMC) using EMRAN for Active Engine Mounting System .....</b>	1365
<i>Andika Aji Wijaya, Wahyudi Akmeliaawati, R. Akmeliaawati, Fadly Jashi Darsivan</i>	

<b>Convergence Accuracy Analysis of Discretized Sliding Mode Control Systems</b>	1370
<i>Bin Wang, Xinghuo Yu, Liuping Wang</i>	
<b>Navigation of Four-Wheel-Steering Mobile Robots using Robust Fault-Tolerant Sliding Mode Control</b>	1375
<i>Madushanka Nishan Dharmaweerla, Sui Yang Khoo, Zhihong Man</i>	
<b>Leader-follower Consensus Control of a Class of Nonholonomic Systems</b>	1381
<i>Suiyang Khoo, Lihua Xie, Zhihong Man</i>	
<b>Quantization of Optimal Control System &amp; Synthesis of Optimal Controls of Quantum Diffusion Process</b>	1387
<i>B. C. Roy</i>	
<b>A Nonlinear Exponential Observer for a Batch Distillation</b>	1393
<i>Amiya K. Jana</i>	

## **SESSION TP6: AUTONOMY OF VEHICULAR SYSTEMS I**

<b>A Real-Time Robust Global Localization for Autonomous Mobile Robots in Large Environments</b>	1397
<i>Jianping Xie, Fawzi Nashashibi, Michel Parent, Olivier Garcia Favrot</i>	
<b>The ArosDyn Project: Robust Analysis of Dynamic Scenes</b>	1403
<i>Igor E. Paromtchik, Christian Laugier, Mathias Perrollaz, Mao Yong, Amaury Negre, Christopher Tay</i>	
<b>Detection of Unfocused Raindrops on a Windscreen using Low Level Image Processing</b>	1410
<i>Fawzi Nashashibi, Raoul de Charette, Alexandre Lia</i>	
<b>Visibility Distance Estimation based on Structure from Motion</b>	1416
<i>Clement Boussard, Nicolas Hautiere, Brigitte d'Andrea-Novel</i>	
<b>Collaborative Multi-Vehicle Localization and Mapping in High Clutter Environments</b>	1422
<i>Moratuwage M. D. P., W. S. Wijerupage, B. Kalyan, Nicholas M. Patrikalakis, Peyman Moghadam</i>	
<b>Hardware and Software Architecture for AUV based on Low-cost Sensors</b>	1428
<i>Alain Martinez, Yidier Rodriguez, Luis Hernandez, Carlos Guerra, Hichem Sahli</i>	

## **SESSION TP7: VISUAL SERVOING**

<b>Direct Visual Servo Control of a Robot to Track Trajectories in Supervision Tasks</b>	1434
<i>Gabriel J. Garcia, Carlos A. Jara, Jorge Pomares, Fernando Torres</i>	
<b>Visual Servoing using Triangulation with an Omnidirectional Multi-Camera System</b>	1440
<i>Bernhard Weber, Kolja Kuhnlenz</i>	
<b>Vision-Based Path Planning with Obstacle Avoidance for Mobile Robots using Linear Matrix Inequalities</b>	1446
<i>Weifeng Huang, Anan Osothsilp, Farzad Pourboghrat</i>	
<b>An Intelligent Space for Mobile Robot Navigation with On-Line Calibrated Vision Sensors</b>	1452
<i>Wen-Chung Chang, Ping-Rung Chu</i>	
<b>A Novel Position-Based Visual Servoing Approach for Robust Global Stability with Feature Points Kept within the Field-of-View</b>	1458
<i>In-Joong Ha, Do-Hwan Park, Jeong-Hun Kwon</i>	
<b>A Framework of Networked Visual Servo Control System with Distributed Computation</b>	1466
<i>Haiyan Wu, Lei Lou, Chih-Chung Chen, Sandra Hirche, Kolja Kuhnlenz</i>	

## **SESSION TI: INTERACTIVE SESSION II**

<b>Simple Analytic Formulas for PID Tuning</b>	1472
<i>Wuhua Hu, Gaoxi Xiao, Wen-Jian Cai</i>	
<b>An Optimal Point-wise Control Method for Parabolic Distributed Parameter Systems</b>	1478
<i>Qian Li, Ning Li, Shaoyuan Li</i>	
<b>Decoupling the Control Variables of a Plant in Presence of Time Delay</b>	1483
<i>Julian Fuchs, Ulrich Konigorski</i>	
<b>Modelling of a Hot Water Drum and Heat Exchanger Process Control Training System</b>	1489
<i>Belinda Chong Chiew Meng, Mohd Nor B. Mohd Than</i>	
<b>Fractional-Order Generalized Predictive Control: Formulation and some Properties</b>	1495
<i>Miguel Romero, Angel P. de Madrid, Carolina Manoso, Blas M. Vinagre</i>	
<b>Harmonic Excitation Based Autotuning - Autotuning Usable for Control of Biomass Combustion Processes</b>	1501
<i>Stanislav Vrana, Bohumil Sulc</i>	
<b>On-line Identification and Control Methods for PID Controllers</b>	1507
<i>Utkal Mehta, Somanath Majhi</i>	
<b>Shaping Nonlinear Modal Manifold of Internal Resonance System</b>	1512
<i>Ta-Ming Shih</i>	
<b>Analysis and Application of Trajectory in Discrete-time System</b>	1519
<i>Fang Jianyin, Liu Kai</i>	
<b>Two Flat Normal Forms for a Class of Nonlinear Dynamical Systems</b>	1524
<i>Soraya Bououden, Driss Boutat, Foudil Abdessamed</i>	
<b>Nonlinear Disturbance Decoupling for a Nonholonomic Mobile Robotic Manipulation Platform</b>	1530
<i>Joel Jimenez-Lozano, Bill Goodwine</i>	
<b>Real-time INS/GPS Data Fusion using Hybrid Adaptive Network Based Fuzzy Inference</b>	1536
<i>M. Malleswaran, J. Mary Anita, S. N. Sabreen, V. Vaidehi</i>	

