

2016 IEEE International Conference on Advanced Intelligent Mechatronics (AIM 2016)

**Banff, Alberta, Canada
12-15 July 2016**

Pages 1-851



**IEEE Catalog Number: CFP16775-POD
ISBN: 978-1-5090-2066-9**

**Copyright © 2016 by the Institute of Electrical and Electronics Engineers, Inc
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

******This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP16775-POD
ISBN (Print-On-Demand):	978-1-5090-2066-9
ISBN (Online):	978-1-5090-2065-2
ISSN:	2159-6247

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Development of a Robotic Finger with an Active Dual-Mode Twisting Actuation and a Miniature Tendon Tension Sensor	1
<i>Seok Hwan Jeong, Kyung-Soo Kim, Soohyun Kim</i>	
Mechanical Stiffness Augmentation of a 3D Printed Soft Prosthetic Finger	7
<i>Rahim Mutlu, Solen Kumbay Yildiz, Gursel Alici, Marc In Het Panhuis, Geoff Spinks</i>	
A Method of Discriminating Fingers and Wrist Action from Surface EMG Signals for Controlling Robotic or Prosthetic Forearm Hand.....	13
<i>Takuhei Kawano, Koichi Koganezawa</i>	
Dexterous Gripping of a Hand with Multi-Joint Fingers	19
<i>Takumi Tamamoto, Soichirou Nomura, Koichi Koganezawa</i>	
Development of Robotic Fingertip Morphology for Enhanced Manipulation Stability.....	25
<i>Keung Or, Alexander Schmitz, Satoshi Funabashi, Mami Tomura, Shigeki Sugano</i>	
Analysis on the Joint Independence of Hand and Wrist	31
<i>Yuan Liu, Li Jiang, Dapeng Yang, Yu Liu, Jingdong Zhao, Hong Liu</i>	
Fast Object Approximation for Real-Time 3D Obstacle Avoidance with Biped Robots	38
<i>Daniel Wahrmann, Arne-Christoph Hildebrandt, Robert Wittmann, Felix Sygulla, Daniel Rixen, Thomas Buschmann</i>	
Design and Development of a Two-DOF Torso for Humanoid Robot	46
<i>Baoshi Cao, Kui Sun, Minghe Jin, Cong Huang, Yu Zhang, Hong Liu</i>	
Optimal Preview Control of the Nao Biped Robot Using a UKF-Based State Observer	52
<i>Maani Ghaffari Jadidi, Ehsan Hashemi</i>	
Development of a Biped Balloon Walking Robot with Lightweight Mechanism and Simple ON/OFF Controls	58
<i>Mami Nishida</i>	
Center of Mass Estimation in Irregular Planar Terrains Using a Geometric Approach	64
<i>Luenin Barrios, Wei-Min Shen</i>	
Sensor-Guided Gait Synchronization for Weight-Support Lower-Extremity-Exoskeleton	71
<i>Donghai Wang, Kok-Meng Lee</i>	
State-Dependent Sliding Mode Observer for an Electro-Pneumatic Clutch	77
<i>Robert Prabel, Harald Aschemann</i>	
Design and Fabrication of a Fiber-Reinforced Pneumatic Bending Actuator	83
<i>Boran Wang, Kean C. Aw, Morteza Biglari-Abhari, Andrew McDaid</i>	
Low-Cost Wearable Rehabilitation Devices Using Flexible Pneumatic Cylinder with Built-In Pneumatic Driving System.....	89
<i>Tetsuya Akagi, Shujiro Dohta, Yasuko Matsui, Hiroaki Tamaki, Naoki Kato</i>	
Comparison of Contractile and Extensile Pneumatic Artificial Muscles	94
<i>Thomas Pillsbury, Qinghua Guan, Norman Wereley</i>	
Development of Endoskeleton Type Knee Auxiliary Power Assist Suit using Pneumatic Artificial Muscles	107
<i>Shun Mohri, Hiroki Inose, Yasuyuki Yamada, Taro Nakamura, Kazuya Yokoyama, Isao Kikutani</i>	
Experiments of Human-Robot Teaming under Sliding Autonomy	113
<i>Fang Tang, Mahmood Mohammed, Jacob Longazo</i>	
A Haptic Feedback Driver-Vehicle Interface for Controlling Lateral and Longitudinal Motions of Autonomous Vehicles	119
<i>Udara Eshan Manawadu, Mitsuhiro Kamezaki, Masaaki Ishikawa, Takahiro Kawano, Shigeki Sugano</i>	
A Shared Controller for Brain-Controlled Assistive Vehicles	125
<i>Luzheng Bi, Mingtao Wang, Yun Lu, Feleke Aberham Genetu</i>	
Evaluation of a Three-Mode Robotic Manipulator Control Interface That Employs Voice and Multi-Touch Commands.....	130
<i>Tetsushi Oka, Keisuke Matsushima</i>	
A 3-DOF Compact Haptic Interface for Endoscopic Endonasal Approach Surgery Simulation	136
<i>Jianlong Hao, Gui-Bin Bian, Xiaoliang Xie, Zeng-Guang Hou, Xiao-Hu Zhou</i>	
Admittance Control for an Electromechanical Rowing Machine	142
<i>Shola Otitoju, Hanz Richter, Ton Van Den Bogert</i>	
Global Stabilization of Autonomous Underactuated Underwater Vehicles in 3D Space	148
<i>Morteza Mirzaei, Farzaneh Abdollahi, Nader Meskin</i>	

