

2010 IEEE International Conference on Information and Automation

(ICIA 2010)

**Harbin, China
20-23 June 2010**

Pages 1-822



**IEEE Catalog Number: CFP10833-PRT
ISBN: 978-1-4244-5701-4**

Table of Contents

MA1-1: Biorobotics

- [Experiments with a Teleoperated System for Improved Bio-Micromanipulations](#) 1
Leonardo S. Mattos, Edward Grant, Randy Thresher, Kim Kluckman, Darwin G. Caldwell
- [Biomimetic Design for Bipedal/Quadrupedal Motion in a Robotic Primate](#) 7
S. Davis, Darwin G. Caldwell
- [An Intelligent Monitor System of Otologic Drill to Prevent Drill Bit Entangling with the Cotton](#) 13
Tianyang Cao, Xisheng Li, Zhiqiang Gao, Guodong Feng, Peng Shen
- [A New Piezo-driven Ultrasonic Cell Microinjection System](#) 18
Haibo Huang, James K. Mills, Dong Sun
- [A Cubic CPG Model for Snake-like Robot to Adapt to Environment](#) 24
Chaoquan Tang, Shugen Ma, Bin Li, Yuechao Wang
- [Design and Analysis of a 6-DOF Parallel Robot Used in Artificial Cervical Disc Replacement Surgery](#) 30
Heqiang Tian, Dongmei Wu, Zhijiang Du, Lining Sun

MP1-1: Robot Hands & Grasping

- [The Development and Maintenance of a Reliable Interactive Dexterous Robot Hand for Museum Exhibition](#) 36
S. Davis, Darwin G. Caldwell
- [Impedance Analysis for Piezoelectric Energy Harvesting Devices under Displacement and Force Excitations](#) 42
Junrui Liang, Wei-Hsin Liao
- [Using Superquadrics for the Approximation of Objects and Its Application to Grasping](#) 48
Marcus Strand, Zhixing Xue, Marius Zoellner, Rüdiger Dillmann
- [High Performance Robotic Gripper Based on Choice of Feedback Variables](#) 54
Aziza. M. Zaki, Ayman. M. Soliman, Osama. A. Mahgoub, Abdellatif. M. El-Shafei
- [Imitation Learning of Hand Gestures and Its Evaluation for Humanoid Robots](#) 60
Anand Thobbi, Weihua Sheng
- [Kinematics Analysis of Bridge-type Micro-displacement Mechanism Based on Flexure Hinge](#) 66
Guo Ye, Wei Li, Yuqiao Wang, Xuefeng Yang, Ling Yu

MP2-1: Multi-robot

- [Motion Planning of Multiple Mobile Robots with Formation Requirement](#) 71
Shuang Liu, Dong Sun, Changan Zhu
- [A Coordination Framework for Weakly Centralized Mobile Robot Teams](#) 77
Ke Xu, Peng Song
- [Efficient Localization of Multiple Robots in a Wide Space](#) 83
Wonyeon Choi, Yan Li, JaeHyun Park, Jangmyung Lee

Effects of Algorithmic Parameters on Swarm Robotic Search	87
<i>Ying Tan, Songdong Xue, Jianchao Zeng, Jengshyang Pan, Tienszu Pan</i>	
Research on Architecture of Multiple Robots System Based on the Dynamic Networks	93
<i>Yanmin Lei, Qidan Zhu, Zhibin Feng</i>	
MA1-2: Human Interface Design & Digital Design	
Effect of Tilt Angle of Tablet on Pen-based Input Operation Based on Fitts' Law	99
<i>Dongxing Bao, Yizhong Xin, Xiangshi Ren</i>	
Lever Cursor: A Bimanual Selection Technique for MultiTouch Tabletop	105
<i>Jibin Yin, Hua Liu</i>	
The Empirical Study of A Novel Bimanual Scrolling Technique	110
<i>Jibin Yin, Hua Liu</i>	
A Self-controlled Robot for Upper Limb Rehabilitation	114
<i>Chunguang Li, Yoshio Inoue, Tao Liu, Kyoko Shibata, Koichi Oka</i>	
An Algorithm for Selecting Chinese Features Based on TF-NIDF Weight	120
<i>Yongli Li, Yanheng Liu, Mo Shi, Liyan Dong, Zhen Li, Lixiang Liu, Pengfei Yan</i>	
MP1-2: Models for Human & Informatic	
A Novel Support Vector and K-Means Based Hybrid Clustering Algorithm	126
<i>Liang Sun, Shinichi Yoshida, Yanchun Liang</i>	
Adaptive Multi-Issue Agent-Based Negotiation Model	131
<i>Chun Shen, Xiuzeng Peng, Yi Lu, Lei Liu</i>	
A Communicator Vista Image Generation with an Overlaid Location Indicator for the Virtual Window System	136
<i>Kazunori Iwaki, Atsushi Miyagawa, Kazunori Shimamura</i>	
Study of Emergency Resource Distribution Model Based on Genetic Algorithm	142
<i>Yongli Li, Yanheng Liu, Hailong Zhang, Jiantao Xiao, Yu Zhao, Weizhou Guan</i>	
The Functional Role of Implicit Memory on Gaze-evoked Attention Orienting	148
<i>Qian Qian, Keizo Shinomori, Miao Song</i>	
Implementation and Analysis of Moving Objects Detection in Video Surveillance	154
<i>Henan Guo, Yanchun Liang, Zhezhou Yu, Zhen Liu</i>	
MP2-2: Human Capability & New Methods for Informatics	
Genetic Algorithm with Affinity Propagation	159
<i>Chunguo Wu, Hao Gao, Lianjiang Yu, Yanchun Liang, Rongwu Xiang</i>	
An Empirical Comparison of the Locations of Haptic Feedback in Steering Tasks	163
<i>Minghui Sun, Xiangshi Ren</i>	
The Contributions of Facial Features on the Smiling and Angry Expressions Judgment and its Implication for the Computer Recognition System	167
<i>Miao Song, Keizo Shinomori, Shiyong Zhang</i>	
A Novel Method of Mining Frequent Item Sets	173
<i>Liyan Dong, Zhaojun Liu, Mo Shi, Pengfei Yan, Zhuo Tian, Zhen Li</i>	

Visual Estimation of Lower Limb Motion Using Physical and Virtual Sensors	179
<i>Kun Liu, Tao Liu, Kyoko Shibata, Yoshio Inoue</i>	
Analysis of Muscle Forces in Lower Limbs Based on Wearable Sensors	185
<i>Enguo Cao, Yoshio Inoue, Tao Liu, Kyoko Shibata</i>	
MA1-3: Modeling & Simulation I	
An Assignment Project Based Approach for Engineering Education	191
<i>Guangyu Liu, Yuan Ren</i>	
A General Modeling Method that Simulates Photovoltaic Arrays for Environmental and Electrical Variability	195
<i>Guangyu Liu, Sing Kiong Nguang</i>	
Modeling and Simulation of the Thermal Network in a Space Gear-Bearing System	201
<i>Liqun Qi, Guangyu Zhang, Yongjin Liu</i>	
Modeling and Simulation of Variable Direction Rotatable Axis of Variable Vector Propeller of Submersible Vehicle in Vertical Motion	206
<i>Sheng Liu, Dong Ren, Bing Li, Xucheng Chang, Yuchao Wang</i>	
Research of Anti-acceleration Disturbance for the Micro-machined Airflow Inclinator	212
<i>Wei Zhang, Yu Liu, Fuxue Zhang</i>	
Fault Detection and Diagnosis in Activated Effluent Disposal Process Based on PCA	216
<i>Dong Li, Ze Zhang, Hui Wang</i>	
MP1-3: Modeling & Simulation II	
Modeling and Parameter Identification of a Tractor Semitrailer/Driver Closed-loop System Using the Simulated Annealing (SA) Optimization Approach	222
<i>Jianhua Chen, Zhaoheng Liu</i>	
Information System Hierarchical Fuzzy Evaluation Based on Bottom Index Clustering	228
<i>Leilei Liu, Shiping Yang</i>	
Petri Net and GASA Based Approach for FSP with Multi-workstation Operation	234
<i>Meng Yang, Ze Tao</i>	
A Method for Determining Number of Coherent Signals with Arbitrary Plane Array	240
<i>Jiaqi Zhen, Xicai Si</i>	
Modeling and Simulation for Pressure Character of the Plate-Inclined Axial Piston Type Hydraulic Transformer	245
<i>Jihai Jiang, Chengqiang Liu, Bin Yu</i>	
A Solution Separation RAIM Scheme Based on Adaptive Clock-bias Model	250
<i>Liang Li, Lin Zhao, Wei Cao, Shangyue Lou</i>	
MP2-3: Modeling & Simulation III	
Product Information Model and System Integration Based on Generalized CAD	255
<i>Pengshou Xie, Zhiyuan Rui</i>	
Dynamics Analysis for Cutting Part of Shearer Physical Simulation System	260
<i>Fang Ren, Zhengyan Liu, Zhaojian Yang</i>	

Simulation and Analysis of the Dual Point-Source Decoying ARM	265
<i>Ping Huang, Rongrong Yin, Yingjie Han</i>	
Datasets Simulator Generation Algorithm for Port Management Spatiotemporal Database	269
<i>Chang Liu, Lijun Liu, Feng Gao</i>	
Fault Prediction of Power-Shift Steering Transmission Based on Support Vector Regression	273
<i>Yingfeng Zhang, Biao Ma, Jinsong Zhao, Hailing Zhang</i>	
Development of Flexible Aircraft Lateral Linear Fractional Transformation Model	278
<i>Li Zhang, Weiwei Qin, Zhiqiang Zheng</i>	
MA1-4: Control Theory I	
The Design and Control of the Crustal Movement Simulation System	283
<i>Changchun Fan, Guodong Yang, En Li, Zize Liang, Min Tan</i>	
Switched Stability Design on Canonical Forms	289
<i>Geng Zhu</i>	
DSRV Recovery Control Using Grey Prediction Model	294
<i>Juan Li, Xiaocheng Shi, Yifei Qin, Guifeng Zhang</i>	
Chua System Chaos Synchronization Using Single Variable Feedback Based on LaSalle Invariance Principal	301
<i>Fengxiang Chen, Chuansheng Zhang, Guangji Ji, Shuang Zhai, Su Zhou</i>	
Chaos Control of a Time-Delay Chaotic Neural Network for Information Processing	305
<i>Tao Wang, Kejun Wang, Nuo Jia</i>	
The Study of Nonlinear Vibration of Duffing Equation under Multi-frequency Excitation	309
<i>Desen Yang, Lei Dong, Guanghui Shao, Jie Shi</i>	
MP1-4: Control Theory II	
Robust Stability Analysis of Asymptotic Second-order Sliding Mode Control System Using Lyapunov Function	313
<i>Yaodong Pan, Guangjun Liu, Krishna Dev Kumar</i>	
Indirect Adaptive Control for a Class of Unknown Nonlinear Systems Based on LS-SVM	319
<i>Chunli Xie, Cheng Shao, Dandan Zhao, Juan Wang</i>	
Robust Guaranteed Cost Control for Markovian Jump Systems with Time Delay	323
<i>Yuesheng Luo, Mingye Zhou, Xingyan Zhang, Xu Qi, Xiuping Wen, Ruijuan Chen</i>	
Disturbance Observer Based Control for a Class of Nonlinear Systems with Uncertain Exosystem	329
<i>Yuan Jiang, Li Zeng, Shutang Liu</i>	
Robust Guaranteed Cost Control of Linear Systems with Norm Bounded Uncertainties and External Disturbance	335
<i>Fei Zhang, Guangjun Liu, Hongguang Wang, Lijin Fang</i>	
Construction of the Skipping Steps for Preimage Attack of MD5	340
<i>Ming Mao, Shaohui Chen, Yanjun Li, Shaokun Zeng</i>	
MP2-4: Control Applications I	
The Simulated Dynamical Photovoltaic Array Systems	344
<i>Guangyu Liu, Sing Kiong Nguang, Yuan Ren</i>	