<b>A Benchmarking Tool for MAV Visual Pose Estimation .....</b>	1541
<i>Gim Hee Lee, Markus Achtelik, Friedrich Fraundorfer, Marc Pollefeys, Roland Siegwart</i>	
<b>Mathematical Formulation of RFID Tag Floor based Localization and Performance Analysis for Tag Placement.....</b>	1547
<i>Youngsu Park, Je Won Lee, Daehyun Kim, Jae Jin Jeong, Sang-Woo Kim</i>	
<b>Ad-hoc Swarm Robotics Optimization in Grid Based Navigation.....</b>	1553
<i>Siddarth Jain, Manish Sawlani, Vijay Kumar Chandwani</i>	
<b>Map Based Indoor Robot Navigation and Localization using Laser Range Finder .....</b>	1559
<i>Shung Han Cho, Sangjin Hong</i>	
<b>Improved Genetic Algorithms Based Optimum Path Planning for Mobile Robot .....</b>	1565
<i>Soh Chin Yun, Velappa Ganapathy, Lim Ooi Chong</i>	
<b>Attitude Determination of Large Non-cooperative Spacecrafts in Final Approach .....</b>	1571
<i>Xuehai Gao, Bin Liang, Wenfu Xu</i>	
<b>Modelling and Simulation of a Multi-fingered Robotic Hand for Grasping Tasks .....</b>	1577
<i>J. A. Corrales, C. A. Jara, F. Torres</i>	
<b>New Hand Posture Classification Strategy for Finding Kinematically-Feasible Precision Grasps .....</b>	1583
<i>Peerapong Thonnagith, Attawith Sudsang</i>	
<b>Study on the Structure and Control of a Dexterous Hand .....</b>	1589
<i>Hao Liu, Tao Wang, Wei Fan, Tong Zhao</i>	
<b>Coordinated Control of the Power Compensation Equipments Located in Local Substations of the District Unit Power System .....</b>	1594
<i>Sang-Deok Lee, Ji-Ho Park, Young-Sik Baek</i>	
<b>Local Image Feature Matching for Object Recognition .....</b>	1598
<i>Oleg O. Sushkov, Claude Sammut</i>	
<b>Human Face Detection using Color Spaces and Region Property Measures .....</b>	1605
<i>R. Vijayanand, G. Balakrishnan</i>	
<b>An Improved Algorithm for Segmenting and Recognizing Connected Handwritten Characters .....</b>	1611
<i>Xiaoyu Zhao, Zheru Chi, Dagan Feng</i>	
<b>Automatic Traffic Monitoring using Neural Networks from Satellite Images .....</b>	1616
<i>Mehrad Eslami, Karim Faez</i>	
<b>Sequential Monte-Carlo Estimation Based Road Region Segmentation Considering Perspective Projection .....</b>	1622
<i>Zdenek Prochazka</i>	
<b>An Efficient Edge and Corner Detector .....</b>	1628
<i>Song Yang, Siew-Kei Lam, Thambipillai Srikanthan</i>	
<b>An Initial Edge Point Selection and Segmental Contour Following for Object Contour Extraction .....</b>	1632
<i>Roy Chaoming Hsu, Ping-Wen Kao, Wei-Jie Lai, Cheng-Ting Liu</i>	
<b>Advance in Triangular Mesh Simplification Study .....</b>	1638
<i>Mingyi He, Long Li</i>	
<b>Facial Part Displacement Effect on Template-based Gender and Ethnicity Classification .....</b>	1644
<i>F. Saei Manesh, M. Ghahramani, Y. P. Tan</i>	
<b>Fluid Dynamics Analysis of Contrast Media in Left Ventriculography .....</b>	1650
<i>Lay-Lan Lee, Gwo-Chung Tsai, Chien-Wei Liu</i>	
<b>A Patch-based Spatiotemporal Phase Unwrapping Method for Phase Contrast MRI using Graph Cuts .....</b>	1655
<i>Wenyu Xie, Ying Sun, Sim Heng Ong</i>	