Hydrodynamic Performance Study on a Hinge-Connected Flexible Fin by Fluid-Structure Interaction.....	154
<i>Bo Liu, Zhongze Guo, Qin Yan, Bin Liao</i>	
Design and Development of an LED-Based Optical Communication System with Active Alignment Control.....	160
<i>Mohammed Al-Rubaiai, Xiaobo Tan</i>	
Analysis on the Steering Characteristics of an Underwater Exploration Robot	166
<i>Weiyang Shang, Canjun Yang, Faju Qiu</i>	
Modeling and Optimal Three-Dimensional Trajectory Tracking for an Autonomous Underwater Vehicle	172
<i>Abed Alrahman Al Makdah, Elie Shammas, Naseem Daher, Imad Elhadj</i>	
Reducing Elevation Angle Errors of Long-Range Deep-Sea Acoustic Localization by Ray Tracing and Depth Measurements.....	178
<i>David Oertel, Sergej Neumann, Heinz Woern</i>	
Cutting Force Monitoring and Control System for CNC Lathe Machines.....	184
<i>Jorge Cubas, Josuet Leoro, Daniel Reyes, Syh-Shiuh Yeh</i>	
A Look-Ahead Interpolator with Curve Fitting Algorithm for Five-Axis Tool Path.....	189
<i>Ming-Tsung Lin, Meng-Che Lee, Jih-Chieh Lee, Chien-Yi Lee, Zheng-Wei Jian</i>	
Development of a Front and Rear Aligning Control Winding System.....	195
<i>Chen-Jung Li, Wei-Jia Chen, Yuan-Chen Yu, Chung-Yung Wu, Chun-Kuei Huang</i>	
Offline Gain Adjustment with Constraints for Contour Error Reduction in High Speed Milling	201
<i>Tan-Quang Duong, Pedro Rodriguez-Ayerbe, Sylvain Lavernhe, Christophe Tournier, Didier Dumur</i>	
End-of-Line Fault Detection for Combustion Engines Using One-Class Classification.....	207
<i>Lukas Leitner, Antoine Lagrange, Christian Endisch</i>	
Performance Evaluation of Machine Vision Inspection for Fault Detection in Automated Assembly Machines.....	214
<i>Vedang Dilipkumar Chauhan, Brian Surgenor</i>	
Portability and Antagonistic Stiffness Control for an Shape Memory Alloy Artificial Muscle Actuator Protected by a Rolled Film Tube.....	220
<i>Toshiya Ishikawa, Taro Nakamura</i>	
An Iterative Design Methodology for the Performance Optimisation of Magnetorheological Piston Head Configurations	228
<i>Gonzalo Aguirre Dominguez, Mitsuhiro Kamezaki, Morgan French, Shigeki Sugano</i>	
Single Motor-Variable Stiffness Actuator Using Bistable Switching Mechanisms for Independent Motion and Stiffness Control.....	234
<i>Stefan S. Groothuis, Raffaella Carloni, Stefano Stramigioli</i>	
Experimental Investigation of the Dynamic Performances of a Miniature Soft Magneto-Rheological Shock Absorber.....	240
<i>Daniel Grivon, Yoan Civet, Zoltan Pataky, Yves Perriard</i>	
Hysteresis Modeling of a Hybrid Magneto-Rheological Actuator.....	246
<i>Masoud Moghani, Mehrdad R. Kermani</i>	
RRLAB SEA - A Highly Integrated Compliant Actuator with Minimised Reflected Inertia	252
<i>Steffen Schuetz, Krzysztof Mianowski, Christian Koetting, Atabak Nejadfar, Max Reichardt, Karsten Berns</i>	
Design and Control of an Active-Caster Electric Walker with a Walk Sensing System (SMART WALKER).....	258
<i>Masayoshi Wada, Ken Ichiryu, Takeyoshi Iguchi, Ryuta Yoshida</i>	
A Soft Wearable Sleeve for Joint Stiffness Modulation.....	264
<i>Xiaotian Zhang, Gaurav Singh, Girish Krishnan</i>	
Modelling and Evaluation of the Patient-Specific Electromyography (EMG)-Driven Neuromuscular Model for Cerebral Palsy Patients	270
<i>Ye Ma, Shane Xie, Chengyan Sun</i>	
Wrist Rehabilitation Training Simulator for P.T. Using Pneumatic Parallel Manipulator	276
<i>Masahiro Takaiwa</i>	
Design of an Adaptive Exoskeleton for Safe Robotic Shoulder Rehabilitation	282
<i>Li Chien, Dian Fu Chen, Chao-Chieh Lan</i>	
Extension of the WearME Framework for EMG-Driven Control of a Wearable Assistive Exoskeleton.....	288
<i>Tyler James Charles Desplenter, Joan Lobo-Prat, Arno H. A. Stienen, Ana Luisa Trejos</i>	
Performance Evaluation of Quadrotor with Tilted Rotors under Wind Gusts.....	294
<i>Abdulrahman Aliyu, Moustafa Elshafei, Abdul-Wahid A. Saif, Mujahed Aldhaifallah</i>	
Row and Water Front Detection from UAV Thermal-Infrared Imagery for Furrow Irrigation Monitoring.....	300
<i>Derek Long, Cheryl McCarthy, Troy Jensen</i>	

A Fully Actuated Quadrotor UAV with a Propeller Tilting Mechanism: Modeling and Control	306
<i>Marcin Odлга, Paolo Stegagno, Heinrich H. Buelthoff</i>	
Geometric Adaptive Dynamic Visual Servoing of a Quadrotor UAV	312
<i>Xuetao Zhang, Yongchun Fang, Xiao Liang, Xuebo Zhang</i>	
Adaptive Output Feedback Control for Miniature Unmanned Aerial Vehicle	318
<i>Shafiqul Islam, Jorge Dias, Lakmal Seneviratne</i>	
Analysis of Wing Twist Effects on Hover Flight Dynamics of a Single Rotor Aerial Craft	323
<i>Jun En Low, Ying Hong Peh, Shaohui Foong</i>	
Integrating Input Shaping Technique with Interpolator for Vibration Suppression	329
<i>Meng-Shiun Tsai, Hong Wei Huang, Shin Sheng Yang, Chia Li Chou</i>	
The Development of Flying Touch Hot Rolling Control Method Based on SMCSPO	334
<i>Hyun Hee Kim, Sung Jin Kim, Min Cheol Lee</i>	
Design and Control of an End-Effector Module for Industrial Finishing Applications	339
<i>Zheng Ma, Geok Soon Hong, Marcelo H Ang Jr, Jim A. N. Poo</i>	
Feedrate Optimization for Worn Cutter with Measured Cutting Force in Rough Milling	345
<i>Ming Luo, Yongfeng Hou, Dinghua Zhang</i>	
Wafer-Scale Automation of Electron Beam Induced Depositions	351
<i>Patrick Elfert, Malte Bartenwerfer, Sergej Fatikow</i>	
On-Line Learning Artificial Neural Networks for Stability Classification of Milling Processes	357
<i>Jens Friedrich, Christoph Hinze, Armin Lechler, Alexander Verl</i>	
Analysis of an Underactuated Robotic Finger with Variable Pinch and Closure Grasp Stiffness	365
<i>Matteo Fumagalli, Eamon Barrett, Stefano Stramigioli, Raffaella Carloni</i>	
The University of Malta Minimal Anthropomorphic Robot (UM-MAR) Hand II	371
<i>Donald Dalli, Michael A. Saliba</i>	
A Dexterous Gripper for In-Hand Manipulation	377
<i>Nahian Rahman, Luca Carbonari, Mariapaola D'Imperio, Carlo Canali, Darwin Caldwell, Ferdinando Cannella</i>	
A Topology Optimisation Based Design of a Compliant Gripper for Grasping Objects with Irregular Shapes	383
<i>Lili Bykerk, Dikai Liu, Kenneth John Waldron</i>	
An Accurate Force Regulation Mechanism for Handling Fragile Objects Using Pneumatic Grippers	389
<i>Chih-Chieh Chen, Chao-Chieh Lan</i>	
Optimal Grasp Synthesis to Apply Normal and Shear Stresses of Failure in Beams	395
<i>Mahyar Abdeetedal, Mehrdad R. Kermani</i>	
A Path Planning Approach Via Task-Objective Pose Selection with Application to an Inchworm-Inspired Climbing Robot	401
<i>Chia-Han Yang, Gavin Paul, Peter Ward, Dikai Liu</i>	
Soil Circulating System for a Lunar Subsurface Explorer Robot Using a Peristaltic Crawling Mechanism	407
<i>Toyoharu Nakatake, Masashi Konno, Asuka Mizushina, Yasuyuki Yamada, Taro Nakamura, Takashi Kubota</i>	
Development of a Peristaltic Crawling Robot for Long-Distance Complex Line Sewer Pipe Inspections	413
<i>Ryutaro Ishikawa, Takeru Tomita, Yasuyuki Yamada, Taro Nakamura</i>	
A Reduced Actuation Mecanum Wheel Platform for Pipe Inspection	419
<i>William Alexander Blyth, David Barr, Ferdinando Rodriguez Y Baena</i>	
A Novel Locomotion Robot That Slides and Rotates on Slippery Downhill	425
<i>Fumihiko Asano, Taiki Seino, Isao Tokuda, Yuji Harata</i>	
SMA Actuator and Pulse-Type Hardware Neural Networks IC for Fast Walking Motion of Insect-Type MEMS Microrobot	431
<i>Kazuki Sugita, Daisuke Tanaka, Satoko Ono, Satoshi Chiba, Kei Iwata, Yuxuan Han, Minami Takato, Fumio Uchikoba, Ken Saito</i>	
Synthesis, Encapsulation, and Performance Analysis of Large Deformation Tri-Layer Polypyrrole Actuator	436
<i>Amelie Cot, Mohamed Taha Chikhaoui, Kanty Rabenorosoa, Patrick Rougeot, Nicolas Andreff</i>	
A Model Extended Temperature and Strain Controller Modulated with PWM for Precision Position Control of Shape Memory Alloy Actuators	442
<i>Arathi Pai, Markus Riepold, Ansgar Traechtler</i>	
On the Feasibility of Using Measurements of Charge and Effective Capacitance for Simultaneous Position and Force Self-Sensing of Piezoelectric Actuators	448
<i>Sepehr Zarif Mansour, Rudolf Seethaler</i>	
Controlled Acoustic Levitation - Physical Model and Real-Time Digital Implementation	452
<i>Izhak Bucher</i>	
Lyapunov-Based Self-Tuning of Sliding Surfaces - Methodology and Application to Hydraulic Valves	457
<i>Christoph Krimpmann, Georg Schoppel, Ingo Glowatzky, Torsten Bertram</i>	