Azimuth Ultra Low Speed Tracking Control for Direct Driving Brushless Motor	350
<i>Wei Hu, Jianxun Li, Weiwei Xue, Rong Jiang</i>	
Robust Adaptive Synchronization of a Class of Uncertain Non-smooth-air-gap PMSM Chaotic Systems	355
<i>Dan Zhao, Weihua Tian, Tianlong Zhang, Heli Hu</i>	
Research on the Control Method for the Start of Microturbine Generation System	359
<i>Yanming Li, Hong Guo, Qingming Xie, Peng Yuan</i>	
Vibration Characteristics Analysis of a Tilt-Rotor Transmission-Wing System	365
<i>Jiashun Guo, Sanmin Wang</i>	
Dynamic Analysis and Simulation on Multiplexed Controllable Antiskid Device of Friction Hoist	371
<i>Xingming Xiao, Jun Wu, Qian Wang, Chengming Hu</i>	

MA1-5: Information & Image Processing I

Prognostic Experiment for Ball Screw Preload Loss of Machine Tool through the Hilbert-Huang Transform and Multiscale Entropy Method	376
<i>Jun-Liang Chang, Jen-Ai Chao, Yi-Cheng Huang, Jen-Shueng Chen</i>	
Characteristic Polynomial of the QUEST Algorithm	381
<i>Yang Cheng</i>	
Calibration Research on Fish-eye Lens	385
<i>Xiaofeng Wang, Weijia Feng, Qingjie Liu, Baofeng Zhang, Zuoliang Cao</i>	
Hybrid Conditional Random Fields for Multi-object Tracking with a Mobile Robot	391
<i>Ronghua Luo, Huaqing Min</i>	
Imaging Quality Based State Switch Algorithm for Outdoor Moving Robot System	397
<i>Haoting Liu, Hongwei Zhu, Fenggang Xu, Hanqing Lu</i>	
De-noising Algorithm Based on Compression of Wavelet Coefficient for MEMS Accelerometer Signal	402
<i>Peng Wu, Yuansheng Ge, Shitong Chen, Bing Xue</i>	

MP1-5: Information & Image Processing II

Selection of Dimensional Normalization Parameter in Digital Computation of the Fractional Fourier Transform	408
<i>Huifa Xu, Feng Liu</i>	
A New Underwater Acoustic Communication System Based on Fractional Fourier Transform	413
<i>Yun Chen, Ping Cai, Yilin Wang</i>	
Splash Sound Feature Research based on Empirical Mode Decomposition and Hilbert-Huang Spectrum	419
<i>Sichun Li, Desen Yang, Yang Lu</i>	
3D Hypergraph-Oriented Air Flow Analysis Based On PTV	424
<i>Denis Klimentjew, Nils Erik Flick, Till Bosselmann, Jianwei Zhang</i>	
Analysis of Stock Market Information ---- A New Financial Engineering Approach	430
<i>Feng Yao, Yirong Ying, Lingwen Zhang</i>	
The Applications of Fractional Fourier Transform in Underwater Acoustic Trajectory Tracking	436
<i>Yilin Wang, Xiaoxue Wang, Ping Cai</i>	

MP2-5: Information & Image Processing III

- [Bioinformatics Data Mining Using Artificial Immune Systems and Neural Networks](#) 440
Shane Dixon, Xiao-Hua Yu
- [A New Approach for Carrier Ambiguity Resolution under Multipath Condition](#) 446
Wei Wang, Yuehua Ma, Peng Yang
- [A Method for Determining the Number of Signals Based on Modified K-means Clustering](#) 451
Chunjie Zhang, Xicai Si, Jiling Xie
- [Compressed Sensing and Reconstruction with Bernoulli Matrices](#) 455
Gesen Zhang, Shuhong Jiao, Xiaoli Xu, Lan Wang
- [Data Communication and Information Security Analysis of Wide Area Protection System](#) 461
Cheng Li, Zhongwei Li, Weiming Tong
- [Resolutions of Some Overlap Signals Based on MUSIC Algorithm](#) 466
Ping Chu, Weijian Si, Shenghe Sun

MA1-6: Information Acquisition I

- [A Robust Data Association for Simultaneous Localization and Mapping in Dynamic Environments](#) 470
Rex H. Wong, Jizhong Xiao, Samleo L. Joseph
- [A Blind Guidance System for Street Crossings Based on Ultrasonic Sensors](#) 476
Satoshi Hashino, Ramin Ghurchian
- [Trajectory Planning of Autonomous Robot Using Advanced Fuzzy Controller](#) 482
Sungha Kim, Chisung Park, Hyun Lee, Jangmyung Lee
- [Information Acquisition of Truck on Express Highway by Optical Fiber Bragg Grating](#) 486
Shuhua Mo, Dong Yu, Boming Zhang
- [Hardware/Software Partitioning for Heterogeneous Multicore SOC Using Particle Swarm Optimization and Immune Clone \(PSO-IC \) Algorithm](#) 490
Li Luo, Hongjun He, Chunke Liao, Qiang Dou, Weixia Xu
- [Visualization of Linkage Diagrams by System Visual Structure Editor \(VSE\)](#) 495
V. V. Kuzlyakina, U. N. Slepenco

MP1-6: Information Acquisition II

- [Oceangraphic Data Acquisition and Dissemination Infrastructure for UTM-CSIC Research Vessels](#) 502
O. Garcia, J. Olivé, D. Afonso, E. Arilla, A. Hernández, J. L. Ruiz, X. Romero, A. Sandoval, J. A. Serrano, J. Sorribas, E. Trullols
- [The Integration of GPS and Interferometric Quantum Position System for High Dynamic Precise Positioning](#) 508
Chunyan Yang, Dewei Wu, Yonglin Yu
- [A Large Scale 3D Positioning Method Based on a Network of Rotating Laser Automatic Theodolites](#) 513
Zhigang Liu, Yaozhong Xu, Zhongzheng Liu, Jianwei Wu
- [The Design and Validation of RF Front-end Platform for GPS Receiver](#) 519
Lin Zhao, Shuaihe Gao, Pengfei Li, Xuechuan Han

Distributed Uniform Attitude Reference of Warship Based on Inertial Measurement	523
<i>Aili Liu, Hongxu Ma, Hongde Dai</i>	
A Study into Plant Dynamics by DYNAMO Computer-aided Design System	527
<i>Valentina Kuzlyakina, Ludmila Brazhnik</i>	
MP2-6: Information Acquisition & Processing	
Vision Based Collision Avoidance by Plotting a Virtual Obstacle on Depth Map	532
<i>Akshay Aggarwal, Astha Kukreja, Pankaj Chopra</i>	
Characteristic Analysis and Pattern Recognition of Arc Sound under Typical Penetration Status in MIG Welding	537
<i>Shujuan Bi, Hu Lan, Hongyan Zheng, Lijun Liu</i>	
NAIR: A Novel Automated Intrusion Response System Based on Decision Making Approach	543
<i>Xin Zan, Feng Gao, Jiuqiang Han, Xiaoyong Liu, Jiaping Zhou</i>	
Ant Colony Optimization Algorithm Based on Space Contraction	549
<i>Liqiang Liu, Haijiao Ren, Yuntao Dai</i>	
Analysis of Current Sharing and Controller Design Fundamental for Paralleled DC/DC Power Converters	555
<i>Jiang You, Hui Wang, Fanrong Meng, Jianwen Cui</i>	
An Automated Design Flow for MEMS Accelerometers with Sigma-Delta Control	559
<i>Chenxu Zhao, Tom J. Kazmierski</i>	
MA1-7: Diagnosis & Prediction	
Engine Spark Ignition Diagnosis with Wavelet Packet Transform and Case-based Reasoning	565
<i>C.M. Vong, H. Huang, P.K. Wong</i>	
Forecasting Daily Ambient Air Pollution Based on Least Squares Support Vector Machines	571
<i>W.F. Ip, C.M. Vong, J.Y. Yang, P.K. Wong</i>	
An Intelligent Approach for Engine Fault Diagnosis Based on Wavelet Pre-processing Neural Network Model	576
<i>Yansong Wang, Yanfeng Xing, Hui He</i>	
A New Failure Mode and Effects Analysis Model of CNC Machine Tool Using Fuzzy Theory	582
<i>Zhaojun Yang, Binbin Xu, Fei Chen, Qingbo Hao, Xiaocui Zhu, Yazhou Jia</i>	
Improved Performance of Motor Drive Using RBFNN-based Hybrid Reactive Power MRAS Speed Estimator	588
<i>Jinfeng Xiao, Biwen Li, Xueyu Gong, Yifa Sheng, Jun Chai</i>	
Study of Fuzzy Control with Smith Forecast and Compensation for Aeroengine	594
<i>Shiyong Zhang, Xixing Yu, Yu Hu</i>	
MP1-7: Fuzzy Control	
Decoupled Fuzzy Adaptive Sliding Mode Control for Under-Actuated Systems with Mismatched Uncertainties	599
<i>Seung-Yong Shin, Joon-Yong Lee, Masanori Sugisaka, Ju-Jang Lee</i>	

New Approach for Automatic Control Modeling and Analysis Using Arithmetic and Visual Fuzzy Logic-based Representations in Fully Fuzzy Environment	605
<i>Hassen Taher Dorrah, Walaa Ibrahim Mahmoud Gabr</i>	
Adaptive Fuzzy Logic Based Inspection Robot for High Voltage Power Transmission Line	613
<i>Guodong Yang, En Li, Changchun Fan, Weiyang Lei, Zize Liang</i>	
Fuzzy Switch of High-speed ATO Systems Based on Running Conditions	619
<i>Hairong Dong, Li Li, Bin Ning</i>	
T-S Fuzzy Identical Synchronization of a Class of Generalized Henon Hyperchaotic Maps	623
<i>Ying Pan, Bo Li, Yuncheng Liu</i>	
Study on Control of an Two Hub-Motor Electric Vehicle	627
<i>Yong Chen, Zhongkui Lu</i>	