## **SESSION FA1: NONLINEAR SYSTEMS**

<b>Robust Stabilization using Time-scaling and Lyapunov Redesign: The Ball-beam System .....</b>	1661
<i>T. R. Maruthi, Arun D. Mahindrakar</i>	
<b>Lyapunov Based <math>H_\infty</math> Controller Design in Multimachine Power Systems .....</b>	1667
<i>Maryam Dehghani, Seyyed Kamaleddin Nikravesh</i>	
<b>Multi Objective Evolutionary Programming to Solve Environmental Economic Dispatch Problem .....</b>	1673
<i>Bo-Yang Qu, P. N. Suganthan, V. R. Pandi, B. K. Panigrahi</i>	
<b>Adaptive Control of Singular Nonlinear Systems with Convex/Concave Parametrization .....</b>	1680
<i>FangQingxiang, Cao Feilong</i>	
<b>Multi-layer Moving-window Hierarchical Neural Network for Modeling of High-density Polyethylene Cascade Reaction Process .....</b>	1684
<i>Yuan Xu, Qunxiang Zhu</i>	
<b>Vehicle Formation Analysis based on Zero Dynamics for Road Traffic System .....</b>	1688
<i>Di-Hua Sun, Yong-Fu Li</i>	

## **VOLUME 3**

## **SESSION FA2: NETWORKED CONTROL SYSTEMS**

<b>Synchronization of Networked Harmonic Oscillators under Nonlinear Protocols.....</b>	1693
<i>Shan Cheng, Gang Zhang, Lan Xiang, Jin Zhou</i>	
<b>Inertial Sensor Data Compression using Modified ADPCM.....</b>	1699
<i>Young Soo Suh, Young Shick Ro, Hee Jun Kang</i>	

<b>Convergence of Kalman Filter with Quantized Innovations .....</b>	1703
<i>Jian Xu, Jianxun Li, Jiayun Wu</i>	
<b>Security Enhancement with Optimal QoS using ECDH for Converged 3G-WLAN System .....</b>	1709
<i>R. Shankar, Timothy K. Rajkumar, P. Dananjanay</i>	
<b>Simple Analog-Digital Circuit for Detection of Approaching Object based on Visual Systems of Pigeon and Locust .....</b>	1714
<i>Kimihiko Nishio, Naoya Ihara, Takumi Yamasaki</i>	
<b>Incremental Learning Bayesian Network Structures Efficiently .....</b>	1719
<i>Da Shi, Shaohua Tan</i>	

### **SESSION FA3: ROBOTICS IN UNSTRUCTURED ENVIRONMENTS**

<b>Wavelets/Multiwavelets Bases and Correspondence Estimation Problem: An Analytic Study .....</b>	1725
<i>A. Bhatti, S. Nahavandi, M. Hossny</i>	
<b>Control System Design for a 5-DOF Table Tennis Robot.....</b>	1731
<i>Ping Yang, De Xu, Huawei Wang, Zhengtao Zhang</i>	
<b>Rocket Roll Dynamics and Disturbance - Minimal Modelling and System Identification .....</b>	1736
<i>Christopher E. Hamm, Malcolm Snowdon, Avinash Rao, Robert Tang, Agnetha Korevaar, Greg Skinner, Alex Keall, XiaoQi Chen, J. Geoffrey Chase</i>	
<b>Spline-Interpolation Based PVT Algorithm and Application in a Bionic Cockroach Robot .....</b>	1742
<i>Haosong Yue, Weihai Chen, Wenjie Chen, Xingming Wu</i>	
<b>Towards Autonomous Image Fusion.....</b>	1748
<i>M. Hossny, S. Nahavandi, D. Creighton, A. Bhatti</i>	
<b>A Flexure-Based 4-DOF Coaxial Alignment System: Design and Application .....</b>	1755
<i>Chen Wenjie, Lin Wei, Yang Guilin</i>	

### **SESSION FA4: INTELLIGENT AUTOMATION**

<b>A Novel SVM Based Approach for Noisy Data Elimination.....</b>	1760
<i>Narendra S. Chaudhari, Aruna Tiwari, Jaya Thomas</i>	
<b>Novel Simulated Annealing Algorithm in order to Optimal Adjustment of Digital PID Controller .....</b>	1766
<i>Mohammad J. Dashti, Kambiz G. Shojaee, S. M. H. Seyedkashi, M. Behnam T.</i>	
<b>Multi-criteria Optimization of the Parallel Mechanism with Actuators Located Outside Working Space.....</b>	1772
<i>Nguyen Minh Thanh, Victor Glazunov, Tran Cong Tuan, Nguyen Xuan Vinh</i>	
<b>Dealing with Nonlinear and Uncertain Nonlinear Resistances in Train Control via Adaptive Approach .....</b>	1779
<i>Qi Song, Y. D. Song</i>	
<b>Fuzzy Feeder Models for Distribution System Calculations .....</b>	1785
<i>Shyi-Wen Wang</i>	
<b>Novel Integrated Development Environment for Implementing PLC on FPGA by Converting Ladder Diagram to Synthesizable VHDL Code .....</b>	1791
<i>Shaila Subbaraman, Manish M. Patil, Prashant S. Nilkund</i>	