Closed-Loop Petri Net Model for Implementing an Affective-State Expressive Robotic Face	463
<i>Masood Mehmood Khan, Timothy Hargreaves, Daniel Benson, Tele Tan</i>	
Learning-Based Object Abstraction Method from Simple Instructions for Human Support Robot HSR	468
<i>Kotaro Nagahama, Hiroaki Yaguchi, Hattori Hirohito Hattori Hirohito, Kiyohiro Sogen, Takashi Yamamoto, Masayuki Inaba</i>	
Approaching Humans in Crowded and Dynamic Environments	476
<i>Trung-Dung Ngo</i>	
Data-Driven Human Skill Evaluation for Excavator Operation	482
<i>Kazushige Koiwai, Toru Yamamoto, Takao Nanjo, Yoichiro Yamazaki, Yoshiaki Fujimoto</i>	
Teach Industrial Robots Peg-Hole-Insertion by Human Demonstration	488
<i>Te Tang, Hsien-Chung Lin, Yu Zhao, Yongxiang Fan, Wenjie Chen, Masayoshi Tomizuka</i>	
Towards a Multi-Sensor System for the Diagnosis of Neurological Disorders	495
<i>Felix Tenner, Axel Schramm, Mona Sohle, Martin Regensburger, Elisa Wirthmann, Zeev Zalevsky, Michael Schmidt</i>	
Augmented-MRAC for Quadrotor UAVs with Parameter Change	501
<i>Fangrui Fan, Mengxiang Lin, Rong Ding, Zheng Zheng, Yang Liu</i>	
Discrete-Time Flatness-Based Control for a Twin Rotor Helicopter with an Extended Kalman Filter	507
<i>Hao Sun, Saif Siddique Butt, Harald Aschemann</i>	
Aggressive Maneuvers of a Quadrotor MAV Based on Composite Nonlinear Feedback Control	513
<i>Kun Li, Kangli Wang, Kun Zhang, Ben M. Chen</i>	
Bilateral Shared Autonomous System for MUMAV with Nonpassive Human and Environment Input Interaction Forces	519
<i>Shafiqul Islam, Jorge Dias, Seneviratne Lakmal</i>	
The Comparison of the Detecting Performance between the Ground and the Aerial Visual Analytics in the UGV-UAV Collaborative System	524
<i>Heeseo Chae, Woo Yeol Kim, Ji Tae Hong</i>	
Optimal Tracking a Moving Target for Integrated Mobile Robot-Pan Tilt-Stereo Camera	530
<i>Van Chung Le, Thuong Cat Pham</i>	
Automated Identification and Characterization of Clustered Weld Defects	536
<i>Hong Luo, Wei Lin, Qun Han Chen, Ngoc Chi Nam Doan</i>	
Modeling and Simulation of Three Dimensional Weld Pool Reconstruction by Stereo Vision	542
<i>Andrew Neill, John Steele</i>	
Dynamic Evolution of the Weld Pool Reflection During Weld Penetration Development	548
<i>Jinsong Chen, Jian Chen, Zhili Feng, Yuming Zhang</i>	
Optimal Redundancy Resolution for Robotic Arc Welding Using Modified Particle Swarm Optimization	554
<i>Ngoc Chi Nam Doan, Pey Yuen Tao, Wei Lin</i>	
Automatic Program Generation for Welding Robots from CAD	560
<i>Nathan Larkin, Andrew Short, Zengxi Pan, Stephen Van Duin</i>	
Robotic Arc Welding with On-Line Process Monitoring Based on the LMM Analysis of the Welding Process Stability	566
<i>Fengjun Bai, Tomasz Lubecki, Wei Lin</i>	
Grasping of Unknown Objects on a Planar Surface Using a Single Depth Image	572
<i>Toshitaka Suzuki, Tetsushi Oka</i>	
Precise Motion Control of SCARA Robot Using Combination of PWM Signals and Visual Information	578
<i>Akihiro Kawamura, Yoshiki Mori, Soichiro Yamate, Sadao Kawamura</i>	
Performance Quantification of Strain Sensors for Flexible Manipulators	584
<i>Solen Kumbay Yildiz, Rahim Mutlu, Gursel Alici</i>	
Adaptive Robust Motion Control of Uncertain Manipulators through Immersion and Invariance Adaptive Visual Servoing	590
<i>Tao Yang, Bin Yao, Xiaocong Zhu, Qingfeng Wang</i>	
An Asymptotic Torque Estimation for Robot Manipulators	596
<i>Fatemeh Khosrosereshki, Heidar Ali Talebi</i>	
Kinematics and Dynamics Identification of a Hyper-Redundant, Electromagnetically Actuated Manipulator	601
<i>Svenja Tappe, Michael Dorbaum, Jens Kotlarski, Bernd Ponick, Tobias Ortmaier</i>	
Development of a Quadruped Robot with Redundant DOFs for High-Degree of Functionality and Adaptation	608
<i>Bokeon Kwak, Hyunkyoo Park, Joonbum Bae</i>	