MP2-7: Fuzzy System

An Analysis Model of Merchant Discount Rate for Services of Credit Card in Commercial Bank Using Fuzzy Logic	633
<i>Patinee Sakdanupab, Davich Banthao, Adisorn Leelasantitham, Supaporn Kiattisin</i>	
Arithmetic Fuzzy Logic-based Representation Approach Versus Conventional Fuzzy Theory for Modeling and Analysis in Fully Fuzzy Environment	637
<i>Walaa Ibrahim Mahmoud Gabr</i>	
Framework and Realization of Ship Product Data Exchange	644
<i>Jinghua Li</i>	
Influences of Soft Prolate Spheroid Baffle on Directivity of Acoustic Vector Sensor	650
<i>Jianfei Ji, Guolong Liang, Kai Liu, Yang Li</i>	
Vehicle Chassis Coordinated Control Strategy Based on Model Predictive Control Method	655
<i>Changfu Zong, Heqi Liang, Chengwei Tian, Rufei Hu</i>	
Design and Control Strategy of Motorcycles Vibration Durability Test Platform	660
<i>Xiaoli Wang, Yaxiao Wang</i>	

TA1-1: Mobile Robot

Effective Target-Following Schemes for Indoor Mobile Robots	666
<i>Byoung-Suk Choi, Joon-Woo Lee, Ju-Jang Lee</i>	
Path Tracking Control Considering Center of Gravity Shift and Load Change for an Omni-directional Walker	672
<i>Renpeng Tan, Shuoyu Wang, Yinlai Jiang, Kenji Ishida, Masanori Nagano</i>	
A Novel Regenerative Braking Method of BLDCM for Wheeled Mobile Robot	676
<i>Juzhong Zhang, Shengjin Li, Gang Lu, Qixun Zhou</i>	
Study on the Dynamics and Motion Capability of the Planetary Rover with Asymmetric Mobility System	682
<i>Jianjun Du, Mingjun Ren, Jianjun Zhu, Dun Liu</i>	
Trajectory Tracking Control of Nonholonomic Wheeled Mobile Robots	688
<i>Jiang Chang, Qingxin Meng</i>	

TP1-1: Robot Control I

- [A Novel Bacterial Foraging Algorithm for Automated Tuning of PID Controllers of UAVs](#) 693
John Oyekan, Huosheng Hu
- [Petri Net Model Based Specification and Distributed Control of Robotic Manufacturing Systems](#) 699
Gen'ichi Yasuda, Bin Ge
- [Dynamics and a Convenient Control Design Approach for a Unicycle Robot](#) 706
Jie Zhao, Mei Xiong, Hongzhe Jin
- [A New Robust Controller in the Network-based Teleoperation System with Force Feedback](#) 712
Ting Chen, Xiufen Ye, Shuxiang Guo
- [Hybrid Genetic-Ant Colony Algorithm Based Job Scheduling Method Research of Arc Welding Robot](#) 718
Zhengda Meng, Qinqi Chen
- [Research on a Central Pattern Generator Bionic Coupling Control System of Robot](#) 723
Tingting Wang, Wei Guo, Fusheng Zha, Mantian Li

TP2-1: Robot Control II

- [Virtual Impedance Model for Obstacle Avoidance in a Limb Mechanism Robot](#) 729
Kenji Tsukamoto, Tomohito Takubo, Kenichi Ohara, Yasushi Mae, Tatsuo Arai
- [Mechanism and Control of a Spiral Type Microrobot](#) 735
Qinxue Pan, Shuxiang Guo, Takuya Okada
- [Control Strategy for Active Vibration Suppression of Flexible Robot Manipulator](#) 741
M. A. Ahmad, R.M.T. Raja Ismail, M.S. Ramli
- [Torque Shaping Control for Initial Unstable Passive Dynamic Walker](#) 747
Jianfei Li, Yantao Tian, Xiaoliang Huang, Hongshuai Chen, Limei Liu
- [Adaptive Neural Network PID Sliding Mode Dynamic Control of Nonholonomic Mobile Robot](#) 753
Yandong Li, Zongyi Wang, Ling Zhu
- [Dynamic Modeling of a Bicycle Robot with Front-Wheel Drive Based on Kane's Method](#) 758
Yonghua Huang, Qizheng Liao, Shimin Wei, Lei Guo

TA1-2: Human Machine Interaction

- [Human Assist by a Mobile Manipulator with High Speed Tactile Sensor](#) 765
Hisashi Yamaguchi, Zhaoxian Xie, Aiguo Ming, Makoto Shimojo
- [A Real-time Deformation Modeling Scheme of Soft Tissue for Virtual Surgical](#) 771
Ling Zhu, Xiufen Ye, Xi Ji'er, Yizhou Gu, Shuxiang Guo
- [Study of Coordinated Motions of the Human Hand for Robotic Applications](#) 776
Shaochun Sun, Carlos Rosales, Raúl Suárez
- [A Force Display Method for a Novel Catheter Operating System](#) 782
Jian Guo, Nan Xiao, Shuxiang Guo, Takashi Tamiya
- [An Adaptive Modeling Approach Based on ESN for Robotic Belt Grinding](#) 787
Hongbo Lv, Yixu Song, Peifa Jia, Zhongxue Gan, Lizhe Qi

<p>A Pen Pressure Division Method Using Personal Distribution <i>Yizhong Xin, Yan Li, Xiangshi Ren</i></p>	<p>793</p>
TP1-2: Human Machine Interface	
<p>Evaluation of Human Pointing Movement Characteristics for Improvement of Human Computer Interface <i>Qiong Wu, Jiajia Yang, Jinglong Wu</i></p>	<p>799</p>
<p>Three-dimensional Motion Analysis for Gesture Recognition Using Singular Value Decomposition <i>Yinlai Jiang, Isao Hayashi, Masanao Hara, Shuoyu Wang</i></p>	<p>805</p>
<p>A Length Compensation Method to Eliminate the Varying Length Defect in One Dimensional Fisheye Views <i>Hongzhi Song, Yi Fu, Yu Qi, Liang Zhang, Xiaolong Luke Zhang</i></p>	<p>811</p>
<p>A Research on Text Analysis in Tibetan Speech Synthesis <i>Lu Gao, Hongzhi Yu, Yonghong Li, Jie Liu</i></p>	<p>817</p>
<p>GUI Testing Techniques Based on Event Interactive Graph Tree Model <i>Feng Gao, Ling Zhao, Chang Liu</i></p>	<p>823</p>
<p>A Study on Tibetan Prosodic Model of Speech and Respiratory Signals <i>Qi Chen, Hongzhi Yu, Chen Chen, Jing Shi</i></p>	<p>828</p>
TP2-2: Machine Intelligenece & Human Machine Interface	
<p>Online Incremental Image Classification by Use of Human Assisted Fuzzy Similarity <i>Gancho Vachkov</i></p>	<p>834</p>
<p>WappenLite and Its Flash-based User Interface for Novice Learners <i>Zhe Chen, Koji Kagawa</i></p>	<p>840</p>
<p>Realtime Human Daily Activity Recognition Through Fusion of Motion and Location Data <i>Chun Zhu, Weihua Sheng</i></p>	<p>846</p>
<p>EMG Signals Based Gait Phases Recognition Using Hidden Markov Models <i>Ming Meng, Qingshan She, Yunyuan Gao, Zhizeng Luo</i></p>	<p>852</p>
<p>Research on Detection of Fabric Defects Based on Singular Value Decomposition <i>Shuyue Chen, Jun Feng</i></p>	<p>857</p>
<p>A Novel Flexible Assistant Parallel Mechanism and Dynamic Analyses <i>Hongjun Liu, Shuai Zhao, Shuai Li, Qingfei Zhang</i></p>	<p>861</p>
TA1-3: Knowledge-based Design of System	
<p>Assessing the Weighted Sum Algorithm for Automatic Generation of Probabilities in Bayesian Networks <i>Simon Baker, Emilia Mendes</i></p>	<p>867</p>
<p>A Discussion on Transfer of Design Knowledge, Skill, and Knowhow <i>Zhihua Zhang</i></p>	<p>874</p>
<p>A Simplification on SMO Algorithm and Its Application in Solving ϵ-SVR with Non-positive Kernels <i>XiaoJian Zhou, Yizhong Ma, Ziqiang Cheng, Liping Liu, Jianjun Wang</i></p>	<p>878</p>

Mixed Strategy Guidance Based on Target Maneuver Detection	884
<i>Wenhua Hua, Xinglin Chen</i>	
A Sample-Guided Approach to Incremental Structured Web Database Crawling	890
<i>Wei Liu, Jianguo Xiao, Jianwu Yang</i>	
DC Bus Voltage Feedforward Analysis and Regulation for Interconnected Power Converters with CPL	896
<i>Jiang You, Lijun Yu, Fanrong Meng, Bin Fu, Jianwen Cui</i>	
TP1-3: Sensors I	
Design of Pressure Sensor Array with Reduced Number of Wires	900
<i>Debao Zhou, Kevin Jax</i>	
Piezoelectric Dynamic Pressure Sensor	906
<i>Likun Wang, Lei Qin, Li Li</i>	
Permittivity Measurement of Wood Based on an Uniplanar Capacitance Sensor	912
<i>Zheng Liu, Shaogang Liu, Yuesheng Luo, Jue Wang, Shicheng Wang</i>	
Range Resolution of Ultrasonic Distance Measurement Using Single Bit Cross Correlation for Robots	917
<i>Jinjin Wang, Dong Yuan, Ping Cai</i>	
A New Calibration and Compensation Method for Installation Errors of Accelerometers in Gyroscope Free Strap-down Inertial Navigation System	924
<i>Zhen Shi, Jie Yang, Peng Yue, Zijian Cheng</i>	
Research on Nonlinearity Property of Piezoelectric Vibration Accelerometer Based on Cymbal Transducer	930
<i>Denghua Li, Xiangyu Gao, Feng Zhou, Zhixin Zhang</i>	
TP2-3: Sensors II	
Vehicle Classification Based on Magnetic Sensor Signal	935
<i>Saowaluck Kaewkamnerd, Jatuporn Chinrungrueng, Ronachai Pongthornseri, Songphon Dumnin</i>	
Oblique Fringe Measurement by Pattern Correlation	940
<i>Lanjiao Liu, Haiyan Pan, Jia Xu, Hongmei Xu, Yong Yue, Dayou Li, Zhengxun Song, Zhankun Weng, Zhen Hu, Zuobin Wang, Jin Zhang</i>	
A New Method of Closed-loop Calibration of Fiber Gyro	946
<i>Yueyang Ben, Qian Li, Wei Gao, Fei Yu</i>	
Comparative Experiment Study of Distributed Optical Fiber Temperature Monitoring Methods	952
<i>Jun He, Huijuan Dong, Kan Yang, Guangyu Zhang</i>	
Sensitivity Online Recognition of AMR Sensor	956
<i>Xisheng Li, Ruiqing Kang, Yanxia Liu, Zhihua Wang, Xiongying Shu, Jinhui Lan</i>	
Analyses on Output Signal of MEMS Gyroscope Applied to Low Speed Rotating Carrier	960
<i>Ling Wang, Fuxue Zhang</i>	
TA1-4: Control Applications II	
Light Ink Control of Digital Textile Printer	965
<i>Wenhua Zhu, Xiaohua Wang</i>	