### **SESSION FA5: AUTONOMY OF VEHICULAR SYSTEMS II**

<b>A GA based SLAM with Range Sensors Only .....</b>	1796
<i>Han Wang, Yi Yan, Dan Wei Wang</i>	
<b>Urban Vehicle Platooning using Monocular Vision: Scale Factor Estimation .....</b>	1803
<i>P. Avanzini, B. Thuilot, P. Martinet</i>	
<b>A Lidar Perception Scheme for Intelligent Vehicle Navigation .....</b>	1809
<i>Julien Moras, Veronique Cherfaoui, Phillippe Bonnifait</i>	
<b>Design of a Wheel-Propeller-Leg Integrated Amphibious Robot .....</b>	1815
<i>Jiancheng Yu, Yuangui Tang, Xueqiang Zhang, Chongjie Liu</i>	
<b>A MDL-Based Control Method for Tele-robotic Systems over Internet .....</b>	1820
<i>Jianning Hua, Hongyi Li, Yuechao Wang, Ning Xi</i>	
<b>Development of a Tele-guidance System with Fuzzy-based Secondary Controller .....</b>	1826
<i>Manh Duong Phung, Thanh Van Thi Nguyen, Cong Hoang Quach, Quang Vinh Tran</i>	

### **SESSION FA6: BIOMETRICS**

<b>Comparing Human Faces using Edge Weighted Dissimilarity Measure .....</b>	1831
<i>Aditya Nigam, Phalguni Gupta</i>	
<b>Pose-Invariant 2.5D Face Recognition using Geodesic Texture Warping .....</b>	1837
<i>Farshid Hajati, Abolghasem A. Raie, Yongsheng Gao</i>	
<b>LBP-Based Biometric Hashing Scheme for Human Authentication .....</b>	1842
<i>Zhengyao Bai, Dimitrios Hatzinakos</i>	
<b>Finding Distinctive Facial Areas for Face Recognition .....</b>	1848
<i>Ce Zhan, Wanqing Li, Philip Ogunbona</i>	
<b>Recognizing Face Profiles in the Presence of Hairs/glasses Interferences .....</b>	1854
<i>Weiping Chen, Yongsheng Gao</i>	

<b>Dense SIFT and Gabor Descriptors-Based Face Representation with Applications to Gender Recognition .....</b>	1860
<i>Jian-Gang Wang, Jun Li, Chong Yee Lee, Wei-Yun Yau</i>	

### **SESSION FA7: IMAGE/VIDEO ANALYSIS II**

<b>A Neural Network Model with Adaptive Structure for Image Annotation .....</b>	1865
<i>Zenghai Chen, Hong Fu, Zheru Chi, Dagan Feng</i>	
<b>Novel Gray-scale Watermarking Algorithm based on QFT.....</b>	1871
<i>Chi Zhao, Weijiang Wang, Xiwei Huang</i>	
<b>Vision-Based Lane Departure Detection System in Urban Traffic Scenes .....</b>	1875
<i>Yu-Chi Leng, Chieh-Li Chen</i>	
<b>A Method for the Segmentation of Connected Handwritten Persian Digits.....</b>	1881
<i>Fattaneh Taheri Ashtiyani, Karim Faeez</i>	
<b>A 3D Reconstruction System based on Improved Spacetime Stereo .....</b>	1886
<i>Federico Tombari, Luigi Di Stefano, Stefano Mattoccia, Andrea Mainetti</i>	

### **SESSION FM1: CONTROL APPLICATIONS I**

<b>Precision Motion Control for the Parallel Mechanism of Virtual Axis Machine Tool.....</b>	1894
<i>Gao Guoqin, Luo Yan, Jiang Daogen, Liu Xinjun</i>	
<b>Designing and Simulating of H<sub>∞</sub> Controller for Flexible Aircraft .....</b>	1900
<i>Meng Wen-Jie, Li Ai-Jun, Tan Jian, Wang Chang-Qing</i>	
<b>Temperature and Humidity Control in Livestock Stables.....</b>	1905
<i>M. Hansen, P. Andersen, K. M. Nielsen, T. S. Pedersen, M. Riisgaard-Jensen</i>	
<b>Backstepping Based Nested Multi-Loop Control Laws for a Quadrotor.....</b>	1911
<i>Erik De Vries, Kamesh Subbarao</i>	
<b>Invariant Sets Techniques for Buck DC-DC Converter Control.....</b>	1917
<i>Anamaria Luca, Pedro Rodriguez-Ayerbe, Didier Dumur, Pierre Lefranc</i>	
<b>Nonlinear 3-D Trajectory Guidance for Unmanned Aerial Vehicles .....</b>	1923
<i>Mousumi Ahmed, Kamesh Subbarao</i>	

### **SESSION FM2: DELAY SYSTEMS**

<b>Sensor Fusion of Delay and Non-delay Signal using Ensemble Kalman Filter with Moving Covariance .....</b>	1928
<i>Yucheng Zhou, Jiale Xu</i>	
<b>Synchronization of Non-autonomous Chaotic Systems with Time-Varying Delay via Delayed Feedback Control.....</b>	1934
<i>Thongchai Botmart, Piaypong Niamsup, Xinzhi Liu</i>	
<b>Impulsive Exponential Stabilization of Discrete Population Growth Models with Time Delays .....</b>	1940
<i>Yu Zhang, Jitao Sun</i>	
<b>Control of Unstable PDE with Long Input Delay .....</b>	1945
<i>Yangyang Zhang, Chengkang Xie</i>	
<b>Robust Stabilization of 2-D State-delayed Systems with Stochastic Perturbation.....</b>	1951
<i>Juan Yao, Shuxia Ye, Weiqun Wang</i>	
<b>Decoupling MIMO Systems with Multiple Input/Output Time Delays .....</b>	1957
<i>Pedro Albertos, Pedro Garcia</i>	