Towards a Walking, Turning, and Jumping Quadruped Robot with Compliant Mechanisms	614
<i>Chen-Yu Chan, Yen-Chen Liu</i>	
Analysis of Underwater Locomotion and Improvement of FroBot	633
<i>Yi Yang, Jianqing Zhang, Han Xu, Maokuan Chen, Lu Zhang, Zhongjing Zhu</i>	
Design of a Compliant Knee-Motion Actuator for Lower Extremity Exoskeletons	639
<i>Kun Bai, Kok-Meng Lee, Jinjin Lu, Mi Yuan</i>	
Nonlinear Design Optimization of Electric Machines by Using Parametric Fourier Coefficients of Air Gap Flux Density	645
<i>Norman Borchardt, Roland Kasper</i>	
Analysis of Eddy Currents Influencing an Electromagnetic Tilting Actuator	651
<i>Michael Dorbaum, Marc England, Bernd Ponick</i>	
Parameter Identification for Nanopositioning of a 6-Axis Maglev Stage with Moving Lorentz Coils	657
<i>Vu Nguyen, Won-Jong Kim</i>	
Development of Electromagnetic MEMS Motor without Winding Wire and Application to Microrobot	663
<i>Minami Takato, Kaito Mishima, Yuxuan Han, Ken Saito, Fumio Uchikoba</i>	
Motor-Gearbox Selection for Energy Efficiency	669
<i>Douwe Dresscher, Theo De Vries, Stefano Stramigioli</i>	
Building Lightweight Robots Using Single-Motor Drives - a Survey and Concept Study	676
<i>Cong Wang, Lu Lu</i>	
Data-Based Feedforward Controller Reconstruction from Iterative Learning Control Algorithm	683
<i>Cheng-Wei Chen, Tsu-Chin Tsao</i>	
Multirate Feedforward Control with State Trajectory Generation based on Time Axis Reversal for Plant with Continuous Time Unstable Zeros	689
<i>Wataru Ohnishi, Hiroshi Fujimoto</i>	
On the Reduction of Vibration of Parallel Robots using Flatness-based Control and Adaptive Inputshaping	695
<i>Julian Oltjen, Jens Kotlarski, Tobias Ormaier</i>	
Data-Driven Optimization of Disturbance Observer and Feedforward Controller in a Composite Control Structure	703
<i>Xiacong Li, Silu Chen, Chek Sing Teo, Kok Kiong Tan</i>	
Optimization-Based Constrained Iterative Learning Control with Application to Building Temperature Control Systems	709
<i>Cheng Peng, Liting Sun, Wenlong Zhang, Masayoshi Tomizuka</i>	
Experimental Validation of Forward and Back-Drivable Characteristics on Series Clutch Actuator Using Acceleration Control	716
<i>Kazumasa Miura, Seiichiro Katsura</i>	
Fundamental Development of a Virtual Reality Simulator for Four-Arm Disaster Rescue Robot OCTOPUS	721
<i>Kui Chen, Mitsuhiro Kamezaki, Takahiro Katano, Junjie Yang, Tatsuzo Ishida, Masatoshi Seki, Ichiryu Ken, Shigeki Sugano</i>	
Prototype System for Energy Management of Mobile Device Via Wireless Charging Robot	727
<i>Sousuke Nakamura, Taito Suzuki, Yoshinori Kakinuma, Seiya Saruwatari, Koudai Yamamoto, Kazuhiro Arai, Keita Akiho, Hideki Hashimoto</i>	
TIREBOT: A Novel Tire Workshop Assistant Robot	733
<i>Alessio Levratti, Antonio De Vuono, Cesare Fantuzzi, Cristian Secchi</i>	
Development of Biocompatible Magnetic Microrobot Transportor Using 3D Laser Lithography	739
<i>Junyang Li, Weicheng Ma, Fuzhou Niu, Yu Ting Chow, Shuxun Chen, Bo Ouyang, Haiibo Ji, Jie Yang, Dong Sun</i>	
Modeling of a Variable Diameter Wheeled Robot for Traversing Rough Terrain	745
<i>Mohamad Alsalman, Elie Shammass, Daniel Asmar, Naseem Daher</i>	
Experimental Studies on Q Filter Design of a Disturbance Observer for a One-Wheel Robot	751
<i>Sangdeok Lee, Seul Jung</i>	
Leakage Flux Modelling in Magnetic Fluids Test Bench	757
<i>Cecile Chuchet, Christophe Espanet, Yoan Civet, Stephane Biwersi, Yves Perriard</i>	
Modelling the Structural Dynamics of a Tower Crane	763
<i>Patrick Schlott, Florentin Rauscher, Oliver Sawodny</i>	
Modeling Induction Motor Imbalances: A Non-DQ Approach	769
<i>Kabenla Egya Ennor Enyimah Armah, Jerome Jouffroy, Lars Duggen</i>	
Simple Torso Model for Upper Limb Compensatory Assessment after Stroke	775
<i>Nurdiana Nordin, Shane Xie, Burkhard Wuensche</i>	
Model of Traction System and Speed Control for Single Train of Taipei Mass Rapid Transit System	781
<i>Bwo-Ren Ke, Hari Maghfiroh, Kuo Lung Lian, Nanming Chen, Dawit Fekadu Teshome</i>	