An Enhanced Global Optimization Method Based on Gaussian Process and Its Application of Warpage Control in Injection Molding	970
<i>Wei Xia, Bin Luo, Xiaoping Liao</i>	
Fault-tolerant Control for Linear System with Actuator and Sensor Simultaneous Faults	976
<i>Yuesheng Luo, Xingyan Zhang, Lirong Fu, Mingye Zhou, Xiuping Wen, Xinping Gong</i>	
Modeling of Dynamic Shape Control Strategy in Cold Rolling of Strip	982
<i>Xiaozhong Du, Quan Yang, Xiaocheng Wang</i>	
A Linear PI Cross-Coupled Control for Servo System of CNC Gear Hobbing Machine	987
<i>Shilong Wang, Liang Huang, Jie Zhou, Ling Kang</i>	
Design of Auto Disturbance Rejection Controller based on Field-bus	992
<i>Mingge Sun, Xilin Zhu</i>	

TP1-4: Flight Control I

Model Predictive Control of Cube Satellite with Magnetotorquers	997
<i>Xi Chen, Xiaofeng Wu</i>	
Desired Trajectory Generation of a Quadrotor Helicopter Using Hybrid Control for Enhanced Situational Awareness	1003
<i>Igor Astrov, Andrus Pedai, Ennu Rüstern</i>	
Processor-in-the-loop Demonstration of Coordination Control Algorithms for Distributed Spacecraft	1008
<i>Min Hu, Guoqiang Zeng, Hong Yao, Yafeng Tang</i>	
Robust Model Predictive Control for Hypersonic Vehicle Based on LPV	1012
<i>Weiwei Qin, Zhiqiang Zheng, Li Zhang, Gang Liu</i>	
The AUV Heading Control System Based on Auto Disturbance Rejection Control Principle	1018
<i>Jian Xu, Zheping Yan, Jie Zhao</i>	

TP2-4: Flight Control II

High-precision Speed Control for a Flight Motion Simulator	1023
<i>Guojiang Zhang, Jie Ma, Yu Yao</i>	
QFT Compound Controller Design Method for Improving Workspace Motion Fidelity of Hydraulic Flight Simulators	1028
<i>Zhifu Guo, Chenglei Wang, Keding Zhao, Yuanfei Wang</i>	
The Robust and Perfect Tracking Control for Flight Simulator	1033
<i>Lianqiang Zheng, Weihong Wang, Zhichao Yao</i>	
A 3-axis Simulator for Spacecraft Attitude Control Research	1040
<i>Lu Dai, Guang Jin</i>	
Research on Satellite Attitude Determination with Adaptive Filter	1045
<i>Lin Zhao, Chen Huang, Xinzhe Wang, Zhonghua Su</i>	

TA1-5: Information & Image Processing IV

Mean-Square-Error-of-Instantaneous-Frequency Detector and Its Performance Evaluation	1049
<i>Jin Fu, Guolong Liang, Guangpu Zhang, Wangsheng Lin</i>	

AN Algorithm of Premature Contraction Detection Based on Wavelet Method	1053
<i>Zhao Shen, Chao Hu, Jingsheng Liao, Max Q.-H. Meng</i>	
A Design Methodology to Create Pairs of Filters with Matched Responses	1059
<i>João Luiz de Paiva Martins, Fuad Kassab Junior</i>	
A Three-Dimensional Visual Localization System Based on Four Inexpensive Video Cameras	1065
<i>Wei Liu, Chao Hu, Qing He, Max Q.-H. Meng</i>	
An Improved Method for Unwrapping Phase Difference in Bathymetry	1071
<i>Yile Zhang, Haisen Li, Tian Zhou, Xiao Liu, Ci Ren</i>	
One Curve-Fit Method for the Evaluation of the Total Distortion of Sinusoidal Signal	1076
<i>Hui Wang, Yunjian Ge, Zhengshi Liu, Huanjin Liu, Liang Xu</i>	

TP1-5: Image Processing I

Skin Color Detection by Illumination Estimation and Normalization in Shadow Regions	1082
<i>Yongqiu Tu, Faling Yi, Guohua Chen, Shizhong Jiang, Zhanpeng Huang</i>	
Improved Image Denoising Method based on Curvelet Transform	1086
<i>Tao Jiang, Xin Zhao, Wenwen Ding, Junqing Chen</i>	
A Research on the Robust Digital Watermark of Color Radar Images	1091
<i>Yushen Li, Yanling Hao, Chenye Wang</i>	
Research on Radar Image Overlay on ECDIS	1097
<i>Yanfeng Liang, Yanling Hao</i>	
Research of Image Processing Technology Based on Seamless Splice and Depth Measurement	1101
<i>Yong Yao, Zhi Li, Jiguang Zhao</i>	

TP2-5: Image Processing II

An Optimized High-Speed High-Accuracy Image Matching System Based on FPGA	1107
<i>Tao Zhang, Fengping Yu, Haojun Quan</i>	
Sonar Image Preprocessing Based on Morphological Wavelet Transform	1113
<i>Hong Shi, Hui Wang, Chunhui Zhao, Zhengyan Shen</i>	
A Digital Image Inpainting Method Based on Multiscale Markov Random Field	1118
<i>Junxi Sun, Defang Hao, Lifeng Hao, Huamin Yang, Dongbing Gu</i>	
Online Sparse IR Background Estimation via KRLS	1123
<i>Bin Zhu, Zhengdong Cheng, Xiang Fan, Huachun Tan</i>	
Landmark Direction Angle Estimation Based on Omnidirectional Image	1128
<i>Ming Li, Zhonghua Liu, Jianan Huang, Kenji Imou</i>	
Image Stitching Using Simplified SIFT	1134
<i>Qidan Zhu, Ke Li</i>	

TA1-6: Scheduling

Application of Compensation Method in Calculating Symmetrical Short Circuit Fault	1138
<i>Yangqing Dan, Wenying Liu, Yanwei Zhu</i>	

Control System and Elastic Scheduling Co-Design	1142
<i>Chenggang Qin, Dong Yu, Wenjiang Wu, Wanfu Ding</i>	
Isolated Operation of PS and Its Application in Modeling Manufacturing Process System	1149
<i>Xinqin Gao, Yan Li, Mingshun Yang, Xiaoqing Wu, Li Ba</i>	
Hybrid Particle Swarm Optimization for Flexible Job-Shop Scheduling Problem and Its Implementation	1155
<i>Xiaohong Xu, Lingli Zeng, Yuewen Fu</i>	
Finite-Horizon Optimal Linear Control for Autonomous Soft Landing of Small-scale Helicopter	1160
<i>Xiaohu Xia, Yunjian Ge</i>	
Optimal Actuator Fault Tolerance for Static Nonlinear Systems Based On Minimum Output Velocity Jump	1165
<i>Hamid Abdi, Saeid Nahavandi</i>	

TP1-6: Signal Processing I

An Improved Merging Algorithm for Delaunay Meshing on 3D Visualization Multibeam Bathymetric Data	1171
<i>Dan Lu, Haisen Li, Yukuo Wei, Tongxi Shen</i>	
Estimation of Multibeam Phase Difference Using Variable Bandwidth Filter	1177
<i>Bin Yao, Yile Zhang, Haisen Li, Chao Xu, You Li</i>	
New Detection Algorithm for Weak Target Signal Embedded in Direct Path Interference Using Signal Phase Matching Principle	1182
<i>Dongze Lv, Feng Shen</i>	
PCM / PSK High Bit-rate Transmission Performance in Launch Vehicle Multi-path Channel	1188
<i>Li Jiang, Kuimin Wang</i>	
Application Issues of Virtual Reference Feedback Tuning and Non-iterative Correlation-based Tuning	1194
<i>Hairong Jiang, Lin Cong</i>	

TP2-6: Signal Processing II

Blind Image Super-resolution Reconstruction Based on PSF Estimation	1200
<i>Fengqing Qin</i>	
Research on the Demodulation of the Underwater Acoustic Differential Frequency-hopping Signals Based on Adaptive Notch Filter	1204
<i>Guangpu Zhang, Youyong Liu, Guolong Liang, Kai Liu</i>	
Five-beam Interference Pattern Model for Laser Interference Lithography	1208
<i>Xiangying Deng, Zhen Hu, Guowei Xiu, Dayou Li, Yong Yue, Zhengxun Song, Zhankun Weng, Jia Xu, Zuobin Wang</i>	
Research on the Signal Synchronization Technology of Three Axes FOGs	1214
<i>Qiang Yu, Yanling Hao, Yonggang Zhang, Bo Xu</i>	
A Novel Spectrum Reconstruction Algorithm Based on FrFT for Multiple Azimuth Beam SAR	1218
<i>Baoliang Zhou, Shunsheng Zhang, Wei Zhang, Chunyang Dai, Lingkun Kong</i>	
An FHMA Acoustic Communication System for Multiple Underwater Robots	1223
<i>Zixin Zhao, Shuxiang Guo</i>	

TA1-7: Integrated Navigation

- [A Matching Algorithm for GGI Aided Navigation where Reference Map is Obtained by Forward Method](#) 1229
Fanming Liu, Dong Qian
- [Research on Attitude Updating Algorithm Based on Modified Rodrigues Parameters for Low Cost Attitude and Heading Reference System](#) 1235
Peng Wu, Yuansheng Ge, Haijing Yuan
- [Optimal Four-Sample and Two-Time Iteration Algorithm for SINS Attitude Updating](#) 1240
Tong Zhang, Jun Zhang, Wenlin Li
- [A Novel Gaussian Particle Filter based on Randomized Quasi Monte Carlo for Initial Alignment in SINS](#) 1245
Junhou Wang, Chunlei Song, Jiabin Chen, Zhide Liu, Xingtai Yao
- [Optimal Design of Strap-Down Inertial Navigation Support under Random Loads](#) 1251
Xiangyu Hao, Ming Li, Hongguang Jia, Ming Xuan
- [A New Transform Domain LMS Algorithm](#) 1256
Yonggang Zhang, Qiang Yu, Lei Wu, Ping Huang