### **SESSION FM3: MOBILE ROBOTICS III**

<b>A Novel Approach to Motion Modeling using Fuzzy Cognitive Map and Artificial Potential Fields.....</b>	1963
<i>O. Motlagh, S. H. Tang, A. R. Ramlı, N. Ismail, D. Nakhaei Nia</i>	
<b>Mobile Robot Localization using Feature Based Fuzzy Map Matching .....</b>	1968
<i>Haoming Xu, John James Collins</i>	
<b>tinySLAM : A SLAM Algorithm in less than 200 Lines C-Language Program .....</b>	1975
<i>Bruno Steux, Oussama El Hamzaoui</i>	
<b>A DSP FPGA Based Hardware-in-the-Loop Testing Platform.....</b>	1980
<i>Ta-Ming Shih, Ho-Chung Chang</i>	
<b>A Fast Scan Matching for Grid-based Laser SLAM using Streaming SIMD Extensions .....</b>	1986
<i>Oussama El Hamzaoui, Bruno Steux</i>	

### **SESSION FM4: FACTORY MODELING AND SIMULATION**

<b>Generic Data Types for Planning and Control in Intermodal Freight Transshipment Applications.....</b>	1991
<i>Dieter Zoebel, Christian Weyand</i>	
<b>Periodic Stable Robustness of Serial Production Line with Single Processing Parameter Perturbation based on Max-algebra .....</b>	1997
<i>Daoping Li, Xiaolan Yao, Qinghe Wu, Xiaodong Zhang</i>	

<b>Ontology-Based Product Knowledge Integration in Mobile Environment.....</b>	2001
<i>Cao Li, Zongwu Xie, Kui Sun, Hong Liu, Yongjun Zheng</i>	
<b>Model Simplification for Accelerating Simulation-based Evaluation of Dispatching Rules in Wafer Fabrication Facilities.....</b>	2005
<i>Tsung-Che Chiang</i>	
<b>Binary Neural Network Classifier and it's Bound for the Number of Hidden Layer Neurons.....</b>	2012
<i>Narendra S. Chaudhari, Aruna Tiwari</i>	
<b>Predicting Amount of Saleable Products using Neural Network Metamodels of Casthouses .....</b>	2018
<i>Abbas Khosravi, Saeid Nahavandi, Doug Creighton, Bruce Gunn</i>	

### **SESSION FM5: HUMAN ROBOT INTERACTION**

<b>Experimenting Extended Neglect Tolerance Model for Human Robot Interactions in Service Missions .....</b>	2024
<i>Mohan Rajesh Elara, Carlos A. Acosta Calderon, Changjiu Zhou, Wijerupage Sardha Wijesoma</i>	
<b>Modelling of Human Motor Control in an Unstable Task through Operational Space Formulation.....</b>	2030
<i>Shou-Han Zhou, Denny Oetomo, Iven Mareels, Etienne Burdet</i>	
<b>Using Common Motion Patterns to Improve a Robot's Operation in Populated Environments.....</b>	2036
<i>Stephan Sehestedt, Sarah Kodagoda, Gamini Dissanayake</i>	
<b>Thinking Head: Towards Human Centred Robotics .....</b>	2042
<i>D. C. Herath, Christian Kroos, Catherine J. Stevens, Lawrence Cavedon, Prashan Premaratne</i>	
<b>Fuzzy Direct Adaptive Control for Robotic Manipulators.....</b>	2048
<i>Daoxiang Gao, Qingchun Wang, Dunmin Lu</i>	

### **SESSION FM6: TRACKING AND SURVEILLANCE**

<b>Head Plane Estimation Improves the Accuracy of Pedestrian Tracking in Dense Crowds.....</b>	2054
<i>Irshad Ali, Matthew N. Dailey</i>	
<b>Robust Object Tracking using Local Oriented Energy Features and its Hardware/Software Implementation .....</b>	2060
<i>Ehsan Norouznezhad, Abbas Bigdeli, Adam Postula, Brian C. Lovell</i>	
<b>Omnidirectional Video Stabilisation on a Virtual Camera using Sensor Fusion.....</b>	2067
<i>Thomas Albrecht, Tele Tan, Geoff A. W. West, Thanh Ly</i>	
<b>Square Patch Feature: Faster Weak-Classifier for Robust Object Detection.....</b>	2073
<i>Yasir M. Mustafah, Abbas Bigdeli, Amelia W. Azman, Farhad Dadgostar, Brian C. Lovell</i>	
<b>A Hybrid Computational Model for Spoken Language Understanding .....</b>	2078
<i>Guangpu Huang, Meng Joo Er</i>	
<b>Frontal Face Classifier using AdaBoost with MCT Features.....</b>	2084
<i>Jongmin Yoon, Dajin Kim</i>	