Strain Field Sensing and Reconstruction for a Thin-Wall Plate	788
<i>Man Yu, Jiajie Guo, Kok-Meng Lee</i>	
Design of an Ultra Thin Strain Sensor Using Superelastic Nitinol for Applications in Minimally Invasive Surgery	794
<i>Amit Srivastava, Ran Xu, Abelardo Escoto, Christopher D. W. Ward, Rajnikant V. Patel</i>	
In Situ Strain Monitoring in Gas Tungsten Arc Welding Processes	800
<i>Zongyao Chen, Jian Chen, Zhili Feng, Yuming Zhang</i>	
Single-Pixel Tactile Sensor Based on Piezoelectric-Charge-Gated Thin-Film Transistor	805
<i>Weiwei Li, Emad Iranmanesh, Kai Wang</i>	
Modelling of a Dielectric Electroactive Polymer Tubular Shape Sensor for Pressure Measurements	810
<i>Jonathan Chavanne, Yoan Civet, Yves Perriard</i>	
Control Concepts with Acceleration Feedback for Servo Systems	816
<i>Martin Griese, Juergen Maas</i>	
Enhanced Anti-Windup Compensation for the Dual Stage Hard Disk Drive Systems with Amplitude Saturation	822
<i>Shiying Zhou, Masayoshi Tomizuka</i>	
Fundamental Performance Limitations in PID Controlled Elastic Two-mass Systems	828
<i>Martin Goubej</i>	
Adaptive Frequency-Shaped Sliding Mode Control for Narrow-Band Disturbance Rejection	834
<i>Minghui Zheng, Masayoshi Tomizuka</i>	
Robust and Adaptive Nonlinear Regulation of Thermoacoustic Oscillations in Rijke-Type Systems	840
<i>William Thomas Mackunis, Mahmut Reyhanoglu, Krishna Bhavithavya Kidambi, Jaime Rubio Hervas</i>	
Modeling and Robust Control of Miniaturized Magnetically-Actuated Optical Image Stabilizers	846
<i>Alireza Alizadegan, Pan Zhao, Ryozo Nagamune, Mu Chiao</i>	
The Standard for the Selection of the Appropriate GPS in the Outdoor Environment & the Analysis of the Performance for the Improvement of Reception	852
<i>Yo-Seop Hwang, Jong-Woo An, Jangmyung Lee</i>	
Laser-Based Gap Finding Approach to Mobile Robot Navigation	858
<i>Adewole Adekola Ayoade, Marshall Sweatt, John P H Steele, Qi Han, Khaled Al-Wahedi, Hamad Karki</i>	
Multiple Model Adaptive Estimator with Model Set Update	864
<i>Can Ulas Dogruer</i>	
Particle Filter Based Landmark Mapping for SLAM of Mobile Robot Based on RFID System	870
<i>Jun Wang, Yasutake Takahashi</i>	
An Improved FastSLAM Algorithm Based on an Omni-Directional Wheeled Mobile Robot	884
<i>Hao Chang, Huijuan Zhang, Xing Yang, Wei Yang, Chin-Yin Chen, Guilin Yang</i>	
Learning from Demonstration with Partially Observable Task Parameters Using Dynamic Movement Primitives and Gaussian Process Regression	889
<i>Tohid Alizadeh, Milad S. Malekzadeh, Soheila Barzegari</i>	
Cartesian Tasks Oriented Friction Compensation through a Reinforcement Learning Approach	895
<i>Loris Roveda, Giacomo Pallucca, Nicola Pedrocchi, Francesco Braghin, Lorenzo Molinari Tosatti</i>	
Lane Changing Prediction at Highway Lane Drops Using Support Vector Machine and Artificial Neural Networks Classifier	901
<i>Yangliu Dou, Fengjun Yan, Daiwei Feng</i>	
Neural Network-Based Adaptive Control of Uncertain Multivariable Systems: Theory and Experiments	907
<i>Kasra Esfandiari, Esmail Mehrabi, Farzaneh Abdollahi, Ali Talebi</i>	
Expert-Prescribed Weighting for Support Vector Machine Classification	913
<i>Nikhil Bajaj, Niko Murrell, Julie Whitney, Jan P. Allebach, George Chiu</i>	
Estimation of Desired Motion Intention Using Extreme Learning Machine for Upper Limb Assist Exoskeleton	919
<i>Abdul Manan Khan, Fatima Khan, Changsoo Han</i>	
Robust Non-Model-Based Sliding Mode Control for Robot Manipulator with Unknown Deadzone and Disturbance Using Preselected Tracking Performance	924
<i>Seongik Han, Hyunuk Ha, Jangmyung Lee</i>	
Adaptive PD Plus Sliding Mode Control for Robotic Manipulator	930
<i>Puren Ouyang, Jun Tang, Wenhui Yue, Shanuka Jayasinghe</i>	
Gyroscopic Forces for Mechanical Manipulators	935
<i>Nan Wei, Soo Jeon</i>	
Adaptive Backstepping Tracking Control of Robot Manipulators Considering Actuator Dynamic	941
<i>Xiaorong Huang, Hongli Gao, Jun Li, Run Mao, Juan Wen</i>	
Passivity-Based Tracking Control of Robot Manipulators with Torque Constraints	947
<i>Ollin PeOaloza-MejOa, Carlos Ojeda-Perez, Hector Javier Estrada-Garcia</i>	

Modeling and Control of a Flexible-Structure-Mounted Manipulator	953
<i>Mahmut Reyhanoglu, Derek Hoffman</i>	
Design and Control of a Recovery System for Legged Robots	958
<i>Kevin Green, Nils Smit-Anseeuw, Rodney Gleason, C. David Remy</i>	
Biologically Inspired Robotic Leg for High-Speed Running	970
<i>Yoon Haeng Lee, Luong Tin Phan, Dong Youn Kim, Hyunyoung Lee, Ja Choon Koo, Hyouk Ryeol Choi</i>	
A Nonlinear Complementary Filter for Attitude Estimation with Dynamics Compensation of MARG Sensor	976
<i>Ken Masuya, Tomomichi Sugihara</i>	
Design and Characterization of a Miniature Monolithic Piezoelectric Hexapod Robot	982
<i>Shannon Andrew Rios, Andrew J. Fleming, Yuen Kuan Yong</i>	
Development of the Compliance Control for Hexapod Walking Robot LCR200	987
<i>Won-Suk Ji, Bong Huan Jun, Baek-Kyu Cho</i>	
A Novel Capacitive Type Torque Sensor for Robotic Applications	993
<i>Yong Bum Kim, Uikyum Kim, Dong-Yeop Seok, Jinho So, Hyouk Ryeol Choi</i>	
Threshold Sensing Signal Construction from a Capacitive Sensor for MEMS Gyroscope Calibration	999
<i>Yi Chen, Ethem Erkan Aktakka, Jong-Kwan Woo, Kenn Oldham</i>	
Smart Sensors for Process Analytical Technology	1005
<i>Niall O' Mahony, Trevor Murphy, Krishna Panduru, Daniel Riordan, Joseph Walsh</i>	
Design and Implementation of a Simple and Low-Cost Optoelectronic Force Sensor for Robotic Applications	1011
<i>Mohssen Hosseini, Gianluca Palli, Claudio Melchiorri</i>	
Development of Low-Cost Wire Type Linear Potentiometer for Flexible Spherical Actuator	1017
<i>Yasuko Matsui, Tetsuya Akagi, Shujiro Dohda</i>	
Enhancing Measurement Quality through Active Sampling in Mobile Air Quality Monitoring Sensor Networks	1022
<i>Adrian Arfire, Ali Marjovi, Alcherio Martinoli</i>	
An Output Regulation Approach to Rotor Autobalancing in Active Magnetic Bearing Systems with Input Delay	1028
<i>Se Young Yoon, Long Di, Zongli Lin</i>	
Distributed Guidance for Interception by Using Multiple Rotary-Wing Unmanned Aerial Vehicles	1034
<i>Bing Zhu, Abdul Hanif Zaini, Lihua Xie, Guoan Bi</i>	
Real-Time Sensor Fault Detection and Compensation in a Passive Magnetic Field-Based Localization System	1040
<i>Zhenglong Sun, Shaohui Foong, Luc Marechal, Tee Hui Teo, U-Xuan Tan, Asim Shabbir</i>	
A Secure Data Hiding System Based on Over-Complete Dictionary Partitioning	1047
<i>Guang Hua, Lifan Zhao, Guoan Bi</i>	
Development of Fully Autonomous Hybrid UAV U-Lion with Vertical and Cruise Flying Capabilities	1053
<i>Kangli Wang, Yijie Ke, Ben M. Chen</i>	
Leader-Following Consensus of Multiple Unmanned Aerial Vehicles with Input Constraints and Local Coordinate Frames	1061
<i>Xiao Yu, Lu Liu, Gang Feng</i>	
Distributed Coverage Control of Multi-Robot System for Any Environments	1067
<i>Trung Dung Ngo</i>	
Leader-Following Consensus of Multi-Agent Systems under Hierarchical Nearly Cyclic Pursuit	1073
<i>Trung-Dung Ngo</i>	
Distributed Coverage Control for Mobile Robots with Limited-Range Sector Sensors	1079
<i>Hamed Fathalizadeh Parapari, Farzaneh Abdollahi, Mohammad Bagher Menhaj</i>	
On Designing of Leader-Follower Impedance Consensus Controllers for Lagrangian Multi-Agent Systems	1085
<i>Abbas Tariverdi, Iman Sharifi, Heidar Ali Talebi, Masoud Shafiee</i>	
Adaptive Formation Control with Self-Equilibrium Forces	1091
<i>Yoichi Masuda, Kenji Nagase</i>	
A Distributed Communication Protocol for Modular Robotic Systems	1097
<i>Trung-Dung Ngo</i>	
Experimental Implementation of Extended Kalman Filter-Based Optical Beam Tracking with a Single Receiver	1103
<i>Pratap Bhanu Solanki, Xiaobo Tan</i>	
Integrating Principal Component Analysis and Optimal Histogram Estimation for Bayesian Control Loop Diagnosis	1109
<i>Wenbing Zhu, Zijiang Yang, Meishuang Tang, Sun Zhou, Bin Yao, Guoli Ji</i>	