TP1-7: Wireless Navigation I

- [The Design on Marine Small-scale Receiving Antenna in MW and SW Band](#) 1260
Lin Zhao, Yang Liu, Wei Wang, Bin Wang
- [The Study of Sky-wave Interference Cancellation Algorithm Based on APIC](#) 1264
Lili Sun, Yang Liu, Zhou Li
- [Cooperative Multi-ant Colony Pseudo-parallel Optimization Algorithm](#) 1269
Liqiang Liu, Yang Song, Yuntao Dai
- [Strapdown Airborne Gravity Alignment: Using Position Matching](#) 1275
Yangming Huang, Kaidong Zhang, Meiping Wu
- [The Input Characteristic and Stability Analyse of Power Converter in Distribution Power Systems](#) 1280
Yaohua Luo, Shaobo Kang, Jiang You, Bin Fu

TP2-7: Network & Communication

- [Detection of Host Search Activity in PTR Resource Record Based DNS Query Packet Traffic](#) 1284
Yasuo Musashi, Florent Hequet, Dennis Arturo Ludeña Romaña, Shinichiro Kubota, Kenichi Sugitani
- [Research on Wideband Beamforming with Constant Beamwidth Using Vector Sensor Array](#) 1289
Rongrong Han, Erzhen Fang
- [Cooperative Caching Algorithm based on Grouping Nodes in Mobile Ad Hoc Networks](#) 1294
Ke Han
- [The Design and Implementation of Digital Repeater with Echo Canceller in Mobile Multimedia Network](#) 1299
Luguo Hao, Jiachi Yu, Wenbin Zeng
- [Pseudo-median Filter with Enhancing Impulse Suppression](#) 1304
Shaoqiang Liu, Lei Chen, Xiaoping Fan, Zhihua Qu, Xi Yang
- [ESC Testing System Based on Virtual Instrument and Distributed Network](#) 1309
Lianda Liu, Youtong Zhang, Yongfeng Liu

WA1-1: Underwater Robot I

- [Development of an Infrared Sensor-based Wireless Intelligent Fish-like Underwater Microrobot](#) 1314
Baofeng Gao, Shuxiang Guo
- [Hydrodynamic Performance Calculation on Mini-automatic Underwater Vehicle](#) 1319
Xianzhao Yu, Yumin Su
- [The Research of the Switching INS's Working State Based on the Underwater Vehicle Space Motion](#) 1325
Jianhua Cheng, Junyu Shi, Wenting Rong
- [Cooperation of Autonomous Underwater Vehicle Fleet Based on MOOS-IvP](#) 1330
Dapeng Jiang, Yongjie Pang, Zaibai Qin
- [Stable and Accurate Trajectory Control Technology for the Wafer Transfer Robot](#) 1336
Yanjie Liu, Yong Hu, Xiaofei Zheng

WP1-1: Underwater Robot II

- [Development and Control of a Vectored Water-jet-based Spherical Underwater Vehicle](#) 1341
Shuxiang Guo, Xichuan Lin, Koujiro Tanaka, Seji Hata
- [Study and Application of Evaluation Criteria in Underwater Acoustic Warfare Simulation System](#) 1347
Yangze Dong, Pingxiang Liu
- [Application for Autonomous Underwater Vehicle Initial Alignment with Divided Difference Filter](#) 1352
Guiling Zhao, Wei Gao, Xin Zhang, Yueyang Ben
- [Method of Separating Dipole Magnetic Anomaly from Geomagnetic Field and Application in Underwater Vehicle Localization](#) 1357
Yu Huang, Yanling Hao
- [Applying Dynamic Hybrid Grids Method to Simulate AUV Docking with a Tube](#) 1363
Lihong Wu

WP2-1: Underwater Vehicle Control

- [Nonlinear Controller Based ADRC for Dynamic Positioned Vessels](#) 1367
Dawei Zhao, Xinqian Bian, Fuguang Ding
- [Research on Chaotic Control of Duffing System](#) 1372
Chaofeng Lan, Desen Yang, Shengguo Shi, Lei Dong
- [Application of Inverse System on Ship Motion Simulation Bench](#) 1376
Hongyu Shi, Lihua Liang, Songtao Zhang
- [Adaptive Control with Decoupling Algorithm for the Hovering Submarines](#) 1382
Yongpeng Yang, Yanling Hao
- [Nonlinear Feedback Control for Trajectory Tracking of an Unmanned Underwater Vehicle](#) 1387
Xinqian Bian, Ying Qu, Zheping Yan, Wei Zhang
- [Real-Time Adjusting Control Method Based on Attitude Sensor Signal Feedback and Its Application in Spherical Underwater Vehicle](#) 1393
Shuxiang Guo, Juan Du, Xiufen Ye, Hongtao Gao, Yizhou Gu

WA1-2: Advanced Robotics

- [Design and Analysis of a Line-walking Robot for Power Transmission Line Inspection](#) 1398
Ludan Wang, Fei Liu, Shaoqiang Xu, Sheng Cheng, Jianwei Zhang
- [Capturing Intrusions by Mobile Robot in Rectangular Perimeter](#) 1404
Xiannuan Liang, Yang Xiao
- [CPG Based Locomotion Control of Pitch-Yaw Connecting Modular Self-Reconfigurable Robots](#) 1410
Xindan Cui, Yanhe Zhu, Xizhe Zang, Shufeng Tang, Jie Zhao
- [Velocity Analysis of Tri-Axial Differential Pipeline Robot when Getting across Elbow](#) 1416
Qingkai Li, Dewei Tang, Zongquan Deng, Shengyuan Jiang
- [Experiment Study of Impedance Control on Horizontal Lower Limbs Rehabilitation Robot](#) 1421
Lixun Zhang, Hongying Sun, Changsheng Li
- [Joint Driver and Control Design for Large Torque, Long Arm Space Remote Manipulator](#) 1426
Chuangqiang Guo, Fenglei Ni, Jingting Sun, Yechao Liu, Hong Liu

WP1-2: Mechatronics Advancement

- [Methods to Enhance the Performance of Iterated Timing Analysis Algorithm](#) 1432
Chun-Jung Chen, Bin-Cheng Chen, Chih-Jen Lee, Chang-Lung Tsai, Li-Ping Chou, Allen Y. Chang
- [Modeling and Simulation Analysis of a New Photonic Crystal Fiber](#) 1438
Xuyou Li, Hanrui Yang, Zhou He, Yonggang Zhang
- [Study on Optical Path Modeling and Error Analysis of Stimulated Brillouin Fiber Optic Gyroscope](#) 1442
Xuyou Li, Zhou He, Qiang Yu, Wei Hong, Chen Zhang
- [PIV Measurement of Incompletely Liquid-filled Hydrodynamic Coupling](#) 1448
Lidan Fan, Wenxing Ma, Xiuquan Lu, Bosen Chai
- [Non-uniform Distribution of Water-jet Inlet Flow Field](#) 1452
Shuxiang Guo, Yao Chen
- [Definition Measurement Unit with Flexure Hinges for a Wind Tunnel Balance](#) 1457
Tianhao Wang, Junwen Qiu, Xihe Liu

WP2-2: Actuator

- [Modeling of A Novel 3-Way Rotary Type Electro-hydraulic Valve](#) 1463
Yousheng Yang, Emanuele Guglielmino, Jian S. Dai, Thiago Boaventura, Darwin G. Caldwell
- [Development of a New Type of Micro Fluidic System Using EO Pumps](#) 1469
Wei Wei, Shuxiang Guo
- [The Vibration Modes of the Square 1-3-2 Piezoelectric Composite Plate](#) 1474
Li Li, Likun Wang, Lei Qin
- [Dynamic Analysis of Disc Brake and Impact Law of Related Parameters on Braking Torque](#) 1478
Zhaojun Yang, Changliang Liu, Jixin Wang, Xun Yang
- [Calculation of Flow Rate for Flow of the Second-Order Fluid Having Variable Coefficients in Annulus with the Inner Cylinder Executing a Planetary Motion](#) 1484
Shuyun Zhang, Haiqing Cui

United Steering of Control Moment Gyros for Small Satellite with Limited Gimbal Rate 1489
Kai Xu, Guang Jin, Changqing Chen

WA1-3: MEMS

Design of a Compliant XY Stage with Embedded Force Sensor for Micro-Scale Positioning 1494
Qiaokang Liang, Dan Zhang, Quanjun Song, Yunjian Ge

Fabrication Quality of Glass Microfluidic Chips 1500
Junfang Ni, Shihong Shi, Jun Gu, Tsuneaki Yamabe

An Adaptive Particle Filter for MEMS Based SINS Nonlinear Initial Alignment 1504
Ben Mao, Jiantong Wu

A Novel Tunable Band-pass Filter Using MEMS Technology 1510
N. -B. Zhang, Z. L. Deng, J. -M. Huang

Research of Etching A Novel MEMS Gyroscope Sensing Pendulum 1516
Yu Liu, Baisheng Sun, Fuxue Zhang, Wei Zhang

Research on a New Microelectromechanical Hybrid Gyroscope 1520
Bo Yang, Shourong Wang, Kunyu Li, Xi Zhu, Huiliang Cao

WP1-3: Sensor Networks I

Localization Performance Enhancement Using IMM Fusion in Cricket Sensor Network 1526
Ha-ryong Song, Seok-hyoung Lee, Ju-hong Yoon, Vladimir Shin

RSSI Variability Characterization and Calibration Method in Wireless Sensor Network 1532
Zhen Fang, Zhan Zhao, Daoqu Geng, Yundong Xuan, Lidong Du, Xunxue Cui

A Dynamic Sleep MAC Protocol for Wireless Sensor Networks 1538
Junfeng Shi, Yongchang Ma

Frequency Stabilization Research of Brillouin Fiber-optic Gyroscope 1544
Xuyou Li, Wei Hong, Zhou He, Yong Zhang

Dynamic Calibration for Multi-beam Bathymetric System Based on Characteristic Data Processing 1548
Yukuo Wei, Haisen Li, Dan Lu, Ruilong Zhu

Wireless Sensor and Actuator Network System for Calling Home Robots 1553
Guangming Song, Jun Zhang, Xiaofeng Ye, Yanpeng Niu, Aiguo Song

WP2-3: Sensor Networks II

Query Language Extensions for Data and Information Collection in Wireless Sensor Networks 1559
Jun-Zhao Sun, Jiehan Zhou

Kcdlocation: A Localization Algorithm for Wireless Sensor Networks of Known Coordinate Database 1564
Zhen Fang, Zhan Zhao, Daoqu Geng, Yundong Xuan, Lidong Du, Xunxue Cui

SkyCube Computation over Wireless Sensor Networks Based on Extended Skylines 1572
Zhiqiong Wang, Zhiyue Wang, Junchang Xin, Mian Wang, Qianxi Li

Study on Mobile Beacon Trajectory for Node Localization in Wireless Sensor Networks 1577
Qin Fu, Wei Chen, Kezhong Liu, Weibo Chen, Xiaoxi Wang