### **SESSION FM7: PATTERN RECOGNITION**

<b>3D Object Recognition via Multi-View Inspection in Unknown Environments.....</b>	2088
<i>Jamie Westell, Parvaneh Saeedi</i>	
<b>Large Object Detection in Cluttered Background using Boosted Markov Chain Monte Carlo .....</b>	2096
<i>Sungho Kim, Jungho Kim, Chaehoon Park, In So Kweon</i>	
<b>Exploiting Feature Dynamics for Active Object Recognition .....</b>	2102
<i>Philippe Robbel, Deb Roy</i>	
<b>Multiple Kernel Learning SVM-based EMG Pattern Classification for Lower Limb Control .....</b>	2109
<i>Qingshan She, Zhizeng Luo, Ming Meng, Ping Xu</i>	
<b>Classification of Abnormalities in Digitized Mammograms using Extreme Learning Machine.....</b>	2114
<i>G. Vani, R. Savitha, N. Sundararajan</i>	
<b>A Divide-and-Distribute Approach to Single-Cycle Learning HGN Network for Pattern Recognition .....</b>	2118
<i>Anang Hudaya Mohammad Amin, Asad I. Khan</i>	

### **SESSION FP1: UNDERWATER ROBOTICS**

<b>Development of the Actuator Concentration Type Removable Underwater Manipulator.....</b>	2124
<i>Fumiaki Takemura, Reyes Tatsuru Shiroku</i>	
<b>Adaptive Region Tracking Control for Autonomous Underwater Vehicle .....</b>	2129
<i>X. Li, S. P. Hou, C. C. Cheah</i>	
<b>A Neuro-Fuzzy Controller for Underwater Robot Manipulators.....</b>	2135
<i>Shumugham R. Pandian, Norimitsu Sakagami</i>	
<b>Design and Development of an Attitude Control System for a Human-sized ROV.....</b>	2141
<i>Norimitsu Sakagami, Takafumi Kanayama, Tomohiro Ueda, Hideki Hashizume, Mizuho Shibata, Hiroyuki Onishi, Shigeo Murakami, Sadao Kawamura</i>	

## **SESSION FP2: FEATURE EXTRACTION, GROUPING, AND SEGMENTATION II**

<b>A Unified 2D-3D Video Scene Change Detection Framework for Mobile Camera Platforms .....</b>	2147
<i>Wilson S. Leoputra, Tele Tan, Svetha Venkatesh</i>	
<b>Flying Vision System of Placement Machine for MEMS Microphone .....</b>	2154
<i>Liguo Chen, Jifeng Zhu, Weibin Rong, Lining Sun</i>	
<b>Improve Library Shelf Reading using Color Feature Matching of Book-Spine Images .....</b>	2160
<i>Spencer G. Fowers, Dah-Jye Lee, Guangming Xiong</i>	
<b>A Fast and Robust Descriptor for Multiple-view Object Recognition .....</b>	2166
<i>Maja Rudinac, Pieter P. Jonker</i>	
<b>Obstacle-Free Range Determination for Rail Track Maintenance Vehicles .....</b>	2172
<i>Frederic Maire, Abbas Bigdeli</i>	
<b>Recognizing Human Motions from Surrounding Viewpoints Employing Hierarchical Eigenspaces.....</b>	2179
<i>S. M. Ashik Eftakhar, Joo Kooi Tan, Hyoungseop Kim, Seiji Ishikawa</i>	

## **SESSION FP3: NEURO-FUZZY CONTROL II**

<b>An Intelligent Control Approach for Blood Pressure System using Self-generating Fuzzy Neural Networks.....</b>	2185
<i>Liu Fan, Er Meng Joo</i>	
<b>Neural Network Based Minimal State-Space Representation of Nonlinear MIMO Systems for Feedback Control.....</b>	2191
<i>Kristina Vassiljeva, Eduard Petlenkov, Juri Belikov</i>	
<b>Metrics for Measurement of Additive Noise to Weight in Sigmoidal FFANNs.....</b>	2197
<i>Amit Prakash Singh, C. S. Rai, Pravin Chandra</i>	
<b>Fuzzy Metering Control on the Auxiliary Road Signal of the Expressway Exit.....</b>	2202
<i>Yuan Changliang, Li Honghai</i>	
<b>Designing a Fuzzy Logic Controller to Adjust the Angle of Tires in Four Wheel Steering Vehicles.....</b>	2208
<i>Ali Hakima, Sina Ameli</i>	
<b>An Enhanced Online Self-organizing Fuzzy Neural Network.....</b>	2214
<i>L. San, M. J. Er, X. Li, L. Y. Zhai, A. J. Torabi</i>	

## **SESSION FP4: CONTROL APPLICATIONS**

<b>Improvement of Short-Span Seeking Performance in a Dual-Stage Hard Disk Drive Actuator .....</b>	2221
<i>Branislav Hredzak</i>	
<b>Stabilization of a Circular Ball-and-Beam System .....</b>	2227
<i>Aakash A. Ravichandran, Arun D. Mahindrakar</i>	
<b>Efficient Control System Development using Real-time Virtual Hardware-in-the-loop Simulation.....</b>	2231
<i>Jun Zhong, Yi Jin, Guofu Lian, Guoliang Ding, Chang'an Zhu</i>	
<b>Design and Development of a 4kW SMPS Power Supply with Long Term Short Circuit Capability .....</b>	2237
<i>J. W. K. K. Jayasundara, W. T. M. S. Tennakoon</i>	
<b>A Unified Controller Design using two Different Types of Optimal Reset Control Laws for HDD Servo Systems .....</b>	2242
<i>Hui Li, Youyi Wang</i>	
<b>Model Predictive Control Based Efficient Operation of Battery Energy Storage System for Primary Frequency Control.....</b>	2248
<i>Muhammad Khalid, Andrey V. Savkin</i>	