Active Touch Point Selection with Travel Cost in Tactile Exploration for Fast Shape Estimation of Unknown Objects	1115
<i>Takamitsu Matsubara, Kotaro Shibata, Kenji Sugimoto</i>	
Model Recovery of Unknown Objects from Discrete Tactile Points	1121
<i>Haiwei Gu, Yuanfei Zhang, Shaowei Fan, Minghe Jin, Hua Zong, Hong Liu</i>	
High Gain Observer for Speed-Sensorless Motor Drives: Algorithm and Experiments	1127
<i>Yebin Wang, Lei Zhou, Scott Bortoff, Akira Satake, Shinichi Furutani</i>	
Biologically Inspired Vision Based Control Using Featureless Time-to-Contact Estimations	1133
<i>Haijie Zhang, Jianguo Zhao</i>	
Sonic-speed Manipulation of a Bull Whip Using a Robot Manipulator	1139
<i>Yuji Yamakawa, Kazunori Odani, Masatoshi Ishikawa</i>	
Topology and Size Optimization of an Adaptive Compliant Gripper to Maximize the Geometric Advantage.....	1145
<i>Chih-Hsing Liu, Guo Feng Huang, Chen-Hua Chiu, Ta-Lun Chen</i>	
Design and Shape Control of a Three-Section Continuum Robot	1151
<i>Bo Ouyang, Yunhui Liu, Dong Sun</i>	
Modeling and Control of an Intrinsic Continuum Robot Actuated by Pneumatic Artificial Muscles	1157
<i>Bongsoo Kang, Edward J. Park</i>	
Online TCP Trajectory Planning for Redundant Continuum Manipulators Using Quadratic Programming	1163
<i>Valentin Falkenhahn, Frank A. Bender, Alexander Hildebrandt, Ruediger Neumann, Oliver Sawodny</i>	
Motion Control of Articulated Rigid Bodies Used to Model Deformable Biomaterials.....	1169
<i>Ai-Ping Hu, Noah Harvey, Clarence Washington</i>	
Needle Path Control During Insertion in Soft Tissue Using a Force-Sensor-Based Deflection Estimator	1174
<i>Thomas Lehmann, Carlos Rossa, Ronald Sloboda, Nawaid Usmani, Mahdi Tavakoli</i>	
Human-Integrated Automation of Suturing Task with One-Master Two-Slave System for Laparoscopic Surgery	1180
<i>Kengo Watanabe, Takahiro Kanno, Kazuhisa Ito, Kenji Kawashima</i>	
Introducing Notched Flexible Needles with Increased Deflection Curvature in Soft Tissue	1186
<i>Mohsen Khadem, Carlos Rossa, Nawaid Usmani, Ronald Sloboda, Mahdi Tavakoli</i>	
Black-Box Modeling and Control of Steerable Ablation Catheters.....	1192
<i>Mahta Khoshnam Tehrani, Peyman Yadmellat, Rajnikant V. Patel</i>	
Constrained Optimal Control of Needle Deflection for Semi-Manual Steering	1198
<i>Carlos Rossa, Mohsen Khadem, Ronald Sloboda, Nawaid Usmani, Mahdi Tavakoli</i>	
Real-Time Needle Shape Prediction in Soft-Tissue Based on Image Segmentation and Particle Filtering	1204
<i>Jay Carriere, Carlos Rossa, Ronald Sloboda, Nawaid Usmani, Mahdi Tavakoli</i>	
Tracking Control of Rotary Steerable Toolface in Directional Drilling.....	1210
<i>Xingyong Song, Madhu Vadali, Yuzhen Xue, Jason Dykstra</i>	
Model-Based Design and Analysis of a Subsea High Integrity Pressure Protection System (HIPPS)	1216
<i>Amine Meziou, Taoufik Wassar, Majdi Chaari, Matthew Francheck, Reza Tafreshi</i>	
Modeling Offshore Ropes for Deepwater Lifting Applications.....	1222
<i>Markus Richter, Fabian Zeil, Dominik Walser, Klaus Schneider, Oliver Sawodny</i>	
Model-Based Early Gas Kick and Well Loss Detection.....	1228
<i>Ala Eddine Omrani, Matthew Francheck, Karolos Grigoriadis, Reza Tafreshi</i>	
High-Speed Response of the Pneumatic Actuator Used in a Peristaltic Crawling Robot Inspecting Long-Distance Gas Pipes.....	1234
<i>Yuki Tanise, Tatsuya Kishi, Shota Yamazaki, Yasuyuki Yamada, Taro Nakamura</i>	
Adaptive Parameter and Gain RISE Control of a Flexure-Based Dual-Drive -H- Gantry	1240
<i>Nazir Kamaldin, Silu Chen, Chun Jeng Kong, Chek Sing Teo, Kok Kiong Tan</i>	
A Differential Evolution Approach for Coverage Optimization of Visual Sensor Networks with Parallel Occlusion Detection	1246
<i>Boyu Zhang, Xuebo Zhang, Xiang Chen, Yongchun Fang</i>	
High-Resolution, Real-Time to Superfast 3D Imaging Techniques	1252
<i>Beiwen Li, Song Zhang</i>	
A Compact Magnetic Directional Proximity Sensor for Spherical Robots	1258
<i>Fang Wu, Luc Marechal, Akash Vibhute, Shaohui Foong, Gim Song Soh, Kristin Wood</i>	
Cutting Tool Temperature Field Reconstruction Using Hybrid Macro/micro Scale Modeling for Machining of Titanium Alloy.....	1265
<i>Jingjing Ji, Yang Huang, Kok-Meng Lee</i>	