[Extend Kalman Gaussian Mixture Probability Hypothesis Density Filter Based on Radar and IR Sensor Fusion](#) 1582
Yanling Hao, Fanbin Meng, Xiangwei Qiao, Ziyang Zhao, Congmeng Zhang, Yifeng Cai

[Fuzz Interpolation in GPS/INS Data Fusion](#) 1587
Zhibin Miao, Hongtian Zhang, Jinzhu Zhang, Ruiguang Geng

WA1-4: Vehicle Control

[Anti-Rollover Control Algorithm for Heavy Semi-Trailer Based on LQG](#) 1593
Zhixin Yu, Changfu Zong, Lei He, Jieyan Huang

[Design of Control System of Microwave Heating Asphalt Pavement Maintenance Truck](#) 1597
Ruhong Ma, Lei Zhang, Zhisheng Zhang, Qingshan Fu

[Constant SOC Control of a Series Hybrid Electric Vehicle with Long Driving Range](#) 1603
Xudong Liu, Qingwu Fan, Kun Zheng, Jianmin Duan, Yu Wang

[Switched Robust Control of Regenerative Braking of Electric Vehicles](#) 1609
Jing Xie, Binggang Cao, Huarong Zhang, Dan Xu

[A Kind of Bicycle Robot Dynamic Modeling and Nonlinear Control](#) 1613
Lei Guo, Qizheng Liao, Shimin Wei, Yonghua Huang

[Development of Control Strategy for SI Engine Cold Start](#) 1618
Qinghui Zhou, Jianmin Sun, Jiangan Qiu

WP1-4: Neural Network Based Control

[Optimization Method of Fault Feature Extraction of Broken Rotor Bar in Squirrel Cage Induction Motors](#) 1622
Xin Wang, Dongxia Zhang

[A Novel Hysteretic Neural Network and Its Application](#) 1626
Jialin Zhang

[Adaptive Control Using Compensatory Fuzzy Neural Network for Vertical Electric Furnace](#) 1630
Hongxing Li, Bingzhang Luo

[Research on Adaptive Kalman Filter Algorithm Based on Fuzzy Neural Network](#) 1636
Zhen Shi, Peng Yue, Xiuzhi Wang

[Research on Coordinated Control Based on Fuzzy Neural Network Applied to Pressure Control of Once-through Steam Generator](#) 1641
Wei Zhang, Xinqian Bian, Hegao Cai, Ming Ai

[Design of AUV Height Control Based on Adaptive Neuro-Fuzzy Inference System](#) 1646
Xiaocheng Shi, Jiang Chen, Zheping Yan, Tao Li

WP2-4: Learning Control

[A Frequency-Domain Approach to PD-type Iterative Learning Control](#) 1652
Hongsheng Li, Xiulan Wen, Jianhua Zhang, Yangquan Chen

[A Novel Immune Dynamic Prediction Method for Sintering Process Control](#) 1657
Xuesong Xu, Sichun Wang

Variable Velocity Limit Chaotic Particle Swarm Optimization	1661
<i>Guiyan Wang</i>	
A New Multi-agent Reinforcement Learning Approach	1667
<i>Jun Li, Qishu Pan, Bingrong Hong</i>	
A Non-myopic Approach Based on Reinforcement Learning for Multiple Moving Targets Search	1672
<i>Yifan Xu, Yuejin Tan, Zhenyu Lian, Renjie He</i>	
Analysis and Design of an Optimal Parameter PID Iterative Learning Control Scheme for Position Servo Control System	1678
<i>Qiang Gao, Weijun Zeng, Chao Dong</i>	

WA1-5: Image Segmentation I

An Algorithm for the Determination of Multi-Period Structure of Time Series	1684
<i>Hua Yi, Qibin Fan</i>	
A Novel Recursive Bayesian Learning Method for Video Segmentation	1690
<i>Qingsong Zhu, Zhan Song</i>	
Contour Detection Based on Contextual Influences	1694
<i>Zhiguo Qu, Ping Wang, Yinghui Gao, Peng Wang, Zhenkang Shen</i>	
The Researches of the Image Segmentation Algorithm Based on Contourlet Transformation	1700
<i>Yihan Xiao, Zhihong Xi, Tao Hai, Liang Guo</i>	
License Plate Location Based on Adaboost	1705
<i>Xiangdong Zhang, Peiyi Shen, Jianhua Bai, Jing Lei, Yang Hu, Yuli Xiao, Bo Li, Dongpo Qi</i>	
Improved Maximally Stable Extremal Region Detector in Color Images	1711
<i>Tao Liu, Jin Chen, Cheng Wang</i>	

WP1-5: Image Segmentation II

Image Segmentation for Surface Material-type Classification Using 3D Geometry Information	1717
<i>Andrew Wing Keung To, Gavin Paul, Dikai Liu</i>	
Local Shape Patch Based Object Detection	1723
<i>Zhijiang Du, Guodong Chen, Lining Sun, Junhong Ji, Ming Xie</i>	
Lane Boundary Detection Based on Parabola Model	1729
<i>Jianfeng Wang, Fangde Gu, Chao Zhang, Guanzhe Zhang</i>	
Lane Detection Based on Random Hough Transform on Region of Interesting	1735
<i>Jianfeng Wang, Ye Wu, Zehua Liang, Yuanjun Xi</i>	
Monocular Vision SLAM Based on Key Feature Points Selection	1741
<i>Eryong Wu, Likun Zhao, Yiping Guo, Wenhui Zhou, Qicong Wang</i>	
Bleeding Detection in Wireless Capsule Endoscopy Images by Support Vector Classifier	1746
<i>Lei Cui, Chao Hu, Yuexian Zou, Max Q.-H. Meng</i>	

WP2-5: Computer Vision

Study on Formation of Thin Cylinder Diffraction Pattern	1752
<i>Jianwen Cui, Bin Fu, Jiang You</i>	

Triangulation in Omnidirectional Vision under the L^∞ -Norm	1757
<i>Liwei Zhang, Jianwei Zhang, Ying Hu</i>	
Quadratic Curve Based Buffer Management for H.264/AVC Rate Control	1763
<i>Ming Li, Yilin Chang, Fuzheng Yang, Shuai Wan</i>	
Study on the State of Slag on Coal-fired Boilers Based on Symmetric Fuzzy Cross Entropy and Vague Sets	1769
<i>Xiaoqiang Wen, Zhiming Xu, Jiaoli Zheng, Yongping Zhao</i>	
Multisensor Information Fusion White Noise Deconvolution Filter with Colored Noise	1775
<i>Xin Wang, Qidan Zhu, Liqiu Jing, Linan Tao</i>	
Iterative Multi-level Magnetic Matching for UAV Navigation	1780
<i>Ying Liu, Meiping Wu, Hongwei Xie</i>	

WA1-6: Pattern Recognition I

Action Classification Algorithm Based on EGEI and LPP	1784
<i>Chunli Lin, Shuxiang Guo, Kejun Wang, Yu Xia, Wansheng Cheng</i>	
Extraction and Analysis of the Man-made Fiberboard Cavity Based on Image Recognition Technique	1789
<i>Pengfei Sun, Honge Ren, Benzhi Dong</i>	
Image Recognition by Combined Invariants of Legendre Moment	1793
<i>Xiubin Dai, Hui Zhang, Huazhong Shu, Limin Luo</i>	
Multi-Scale Maximally Stable Extremal Regions for Object Recognition	1799
<i>Ronghua Luo, Huaqing Min</i>	
Semi-supervised Bi-directional Dimensionality Reduction for Face Recognition	1804
<i>Lihua Wang, Chunjian Ren, Hongbo Xu, Chanchan Qin</i>	
An Improved Diffusion Maps Method for Action Recognition Using Global and Local Constraints	1808
<i>Feng Zheng, Zhan Song</i>	

WP1-6: Pattern Recognition II

A QA-TSK Fuzzy Model Vs Evolutionary Decision Trees Towards Nonlinear Action Pattern Recognition	1813
<i>Theodoros Theodoridis, Alexandros Agapitos, Huosheng Hu</i>	
Novel Algorithm for Underdetermined Blind Separation Based on Sparse Component Analysis	1819
<i>Weihua Wang, Fenggang Huang</i>	
Classification of Underwater Mines by Means of the FRFT and SVM	1824
<i>Tingting Li, Xiukun Li, Zhi Xia</i>	
Automatic Localization of AC and PC Landmarks in T2-weighted MR Volumetric Neuroimages	1830
<i>Guangcai Zhang, Yili Fu, Shuguo Wang, Wenpeng Gao</i>	
Robustness Analysis of Watermarking Spectral Images with PCA-SVD under Various Illumination Conditions	1835
<i>Long Ma, Changjun Li, Shuni Song, Zelin Shi</i>	
Fisheye Transformation for Image Retargeting	1840
<i>Lixia Zhang, Hongzhi Song, Zhaoming Ou, Huakun Liang, Lei Xiao</i>	

WP2-6: Kalman Filter & Applications

- [Quaternion Central Divided Difference Kalman Filtering Algorithm and Its Applications to Initial Alignment of SINS](#) 1846
Weidong Zhou, Guoqiang Ding, Yanling Hao, Guangzhao Cui
- [Multipath Parameters Estimation of Weak GPS Signal Based on New Colored Noise Unscented Kalman Filter](#) 1852
Gannan Yuan, Yanjun Xie, Yang Song, Haibo Liang
- [A Particle Filter Algorithm Based on SSUKF](#) 1857
Meng Yang, Wei Gao
- [A Multiple Object Tracking Method Using Kalman Filter](#) 1862
Xin Li, Kejun Wang, Wei Wang, Yang Li
- [Self-tuning Distributed Measurement Fusion Kalman Filter](#) 1867
Yun Li, Jintao Yu, Ming Zhao, Ke Han

WA1-7: Measurement & Identification

- [Measurement of a Piezoelectric Transducer's Mechanical Resonant Frequency Based on Residual Vibration Signals](#) 1872
Huijuan Dong, Jian Wu, Hui Zhang, Guangyu Zhang
- [Carrier Frequency Estimation in Automatic Modulation Recognition Environment](#) 1877
Zaihe Yu, Jianyu Bai
- [Defect Identification and Classification of Multi-frequency Eddy Current Test based on Spectrum Method](#) 1883
Junzhe Gao, Mengchun Pan, Feilu Luo
- [The Application of Incoherent Correlation Detection Method in Stochastic Resonance Beam-forming](#) 1887
Baoguo Yang, Tan Tian, Dianlun Zhang, Dajun Sun
- [Digital Repetitive Controller Design for Periodic Disturbance Attenuation in High Performance Inverters](#) 1891
Fanrong Meng, Xiaoli Duan, Jiang You, Yaohua Luo, Bin Fu