## **SESSION FP5: IDENTIFICATION AND ESTIMATION II**

<b>Piecewise Linear Approximation of Sinusoidal Inputs for Process Identification.....</b>	2253
<i>Salim Ahmed</i>	
<b>Identification and Control of Nonlinear Systems using Piecewise Affine Models.....</b>	2259
<i>Chow Yin Lai, Cheng Xiang, Tong Heng Lee</i>	
<b>Nonparametric Modeling of Glucose-Insulin Process in IDDM Patient using Hammerstein-Wiener Model .....</b>	2266
<i>Arpita Bhattacharjee, Anindita Sengupta, Ashoke Sutradhar</i>	
<b>Approximation by Discrete Hermite Interpolation .....</b>	2272
<i>Fengmin Chen, Patricia J. Y. Wong</i>	
<b>Approximation by Discrete Spline Interpolation .....</b>	2278
<i>Fengmin Chen, Patricia J. Y. Wong</i>	
<b>Optimal Estimation of the Central Normal of a Heliostat using UKF .....</b>	2284
<i>Fen Xu, Wenfeng Liang</i>	

## **SESSION FP6: ROBOT SENSING, PERCEPTION, AND DATA FUSION**

<b>Sound Source Target Localization System of Mobile Robot .....</b>	2289
<i>Zu Linan, Yang Peng, Sun Hao, Chen Lingling</i>	
<b>Binaural Speaker Recognition for Humanoid Robots.....</b>	2295
<i>Karim Youssef, Sylvain Argentieri, Jean-Luc Zarader</i>	

<b>A System for Reconstruction from Point Clouds in 3D: Simplification and Mesh Representation.....</b>	2301
<i>Lyuba Alboul, Georgios Chliveros</i>	
<b>Multi-class Classification for Semantic Labeling of Places .....</b>	2307
<i>Lei Shi, Sarath Kodagoda, Gamini Dissanayake</i>	
<b>Mobile Sensing and Simultaneously Node Localization in Wireless Sensor Networks for Human Motion Tracking .....</b>	2313
<i>Sen Zhang, Wendong Xiao, Jun Gong, Marcelo H. Ang, Chen Khong Tham, Ronny Quin Fai Tham</i>	
<b>Study of Handoff Performance in a Mobile WiMAX Network.....</b>	2319
<i>V. Vaidehi, M. Poorani</i>	

## **SESSION FP7: ROBOT CONTROL II**

<b>Experimental Investigation of a Path Following Controller for Planar Snake Robots .....</b>	2325
<i>Pal Liljeback, Idar U. Haugstuen, Kristin Y. Pettersen</i>	
<b>Centrifugal Force Compensation of a Two-Wheeled Balancing Robot .....</b>	2333
<i>Mishari Alarfaj, George Kantor</i>	
<b>Design of Length Measuring System for Stewart Platform using New Forward Kinematics Solution.....</b>	2339
<i>Hamid Rezvani Dastgerdi, Mehdi Keshmire</i>	
<b>Robust Path Following Control of an Unmanned Boat.....</b>	2345
<i>Zhenyu Yu</i>	
<b>Dual-loop Adaptive Decoupling Control for Single Wheeled Robot - Based on Neural PID Controller .....</b>	2349
<i>Xiaogang Ruan, Qiyuan Wang, Naigong Yu</i>	
<b>Trajectory Generation of Straightened Knee Walking for Humanoid Robot iCub .....</b>	2355
<i>Zhibin Li, Nikos G. Tsagarakis, Darwin G. Caldwell, Bram Vanderborght</i>	