Harmonic Response of an Eddy-Current Sensor for Real-Time Measurement of Thin-Wall Titanium Alloy Workpiece	1271
<i>Kok-Meng Lee, Chun-Yeon Lin, Min Li, Bingjie Hao</i>	
Adaptive Motion Control in Uncertain Environments using Tactile Feedback	1277
<i>Felix Sygulla, Christoph Schuetz, Daniel Rixen</i>	
Sampling-Based Path Planning with Goal Oriented Sampling	1285
<i>Gitae Kang, Yong Bum Kim, Won Suk You, Young Hun Lee, Hyun Seok Oh, Hyungpil Moon, Hyouk Ryeol Choi</i>	
On Single-Basis Online Trajectory Decomposition for Control Applications	1291
<i>Jiangbo Liu, Qingze Zou</i>	
Robust Trajectory Tracking Control for an Ultra Lightweight Tendon Driven Series Elastic Robot Arm	1297
<i>JerOme Kirchhoff, Oskar Von Stryk</i>	
Recent Progress on Sampling Based Dynamic Motion Planning Algorithms	1305
<i>Andrew Short, Zengxi Pan, Nathan Larkin, Stephen Van Duin</i>	
Neural-Network Based Model Predictive Control for Piezoelectric-Actuated Stick-Slip Micro-Positioning Devices	1312
<i>Weichuan Liu, Long Cheng, Chao Zhou, Zeng-Guang Hou, Min Tan</i>	
Adaptive Tilting Angles for a Dual-Probe AFM System to Increase Image Accuracy	1318
<i>Yu-Ting Lo, Jim-Wei Wu, Wei-Chih Liu, Da-Wei Liu, Kuang-Yao Chang, Li-Chen Fu</i>	
Influence of Piezoelectric Actuator Geometry on Resonant Vibrating Amplitude	1324
<i>Dan Shi, Yoan Civet, Yves Perriard</i>	
Experimental Verification for a Theoretical Model of Contact-Mode Triboelectric Nano-Generators	1329
<i>Daewoong Hong, Moon Gu Lee, Young-Man Choi, Jaehwa Jeong</i>	
Design, Modeling, and Characterization of an XY Nanopositioning Stage Constructed from a Single Sheet of Piezoelectric Material	1333
<i>Andrew J. Fleming, Garth Berriman, Yuen Kuan Yong</i>	
Design and Modelling of Novel Modular 2 DOF Microsurgical Forceps for Trans-Oral Laser Microsurgeries	1339
<i>Manish Chauhan, Leonardo Mattos, Darwin G. Caldwell, Nikhil Deshpande</i>	
Multi-Objective Optimization for an RFID-Enabled Automated Warehousing System	1345
<i>Mohammed Ahmed, Alyahya Saleh, Wang Qian</i>	
A Geometric Programming Approach to the Optimization of Mechatronic Systems in Early Design Stages	1351
<i>Yuchao Li, Anqing Duan, Alexander Gratner, Lei Feng</i>	
Addressing Simplicity, Dexterity and Usability of Compact, Multi-Degree-Of-Freedom Mechatronic Devices	1357
<i>Donald Dalli, Michael A. Saliba</i>	
Built-In HiL Simulator: A Concept for Faster Prototyping of Navigation- and Communication-Based Control Systems	1363
<i>Matthias Reiter, Matthias Ludwig Wehr, Dirk Abel</i>	
Design and HiL Setup of an Autonomous Vehicle for Crowded Environments	1370
<i>Sukru Yaren Gelbal, Erdinc Altug, Faruk Keceli</i>	
Practical Applications of Simulation-Based Control	1376
<i>Juergen Rossmann, Magdalena Dimartino, Marc Priggemeyer, Ralf Waspe</i>	
Optimization for Discriminability of Soft Tissues in Haptic Tele-Surgery System with Flexible Surgical Tool	1382
<i>Sangsoo Park, Sang-Yun Baek, Jeha Ryu</i>	
Analysis of the Magnetic Torque on a Tilted Permanent Magnet for Drug Delivery in Capsule Robots	1386
<i>Fredy Munoz, Gursel Alici, Hao Zhou, Weihua Li, Metin Sitti</i>	
Classical Preisach Model of Hysteretic Behavior in a Da Vinci Instrument	1392
<i>Farshad Anooshahpour, Ilia G. Polushin, Rajnikant V. Patel</i>	
Incompressible Liquid Based Force Sensible Silicone Retractor Attachable to Surgical Suction Instruments	1398
<i>Toshio Koyama, Takeshi Yoneyama, Mitsutoshi Nakada, Tetsuyou Watanabe</i>	
Real-Time Measurement of Tool-Tissue Interaction Forces in Neurosurgery: Quantification and Analysis	1405
<i>Yaser Maddahi, Jordan J. Huang, Jade A. Huang, Liu Shi Gan, Hamidreza Hoshyarmansh, Kouros Zareinia, Garnette Sutherland</i>	
A Force Estimation Scheme for End-Effector Interacting with Non-Passive Soft Tissue in Robotic Beating Heart Surgery	1411
<i>Maryam Sharifi, Iman Sharifi, Heidar Ali Talebi, Masoud Shafiee</i>	

Potential Benefit of Regenerative Braking on Electric Bicycles	1417
<i>Oliver Maier, Markus Krause, Sebastian Krauth, Nico Langer, Patrick Pascher, Juergen Wrede</i>	
Parametric Optimization of Stored Energy in Robots with Regenerative Drive Systems	1424
<i>Poya Khalaf, Hanz Richter</i>	
Design Optimization and Control of a Crank-Slider Actuator for a Lower-Limb Prosthesis with Energy Regeneration	1430
<i>Holly Warner, Dan Simon, Hanz Richter</i>	
Predictive Energy Management Strategy for Electric Vehicles based on Estimation of Preceding Vehicle Future Movements	1436
<i>Shuwei Zhang, Donghao Zhang, Yugong Luo, Junmin Wang, Keqiang Li</i>	
DC/DC Converter Control for Voltage Ripple Reduction in Electric Vehicles	1442
<i>Conrad Sagert, Markus Walter, Oliver Sawodny</i>	
Stair-Climbing and Energy Consumption Evaluation of a Leg-Tracked Quadruped Robot	1448
<i>Jie Wang, Alejandro Ramirez-Serrano</i>	
Development of a Novel Elastic Load-Carrying Device: Design, Modeling and Analysis	1454
<i>Tong Li, Qingguo Li, Tao Liu, Jingang Yi, Guofang Gong</i>	
A Method of Structure Optimization for High-Speed and Heavy-Load Robot Based on Dynamic Characteristic Analysis	1461
<i>Le Liang, Yanjie Liu, Haijun Han</i>	
Research on pose error relations of parallel radiotherapy bed based on total differential method	1467
<i>Shiyi Yang, Fengfeng Zhang, Licheng Fan, Lining Sun, Jingang Yi</i>	
Modeling and Performance Analysis of a Magnetorheological Fluid Actuation System	1473
<i>Chen Si, Xiaocong Zhu, Bin Yao, Jian Cao</i>	
Dynamic Simulation of a Hydraulic Exoskeleton Robot Based on Virtual Prototyping	1479
<i>Shuo Ding, Xiaoping Ouyang, Boqian Fan, Huayong Yang, Guofang Gong</i>	
Slip Detection in Prosthetic Hand Grasping by Using the Discrete Wavelet Transform Analysis	1485
<i>Yancheng Wang</i>	
Analysis of Atmospheric Circulation for Physicochemical Regenerative Environment Control and Life Support System in Space Station	1491
<i>Yunhua Li, Mingbo Lv, Lina Ling, Liman Yang, Dong Li, Sujun Dong, Yun-Ze Li</i>	
Configuration Design and Numerical Analysis of a Martian Dust Storm Simulation Wind Tunnel for Mars Airplanes and Rovers	1497
<i>Wei Guo, Yunhua Li, Yun-Ze Li, Shengnan Wang, Ji-Xiang Wang, Yang Liu, Shaoping Tian</i>	
Performance Analysis of a Self-driven Adaptive Cold-plate, an Experimental Approach	1503
<i>Ji-Xiang Wang, Hongsheng Zhang, Yun-Ze Li, Shengnan Wang, Ya-Nan Zhang, Ming Liang Zhong</i>	
Spherical Mobile Robot Based on a Tensegrity Structure with Curved Compressed Members	1509
<i>Valter Bohm, Tobias Kaufhold, Florian Schale, Klaus Zimmermann</i>	
Analysis of Mapping Dispersion Based on SVD for Tele-Navigation with Command Data Compensation	1515
<i>Yasuharu Kunii, Kohei Maekawa, Yuki Utsuno, Ryota Karitani</i>	
Model-based Selective Catalytic Reduction Systems Aging Estimation	1521
<i>Yao Ma, Junmin Wang</i>	
Development of an End-Effector Mounted Tracking Methodology for Feedback Control of High Precision 3-DOF Planar Motions	1527
<i>Leon Scott Clark, Bijan Shirinzadeh, Julian Smith, Bin Yao, Sergej Fatikow</i>	
Simulation of 3-Axis State Feedback Controller with Bang-Bang Control for Positioning Mechanism Driven by 6 Piezoelectric Actuators	1533
<i>Fumiya Shono, Noriyuki Mouri, Takehiro Higuchi, Ohmi Fuchiwaki</i>	
Powder Conveyance Experiments with Peristaltic Conveyor Using a Pneumatic Artificial Muscle	1539
<i>Shun Yoshihama, Suguru Takano, Koichi Kato, Yasuyuki Yamada, Taro Nakamura</i>	
A Geometrical Work Piece Localization Algorithm for Rapid Robot Programming	1545
<i>Hongzhen Zhao, Guilin Yang, Chengning Zhang, Chin-Yin Chen</i>	
Control of a Flexible Magnetic Levitated Rotor Using the Computed Torque Method in Combination with Stabilizing Filters	1552
<i>Markus Hutterer, Manfred Schroedl</i>	
Online Parameter Identification for a Linear Parameter-Varying Model of Large-Scale Lightweight Machine Tool Structures with Pose-Dependent Dynamic Behavior	1558
<i>Stefanie Apprich, Frederik Wulle, Andreas Pott, Alexander Verl</i>	
Programmable Robotic Chains: Kinematics and Dynamics of a Scalable Tendon-Driven Under-Actuated Multibody System	1564
<i>Matteo Lasagni, Kay Roemer</i>	