WP1-7: Localization

- [VorSLAM: A New Solution to Simultaneous Localization and Mapping](#) 1896
Shuai Guo, Shugen Ma, Bin Li, Rongchuan Sun, Yuechao Wang
- [A Corner and Straight line Matching Localization Method for Family Indoor Monitor Mobile Robot](#) 1902
Fusheng Tan, Jun Yang, Jianming Huang, Weidong Chen, Wei Wang, Jingchuan Wang
- [Study on Localization for Rescue Robots Based on NDT Scan Matching](#) 1908
Jinliang Li, Jihua Bao, Yan Yu
- [Monte Carlo Localization for Mobile Robot Using Adaptive Particle Merging and Splitting Technique](#) 1913
Tiancheng Li, Shudong Sun, Jun Duan
- [Research on Correction of Tri-axial Magnetometer and Application in Underwater Magnetic Field Localization](#) 1919
Yu Huang, Chao Li, Feng Sun
- [LRF-Based Data Processing Algorithm for Map Building of Mobile Robot](#) 1924
Songmin Jia, Hao Yang, Xiuzhi Li, Wei Fu

WP2-7: Tracking & Detection System

- [A 3-D Surveillance System Using Multiple Integrated Cameras](#) 1930
Yi-Yuan Chen, Yung-Huang Huang, Yung-Cheng Cheng, Yong-Sheng Chen
- [Independently Moving Object Detection and Tracking Using Stereo Vision](#) 1936
Hao Sun, Cheng Wang, Boliang Wang, Naser El-Sheimy
- [Study on Wood Image Edge Detection Based on Hopfield Neural Network](#) 1942
Dawei Qi, Peng Zhang, Xuejing Jin, Xuefei Zhang
- [A License Plate Recognition System Based On Tamura Texture in Complex Conditions](#) 1947
Xiangdong Zhang, Peiyi Shen, Jinrong Gao, Dp Qi, L Zhang, Ax Xue, Xi Liang, X Chen
- [A Tracking and Locating Method for UAVs Vision System](#) 1953
Linlin Zhu, Baojie Fan, Yingkui Du, Yandong Tang
- [Estimating the Fundamental Matrix Based on the Actual Distance](#) 1958
Jiulong Xiong, Qi Zhang, Junying Xia, Xiaoquan Xu, Cunbao Lin, Feilu Luo

MA1-P: Poster Session - I

- [Nonlinear Parameter Prediction and Estimation of Fossil Power Plant Based on Kernel Partial Least Squares](#) 1964
Xi Zhang, Yaqing Zhu, Weiwu Yan, Huihe Shao
- [Research on The Double-sided Grinding and Polishing Machine Tool System](#) 1968
Daqi Li, Lei Zhang, Xu Yang, Heran Yang, Tongzhan Li
- [Optimal Speed Control of PMSM for Electric Propulsion Based on Exact Linearization via State Feedback](#) 1972
Ming Yin, Wang Cong, Jin Li, Lei Wang
- [Research on Manufacturing Resource Organization Model Based on Ontology](#) 1978
Ning Guo, Haiquan Yu, Tianguo Jing, Wenjian Liu
- [Rapid Initial Alignment and Calibration for On-board Inertial Navigator](#) 1984
Gannan Yuan, Haibo Liang, Kunpeng He, Yanjun Xie
- [Research on Integrity Monitoring For Integrated GNSS/SINS System](#) 1990
Haiying Liu, Gang Zheng, Huinan Wang, Chengtao Feng
- [Flexible Reconfiguration Patterns for Measurement Architecture](#) 1996
Dengpan Zhang, Hongli Zhu
- [Research on Wavelet De-noising Method Based MEMS Accelerator Signal](#) 2001
Hui Wang, Zijian Cheng, Jie Yang, Peng Yue
- [The Study on Modeling and Simulation of Microwave Landing System](#) 2005
Jing He, Chuanjin Dai, Gang Wang
- [GPS and DR Integration for Robot Navigation in Substation Environments](#) 2009
Rui Guo, Peng Xiao, Lei Han, Xueqi Cheng
- [Application Research of an Adaptive Genetic Algorithms Based on Information Entropy in Path Planning](#) 2013
Zhifeng Shen, Yanling Hao, Kuixing Li

Analysis on Resonant Frequency of Thick-Screen Frequency Selective Surface	2017
<i>Chunyi Fang, Shuren Zhang, Lisong Liu, Zhiming Ma, Yanli Zhang</i>	
A Versatile FH/DS Hybrid Spread Spectrum Signal Generator Based on SOPC	2021
<i>Bing Xue, Yanlei Zhao, Shumin Wu</i>	
A Wavelet Method Based on Goodness of Fit Test for Roughness of Micro-EDM	2026
<i>Zhijie Chen, Jihong Shen, Libin Guo</i>	
IMM-UKF Based Land-Vehicle Navigation With Low-Cost GPS/INS	2031
<i>Huaming Qian, Di An, Quanxi Xia</i>	
Grid Workflow Scheduling Based on Time Prediction of Queuing Theory	2036
<i>Guozhong Tian, Chuangbai Xiao, Xiao Xu, Chaoqin Gao, Nuslati, Mardan</i>	
Numerical Simulation of Burning Methane on S195 Diesel Engine	2040
<i>Qinghui Zhou, Wei Ji, Hui Zhou</i>	
Modeling and Identification of a Vibration Isolation System with Hysteretic Damping	2044
<i>Dewei Sun, Zhigang Chen, Faquan Zhou, Guangyu Zhang</i>	
The Design of an Obstacle Avoiding Trajectory in Unknown Environment Using Potential Fields	2050
<i>Chunshu Li, Genqun Cui, Haifeng Lu</i>	
A Cache Scheme Based on LRU-Like Algorithm	2055
<i>Dongxing Bao, Xiaoming Li</i>	
Time Domain Characteristics Analysis of Load Spectrum of Axle Shaft	2061
<i>Jixin Wang, Ji Hu, Mingyao Yao, Naixiang Wang</i>	
Integrated Monitoring and Management System for Heat-supplying Process	2065
<i>Laihua Fang, Zongzhi Wu, Rongxue Kang, Lijun Wei</i>	
Modeling of Nonlinear Parameters on Ship With Fuzzy CMAC Neural Networks	2070
<i>Yuntao Dai, Liqiang Liu, Xiren Zhao</i>	
Study of Automobile Electric Controlled System Fault Diagnosis Based on Classification Pattern Recognition	2076
<i>Lili Zhang, Jiangwei Chu, Bencun Zou</i>	
Research on Temperature-Dependent Complex Permittivity for Large-Size Heterogeneous Asphalt Mixture	2082
<i>Songqing Zhu, Jinfei Shi</i>	
A Self-Adjusting Fuzzy Control for the Drum Water Level	2087
<i>Yinong Zhang, Hongxing Li</i>	
Investment Decision Model Via an Improved BP Neural Network	2092
<i>Jihong Shen, Canxin Zhang, Chunbo Lian, Hao Hu, Musa Mammadov</i>	
Co-simulation of Neural Networks PID Control for Ship Steering Hydraulic System	2097
<i>Fuquan Lin, Shaofen Lin, Shengbin Zeng</i>	
Research on Chaotic Control of Lorenz System under Periodic Force	2101
<i>Desen Yang, Chaofeng Lan, Shengguo Shi, Xudong He</i>	
Research of Variable Rate Fertilization Control System Based on Fuzzy PID Control Strategy	2106
<i>Chunying Liang, Xi Wang, Chengsheng Zhang, Fuli Wang</i>	

Coordinated Control Study in Engine Starting Process of Hybrid Vehicle	2111
<i>Zhonghua Lu, Xiusheng Cheng, Wei Feng</i>	
Self-Tuning Fuzzy PID Controller for Temperature Control in Variable Air Volume Air Conditioning Systems	2117
<i>Lijuan Xing, Shizhong Yang, Qianqian Lu</i>	
Multivariable Robust Control Design of a Turbofan Engine for Full Flight Envelope Operation	2121
<i>Haiquan Wang, Ling Ouyang, Dongyun Wang, Lei Liu</i>	
Sensorless Control of Switched Reluctance Generator Drive Based on Neural Networks	2126
<i>Guojun Tan, Guangchao Li, Yanping Zhao, Songyan Kuai, Xulong Zhang</i>	
Speed Control of Permanent Magnet Synchronous Motor Based on Differential Geometry Theory and Pole Placement Method	2131
<i>Ming Yin, Wang Cong, Jin Li, Lei Wang</i>	
Variable Structure Control Based on Artificial Immune Network Optimization Approach for Lift Fin Stabilizer	2137
<i>Jiguang Song, Hongzhang Jin, Lihua Liang, Songtao Zhang</i>	
The State Space Transformation and Structural Analysis of the Generalized System	2142
<i>Yuesheng Luo, Huanzhang Ling, Xu Qi, Mingye Zhou</i>	
Resilient Guaranteed Cost Diving Depth Control of AUV	2149
<i>Yuesheng Luo, Shiwei Li, Xu Qi, Xingyan Zhang, Xiuping Wen, Xinping Gong</i>	
Study on Switch Reluctance Motor Drive System Using Variable Structure Control with Sliding	2154
<i>Yaning Sun, Weiping Wang, Dengpan Qiao</i>	
Position Control of a Valve Controlled Asymmetric Cylinder System with Time Delay	2158
<i>Chunfang Dong, Qingxin Meng, Yujie Zhu</i>	

MP1-P: Poster Session - II

Development of a Low Cost Sensor for Measuring Angle of Irradiation	2162
<i>Roneel Krishna Dass, Guangyu Liu</i>	
Cross-terms Suppression in Wigner-Ville Distribution Based on Image Processing	2168
<i>Dianfa Ping, Peihong Zhao, Bing Deng</i>	
Vehicle Dynamics Control Based on Low Cost GPS	2172
<i>Jinzhu Zhang, Hongtian Zhang</i>	
Research on an X-ray Non-destructive Testing System for Conveyor Belt with Steel Wire Ropes	2178
<i>Chunqing Ye, Changyun Miao</i>	
Design of Pulse Detection System for Measurement While Drilling Based on GRNN	2182
<i>Xiaoyong Ni, Dapeng Luo, Yong Yang</i>	
A New Quasi-Monte Carlo Filtering Algorithm Based on Number Theoretical Method	2186
<i>Hui Zhang, Chongzhao Han</i>	
Design and Implementation of Infrared Wireless Data Transmission System	2192
<i>Long Chen, Yajun Zhang</i>	
Statistical Analysis of Backscatter Data from 300 kHz Multibeam Echo Sounder	2196
<i>Chao Xu, Haisen Li, Baowei Chen, Tian Zhou</i>	