## **SESSION FI: INTERACTIVE SESSION III**

<b>Adaptive Generalized Minimum Variance Control for TCP/AQM .....</b>	2361
<i>Roohollah Barzamini, Masoud Shafiee</i>	
<b>Variable Structure Control with Feedforward Compensator for Robot Manipulators subject to Load Uncertainties.....</b>	2367
<i>Suolin Duan, Lanping Chen, Zhenghua Ma, Guirong Lu</i>	
<b>Robust Coordinated Control of Hot Strip Mill Multivariable System.....</b>	2373
<i>Peng Kaixiang, Dong Jie</i>	
<b>Nonlinear Sliding Mode Observers for Fault Reconstruction and State Estimations .....</b>	2379
<i>Kalyana C. Veluvolu, Yeng Chai Soh</i>	
<b>Sparse Structured <math>H_\infty</math> Filter Design with for Linear Systems .....</b>	2385
<i>Wei-Wei Che, Yan-Ping Li</i>	
<b>Robust <math>H_\infty</math> Model Reduction for a Class of Nonlinear Time-varying Systems with Time Delays.....</b>	2391
<i>Weiwei Zhao, Xiao He, Yindong Ji</i>	
<b>Multi-objective Robust PID Controller Tuning using Multi-objective Differential Evolution .....</b>	2398
<i>S.-Z. Zhao, B.-Y. Qu, P.-N. Suganthan, M. Willjuice Iruthayarajan, S. Baskar</i>	
<b>Automatic Take-off Control System for Helicopter - An <math>H_\infty</math> Approach .....</b>	2404
<i>S. Suresh, P. Kashyab, M. Nabi</i>	
<b>Self-learning Continuous Controllers .....</b>	2409
<i>Otto Cerman, Petr Husek</i>	
<b>A Comparative Analysis of LQR and Fuzzy Logic Controller for Active Suspension using Half Car Model .....</b>	2415
<i>Faried Hasbullah, Waleed F. Faris</i>	
<b>Multidimensional Minimization Training Algorithms for Steam Boiler High Temperature Superheater Trip using Artificial Intelligence Monitoring System.....</b>	2421
<i>Firas Basim Ismail, Hussain H. Al-Kayiem</i>	
<b>Integration of INS and GPS using Radial Basis Function Neural Networks for Vehicular Navigation.....</b>	2427
<i>M. Malleswaran, S. Angel Deborah, S. Manjula, V. Kumar</i>	
<b>Environmental Monitoring and Air-conditioning Automatic Control with Intelligent Building Wireless Sensor Network .....</b>	2431
<i>Zheng Tao, Qin Yajuan, Gao Deyun, Zhang Hongke</i>	
<b>Movement Pursuit Control of an Offshore Automated Platform via a RAM-based Neural Network .....</b>	2437
<i>Horacio L. Franca, Joao Carlos P. da Silva, Massimo De Gregorio, Omar Lengerke, Max S. Dutra, Felipe M. G. Franca</i>	
<b>Opportunistic 3D Trajectory Generation for the JPL Aerobot with Nonlinear Trajectory Generation Methodology .....</b>	2442
<i>Weizhong Zhang, Tamer Inanc, Alberto Elfes</i>	
<b>Surface-tracking of a 5-DOF Manipulator Equipped with Tactile Sensors .....</b>	2448
<i>Jingguo Wang, Yangmin Li</i>	
<b>Recurrent Neural Network Based Tracking Control .....</b>	2454
<i>Zhao Xu, Qing Song, Danwei Wang</i>	
<b>Distributed Control of Mobile Robotic Sensor Networks for Multi-level Barrier Coverage .....</b>	2460
<i>Teddy M. Cheng, Andrey V. Savkin</i>	
<b>A Distributed Multi-robot Adaptive Sampling Scheme for Complex Field Estimation.....</b>	2466
<i>Muhammad F. Mysorewala, Dan O. Popa, Lahouari Chedad, Mirza Salman Baig</i>	
<b>Interacting Multiple Models Based Classification of Moving Objects .....</b>	2472
<i>Julien Burlet, Olivier Aycard, Qadeer Baig</i>	

<b>Magician Simulator - A Realistic Simulator for Heterogeneous Teams of Autonomous Robots.....</b>	2479
<i>Adham Atyabi, Tom A. F. Anderson, Kenneth Treharne, David M. W. Powers</i>	
<b>An Ensemble Vector Median Filter for Color Image Denoising.....</b>	2485
<i>Ling Zhong, Yun Zhang, Yan Xing</i>	
<b>Players Tracking and Ball Detection for an Automatic Tennis Video Annotation.....</b>	2491
<i>Kosit Teachabarikiti, Thanarat H. Chalidabhongse, Arit Thammano</i>	
<b>HOG Based Multi-Stage Object Detection and Pose Recognition for Service Robot.....</b>	2495
<i>Li Dong, Xinguo Yu, Liyuan Li, Jerry Kah Eng Hoe</i>	
<b>Full Spectrum Vibration Suppression for Video Stabilization.....</b>	2501
<i>Wen-Jong Lin, Chuen Leong Ng, Hong Luo, ZhengMing Gong, Guilin Yang</i>	
<b>Eye-Gaze Detection with a Single WebCAM based on Geometry Features Extraction.....</b>	2507
<i>Nguyen Huu Cuong, Huynh Thai Hoang</i>	
<b>Visual Interpretation of Natural Pointing Gestures in 3D Space for Human-Robot Interaction .....</b>	2513
<i>Zhi Li, Ray Jarvis</i>	
<b>Liver Cancer Identification based on PSO-SVM Model.....</b>	2519
<i>Huiyan Jiang, Fengzhen Tang, Xiyue Zhang</i>	
<b>Novel Web Cache Architecture.....</b>	2524
<i>Meenakshi Kalia, Ridhi Sood</i>	
<b>Verification of Bank Cheque Images using Hamming Measures .....</b>	2530
<i>M. Sankari, M. Benazir, R. Bremananth</i>	
<b>A Novel Approach to Remove Redundant Gabor Wavelets for Family Classification .....</b>	2536
<i>M. Ghahramani, N. M. Dang, E. K. Teoh, W. Y. Yau</i>	
<b>Author Index</b>	