Maximum Wrench Feasible Payload in Cable-Driven Parallel Robots Equipped with a Serial Robot	1572
<i>Gamal Elghazaly, Marc Gouttefarde, Vincent Creuze, FranOois Pierrrot</i>	
Applications of Slider Chain Inversion in Control Actuation Systems	1579
<i>Ozgur Hasturk</i>	
Tendon-Sheath Analysis for Modeling and Control of Steerable Ablation Catheters	1585
<i>Mahta Khoshnam Tehrani, Rajnikant V. Patel</i>	
Stiffness Control of Pneumatic Actuators to Simulate Human Tissues Behavior on Medical Haptic Simulators	1591
<i>Nicolas Herzig, Richard Moreau, Arnaud Leleve, Minh Tu Pham</i>	
An Integrator-Backstepping Control Approach for Out-Of-Plane Needle Deflection Minimization	1598
<i>Michael Waine, Carlos Rossa, Nawaid Usmani, Ronald Sloboda, Mahdi Tavakoli</i>	
Partial Estimation of Needle Tip Orientation in Generalized Coordinates in Ultrasound Image-Guided Needle Insertion.....	1604
<i>Bitra Fallahi, Carlos Rossa, Ronald Sloboda, Nawaid Usmani, Mahdi Tavakoli</i>	
Dynamics and Characteristics of Thin Film Batteries Cycled Over Capacitive Load	1610
<i>Kendall Teichert, Kenn Oldham</i>	
Development of Wireless Power Transfer System for Robot Arm with Rotary and Linear Movement	1616
<i>Satoru Kikuchi, Tsutomu Sakata, Eiji Takahashi, Hiroshi Kanno</i>	
Finite Element Analysis and Single-Pixel Evaluation of a Pixelated Energy-Harvesting Array by Integrating PVDF Film with Dual-Gate Thin Film Transistors	1622
<i>Emad Iranmanesh, Weiwei Li, Kai Wang</i>	
Design Development of a Flywheel Energy Storage System for Isolated Pacific Island Communities	1628
<i>David Aitchison, Maurizio Cirrincione, Niels Leijtens</i>	
Event-Triggered Control for Bilateral Teleoperation with Time Delays	1634
<i>Shin-Chen Hu, Chen-Yu Chan, Yen-Chen Liu</i>	
Robust Coordination Control Interface for Networked Based Telerobotic System	1640
<i>Shafiqul Islam, Jorge Dias, Lakmal Seneviratne</i>	
Reproducing a Laser Pointer Dot on a Secondary Projected Screen	1645
<i>Siyao Hu, Katherine J. Kuchenbecker</i>	
Exploring the Use of Light and Display Indicators for Communicating Directional Intent	1651
<i>Moondeep Shrestha, Ayano Kobayashi, Tomoya Onishi, Hayato Yanagawa, Yuta Yokoyama, Erika Uno, Alexander Schmitz, Mitsuhiro Kamezaki, Shigeki Sugano</i>	
Integrated Estimation Structure for the Tire Friction Forces in Ground Vehicles	1657
<i>Ehsan Hashemi, Mohammad Pirani, Amir Khajepour, Baris Fidan, Alireza Kasaiezadeh, Shih-Ken Chen, Bakhtiar Litkouhi</i>	
Motion Control of Autonomous Aggressive Vehicle Maneuvers	1663
<i>Aliasghar Arab, Kaiyan Yu, Jingang Yi, Yingshu Liu</i>	
Geometric Path Tracking Algorithm for Autonomous Driving in Pedestrian Environment	1669
<i>Hans Andersen, Zhuang Jie Chong, You Hong Eng, Scott Pendleton, Marcelo H Ang Jr</i>	
Disturbance Compensation for Iterative Control of Suspension Durability Test Rigs	1675
<i>Tino Mueller, Ulrich Voegele, Christian Endisch</i>	
An Efficient Metaheuristic Optimization Approach to the Problem of PID Tuning for Automatic Voltage Regulator Systems	1682
<i>Amir Afroomand, Saeed Tavakoli, Mahdi Tavakoli</i>	
Analysis and Compensation of Control Valve Stiction-Induced Limit Cycles	1688
<i>Lei Fang, Jiandong Wang, Xiaobo Tan, Qunli Shang</i>	
Design of Distributed Controllers for Component Swapping Modularity Using Linear Matrix Inequalities	1694
<i>Azad Ghaffari, A. Galip Ulsoy</i>	
Control of Temperature Conditioning Systems with Distributed Actuator Dynamics	1700
<i>Stefan Schaut, Simon Alt, Oliver Sawodny</i>	
Author Index	