The Embedded Measurement System for Multiple Motor Speed Based on FPGA	2201
<i>Yaohua Guo, Junshuang Ma, Lianshan Li</i>	
Data Acquisition and Analyzing of Solar Energy Resource	2205
<i>Mingzhi Zhao, Zhizhang Liu, Mingjun Yu</i>	
Source Signal Correction of High Resolution Wide Band Parametric Subbottom Profiler	2209
<i>Jianjun Zhu, Haisen Li, Tian Zhou</i>	
Data Acquisition System Based on LabVIEW for ABS Dynamic Simulation Test Stand	2214
<i>Kai Zhou, Xudong Wang, Chao Zhang, Jian Liu</i>	
A Wavelet Packet Transform Power Harmonic Detection Method Based on DSP and LabVIEW	2219
<i>Hong-e Li, Changmin Chen, Xia Yang, Weicheng Xie</i>	
A Novel Platform of Coal Mine Monitoring System Based on Wireless Sensor Network	2225
<i>Xuanmin Lu, Shuyuan Shao</i>	
Research on the Robustness of Array Beamforming based on Support Vector Regression	2229
<i>Guancheng Lin, Yaan Li, Beili Jin</i>	
Ultra-High Temperature Ablation Image Acquisition and Analysis System Based on CCD	2234
<i>Zhiwen Wang, Xiuyan Peng</i>	
Research on Catheter Sidewall Tactile Sensors	2238
<i>Hongtao Gao, Yanling Hao, Juan Du, Huanran Wang</i>	
PS4WSN- A Publish/Subscribe Middleware for Wireless Sensor Networks	2242
<i>Shaoxin Wu, Wansong Zhang, Hongbin Wang</i>	
The Improvement of FOG North-seeker Two-position North Determining Scheme	2248
<i>Xuyou Li, Qiuli Zheng, Hanrui Yang, Jianhua Yang</i>	
Automatic Differentiation System for Posthepatic Cirrhosis in Traditional Chinese Medicine	2252
<i>Na Chu, Lizhuang Ma, Ping Liu</i>	
Mechanical Fault Prediction Based on Principal Component Analysis	2258
<i>Luhui Lin, Jie Ma, Xiulan Ye, Xiaoli Xu</i>	
Dimensionlessness and Threshold Denoising in Multi-joint Arm Calibration Model with Distance Constraints	2263
<i>You Xu, Huiyuan Xiong, Zhijian Zong, Qun Gao</i>	
Bandwidth Auto-Matching Method for MRS Signal	2269
<i>Xinlei Shang, Jun Lin, Yingji Wang, Qingming Duan</i>	
Kinematics of Parallel-Series Position and Pose Adjustment Mechanism for Automated Docking System of Replenishment at Sea	2273
<i>Ying Yu, Qingxin Meng, Liquan Wang, Baolin Yin, Peng Li</i>	
LDPC-Coded Optical PPM Communication System over the Atmosphere Turbulence Channels	2277
<i>Zheng Dou, Xuejun Sha, Yong Wang, Danyang Tian</i>	
The Engineer Realizing of Adaptive Phase Estimator Base on MCU	2281
<i>Heng-jun Zhu, Hong-bo Yu, Shu-dong Liu, Yu-quan Wu</i>	
An Underwater Acoustic Channel Simulator for UUV Communication Performance Testing	2286
<i>Jinjin Wang, Ping Cai, Dong Yuan</i>	

Application of Information Gain Based Heuristic Search in Optimal Test Strategy	2291
<i>Ming Wan, Xiaoguang Fan, Fengming Zhang, Jianguo Nan</i>	
Sensing Incline Terrain for Mobile Robot Autonomous Navigation Under Unknown Environment	2296
<i>Jiang Zhu, Yaonan Wang, Hongshan Yu, Wenge Wang, Yaxing Wen</i>	
Rayleigh-Sommerfeld Diffraction Theory to Moiré Measurement Application	2302
<i>Yanping Huang, Jianxin Qiu, Biaobing Huang, Jingqi Sheng, Hongji Xu</i>	
A Fast Image Mosaicing Method for an Aerial Reconnaissance Camera	2306
<i>Guangfu Ma, Dexin Zhang, Xiaonan Jiang</i>	
Design and Optimization of the Moving Object Detecting System Based on Blackfin DSP	2310
<i>Rongfan Zhou, Dongmei Li, Zhaohui Li</i>	
Spectrum Analysis for Acoustical Signals Based on Fusion Technology	2316
<i>Meng Zhang, Hongwu Qin</i>	
Detection and Removal of Impulsive Colored Noise for Speech Enhancement	2320
<i>Zhiyong He, Xuhong Guo, Maoqing Zhang</i>	
3D Balance Quantization Encoding Based on Variable Size Matrix Segmentation	2325
<i>Aijun Sang, Hexin Chen, Moncef Gabbouj</i>	
A Novel High Resolution Direction of Arrival Estimation Algorithm	2329
<i>Jun Kang, Dengshan Huang, Huifu Cai, Dajun Wang</i>	
A Fine Alignment Method about Doppler-assisted SINS	2333
<i>Wei Gao, Xin Zhang, Guiling Zhao, Yueyang Ben</i>	
An Approach for Fault Diagnosis of Bearings Using Wavelet-Based Fractal Analysis	2338
<i>Peng Li, Qingbo He, Fanrang Kong</i>	
Study on SINS/GPS Tightly Integrated Navigation Based on Adaptive Extended Kalman Filter	2344
<i>Weidong Zhou, Xiangwei Qiao, Fanbin Meng, Hebing Zhang</i>	
Some Advances of Underwater Acoustic Imaging Research for UUV	2348
<i>Xiaofeng Wang, Enfang Sang, Hongyu Bian</i>	

MP2-P: Poster Session - III

Integrating Cloud Model in Evolutionary Algorithm for Path Planning of Mobile Robots	2352
<i>Xuefeng Dai, Xiaomei Ning, Zhifeng Yao, Hongbo Shao</i>	
Laser Range Finder Based Moving Object Tracking and Avoidance in Dynamic Environment	2357
<i>Fujun He, Zhijiang Du, Xiaolei Liu, Yueyue Ta</i>	
Kinematics Simulation and Analysis of 3-RPS Parallel Robot on SimMechanics	2363
<i>Lingtao Yu, Lixun Zhang, Nan Zhang, Shuo Yang, Daoming Wang</i>	
Path Planning and Control System Design for Cleaning Robot	2368
<i>Zhengwei Hu, Hongbo Wang, Tian Zhang, Xiaoqian Zheng, Xue Yang</i>	
Design and Analysis of Spring Roll-style Retractable Sampling Arm	2374
<i>Wei Lu, Aiguo Song, Fei Hao</i>	
Simulation of Optimal Integral Sliding Mode Controller for the Depth Control of AUV	2379
<i>Zhaodong Tang, Jiajia Zhou, Xinqian Bian, Heming Jia</i>	

Square-Root Unscented Kalman Filter Based Simultaneous Localization and Mapping	2384
<i>Shurong Li, Pengfei Ni</i>	
Design SAC of Ship with Ant Colony Optimization Algorithm	2389
<i>Xiangyin Meng, Sheng Huang</i>	
The Intelligent Multimodal Pressure Control of Diamond Synthesis Process for Cubic Hinge Press	2395
<i>Cheng He, Yaonan Wang, Duanyang He</i>	
Hierarchical Control of Energy Regulation Based Variable-speed Electrohydraulic Drive	2401
<i>Ming Xu, Guojin Chen, Jing Ni</i>	
Research and Development of Construction Machinery Hydraulic Measurement and Control System Platform Based on LabVIEW	2406
<i>Zikai Chen, Shaofen Lin, Fuquan Lin</i>	
Improved Genetic Algorithm Applied in Calibrating a Three-axis Measuring Device	2410
<i>Qiang Wen, Yizhen Yang, Yongfeng Shao</i>	
Fuzzy AHP Decision Making Method for Insert Grade Selection	2415
<i>Chaocheng Shao, Weiqun Yang</i>	
Study on Key Technology of Topic Tracking Based on VSM	2419
<i>Shengdong Li, Xueqiang Lv, Qiang Zhou, Shuicai Shi</i>	
Research on Bayesian Optimization Algorithm Selection Strategy	2424
<i>Min Jiang, Yimin Chen</i>	
A Multi-Agent Based Robot Telesupervision Architecture for Hazardous Materials Detection	2428
<i>Jiatong Bao, Yan Guo, Aiguo Song, Hongru Tang</i>	
Content-based Hand Language Video Searching under Complex Background	2433
<i>Shilin Zhang, Shuwu Zhang</i>	
Supervision and Control System of Factory Substation	2438
<i>Shijie Yan, Haitao Guan, Xu Wang</i>	
Pennes Equation Based Blood Perfusion Model and its Application in Face Recognition	2443
<i>Zhijia Xie, Guodong Liu, Shiqian Wu, Zhijun Fang, Yun Gan</i>	
A Novel Adaptive Vein Image Contrast Enhancement Method Based on Fuzzy and Retinex Theory	2447
<i>Bin Fu, Jianwen Cui, Xinyan Xiong</i>	
An Efficient Modified Level Set Method for Brain Tissue Segmentation	2451
<i>Di Jia, Jinzhu Yang, Yifei Zhang</i>	
License Plate-Location Using Adaboost Algorithm	2456
<i>Xiangdong Zhang, Peiyi Shen, Yuli Xiao, Bo Li, Yang Hu, Dongpo Qi, Xiao Xiao, Liang Zhang</i>	
Novel and Fast Algorithms of License Plate Locations and Extractions	2462
<i>Yucheng Li, Mushu Wang</i>	
A Method of Recognizing Objects Specified by Color and Shape in Autonomous ROBOT	2466
<i>Yongxia Li, Zhanying Feng, Hong Sheng</i>	
Property of Correlation Between Entropy and Focus	2471
<i>Yu-Kung Chen, Tung-Han Yang, Jian-Wei Ko</i>	

Research on Digital Image Edge Detection with Local Entropy and Fuzzy Entropy Algorithms	2477
<i>Ming Zhao, Xiulan Ye, Ke Han, Yun Li</i>	
Gait Recognition Based on Key Frame and Elliptical Model	2483
<i>Junhong Xu, Wang Cong, Jin Li, Lei Wang, Lijie Li, Hong Liang</i>	
Robust Irregular Region Matching Based on Inner Product and Exterior Product	2488
<i>Hongmin Liu, Zhiheng Wang</i>	
An Improved Algorithm of KPCA-SIFT for Image Registration	2493
<i>Xuan-min Lu, Zhao He, Jun-ben Wang</i>	
Compressed Video Copy Detection Based on Edge Analysis	2497
<i>Zhijie Zhang, Jianhua Zou</i>	
Overview of Metal Spinning Process	2502
<i>Yu Yang, Hongji Xu</i>	
The Improve SPA Method Research and Its Application in Water Environment Assessment	2508
<i>Zhihong Zheng, Lin Qiu, Minghua Wei</i>	
Numerical Simulation for Effect of Fuel Injector Parameters on Combustion and NO _x Emissions of STC Diesel Engine	2513
<i>Xinguang Li, Yinyan Wang, Yang Wang</i>	
A New Self-adaptive Extendible Hash Index for Flash-based DBMS	251J
<i>Li Wang, Hanhu Wang</i>	

Author Index