

# **2012 12th IEEE International Workshop on Advanced Motion Control**

**(AMC 2012)**

**Sarajevo, Bosnia and Herzegovina  
25-27 March 2012**



**IEEE Catalog Number: CFP12403-PRT  
ISBN: 978-1-4577-1072-8**

# Table of Content of the Book of Abstracts

## OS-3 Compliant Locomotion Manipulation and Actuation

### **Variable Physical Damping Actuators (VPDAs): Facilitating the Control and Improving the Performance of Compliant Actuation Systems '223**

Matteo Laffranchi (Italian Institute of Technology, Italy), Nikos Tsagarakis (Italian Institute of Technology, Italy), Darwin Caldwell (Italian Institute of Technology, Italy)

### **A Framework for Sensorless Torque Estimation and Control in Wearable Exoskeletons '229**

Barkan Ugurlu (Toyota Technological Institute, Japan), Masayoshi Nishimura (Toyota Technological Institute, Japan), Kazuyuki Hyodo (Toyota Technological Institute, Japan), Michihiro Kawanishi (Toyota Technological Institute, Japan), Tatsuo Narikiyo (Toyota Technological Institute, Japan)

### **Legged robot locomotion based on free vibration '236**

Fumiya Iida (ETH Zurich, Switzerland), Murat Reis (ETH Zurich, Switzerland), Nandan Maheshwari (ETH Zurich, Switzerland), Keith Gunura (ETH Zurich, Switzerland), Simon Hauser (ETH Zurich, Switzerland)

### **Torque-control based Compliant Actuation of a Quadruped Robot '242**

Michele Focchi (Italian Institute of Technology, Italy), Thiago Boaventura (Italian Institute of Technology, Italy), Claudio Semini (Italian Institute of Technology, Italy), Marco Frigerio (Italian Institute of Technology, Italy), Jonas Buchli (Italian Institute of Technology, Italy), Darwin G. Caldwell (Italian Institute of Technology, Italy)

### **Image-based Visual Feedback Control for Biped Walking Robot '248**

Naoki Oda (Chitose Institute of Science and Technology, Japan), Junichi Yoneda (Chitose Institute of Science and Technology, Japan), Takahiro Abe (Chitose Institute of Science and Technology, Japan)

### **Control of a Biped Robot Driven by Elastomer-based Series Elastic Actuators '254**

Kouki Abe (Yokohama National University, Japan), Takahiro Suga (Yokohama National University, Japan), Yasutaka Fujimoto (Yokohama National University, Japan)

## OS-4 Network-based Control

### **An Arrangement Identification Method for Parallel Multi-Degrees-of-Freedom Teleoperation Systems Based on Levenberg-Marquardt Method '25:**

Yoshiyuki Hatta (Yokohama National University, Japan), Tomoyuki Shimono (Yokohama National University, Japan), Naoki Motoi (Yokohama National University, Japan)

### **Controller Design based on Sum-of-Squares for Time-varying Delay Systems '266**

Masanori Nagahara (Shibaura Institute of Technology, Japan), Yusuke Suzuki (Shibaura Institute of Technology, Japan), Yutaka Uchimura (Shibaura Institute of Technology, Japan)

### **PD Controller with LPF based Jitter Buffer for Real-Time Communication '272**

Daisuke Yashiro (Keio University, Japan), Takahiro Yakoh (Keio University, Japan)

### **Data Transmission using Motion Detection Based on Sigma-Delta Modulation for Bilateral Control '278**

Fumiya Mitome (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

### **A Design Method of Time-Delay Systems with Communication Disturbance Observer by Using Pade Approximation '284**

Kenji Natori (Aoyama Gakuin University, Japan)

### **Network in the Loop Platform for Research and Training in Bilateral Control '28:**

Ahmet Kuzu (Tubitak-Bilgem-Bte, Turkey), Seta Bogosyan (University of Alaska Fairbanks, USA), Metin Gokasan (Istanbul Technical University, Turkey)

## CO – 1      **Control I**

### **Nonlinear Two-Dimensional Modeling of a McPherson Suspension for Kinematics and Dynamics Simulation '296**

Jorge Hurel (ESPOL, Ecuador), Anthony Mandow (Universidad de Málaga, Spain), Alfonso García-Cerezo (Universidad de Málaga, Spain)

### **Improving the Performance of Higher Order Disturbance Observers: A Position Approach '2: 2**

Emre Sariyildiz (Keio University, Japan), Davide Cattin (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

### **Mechatronic Control System based on a Finite State Machine '2: 8**

Franc Hanžič (Doorson d.o.o., Slovenia), Karel Jezernik (FERI, University of Maribor, Slovenia), Slavko Cehner (Doorson d.o.o., Slovenia)

### **Design of Controller Parameters According to the Transient Indices Using the Dominant Poles Method '2; 6**

Boris Bosnjak (MARUS-ATM, Croatia), Petar Crnosija (Polytechnics of Zagreb, Croatia), Damir Sumina (University of Zagreb, Croatia), Igor Erceg (University of Zagreb, Croatia)

### **Open flexible P-controller design '322**

Mikulas Huba (STU Bratislava, Slovakia)

### **Modular disturbance observer based constrained PI-controller design '328**

Mikulas Huba (STU Bratislava, Slovakia)

## OS-1-1      **Haptics for Human Support**

### **Resonance Ratio Control Based on Coefficient Diagram Method for Force Control of Flexible Robot System '334**

Chowarit Mitsantisuk (Nagaoka University of Technology, Japan), Manuel Nandayapa (Nagaoka University of Technology, Japan), Kiyoshi Ohishi (Nagaoka University of Technology, Japan), Seiichiro Katsura (Keio University, Japan)

### **Micro macro bilateral control in the frequency domain '33:**

Midori Miyagaki (Keio University, Japan), Kohei Ohnishi (Keio University, Japan)

### **Wideband Force Control System based on Friction Free and Noise Free Observation '346**

Thao Tran Phuong (Nagaoka University of Technology, Japan), Chowarit Mitsantisuk (Nagaoka University of Technology, Japan), Kiyoshi Ohishi (Nagaoka University of Technology, Japan)

### **Multilateral Force Feedback Control using Dynamical Modal Transformation '352**

Wataru Yamanouchi (Keio University, Japan), Seiichiro Katsura (Keio University, Japan)

### **Bilateral Control with Local Force Feedback for Delay-Free Teleoperation '358**

Takumi Ishii (Keio University, Japan), Seiichiro Katsura (Keio University, Japan)

### **Force-based Variable Compliance Control Method for Bilateral System with Different Degree of Freedom '364**

Naoki Motoi (Yokohama National University, Japan), Tomoyuki Shimono (Yokohama National University, Japan), Ryogo Kubo (Keio University, Japan), Atsuo Kawamura (Yokohama National University, Japan)

## OS-2-1      **Smart Precise Motion Control – Controller design for precision motion control**

### **Trajectory Tracking Control Method Based on Zero-Phase Minimum-Phase Factorization for Nonminimum-Phase Continuous-Time System '36:**

Takayuki Shiraishi (University of Tokyo, Japan), Hiroshi Fujimoto (University of Tokyo, Japan)

### **A Feedback Controller Design Based on Circle Condition for Improvement of Disturbance Suppression '376**

Yoshihiro Maeda (Nagoya Institute of Technology, Japan), Makoto Iwasaki (Nagoya Institute of Technology, Japan)

**Optimal Mechanical Parameter Design Using Self Resonance Cancellation Control for Gantry-Type High Precision Stage '382**

Yushi Seki (University of Tokyo, Japan), Hiroshi Fujimoto (University of Tokyo, Japan), Kazuaki Saiki (Nikon Corporation, Japan)

**A Coordinate Design of Two-Degrees-Of-Freedom Controller for Fast and Precise Positioning '388**

Takanori Kato (Nagoya Institute of Technology, Japan), Yoshihiro Maeda (Nagoya Institute of Technology, Japan), Makoto Iwasaki (Nagoya Institute of Technology, Japan), Hiromu Hirai (Nagoya Institute of Technology, Japan)

**Feedback Controller Design Considering Plant Dynamics of Table Drive System in Microscopic Displacement Region '394**

Kazuaki Ito (Toyota National College of Technology, Japan), Yuichi Katsuki (Nagoya Institute of Technology, Japan), Wataru Maebashi (Nagoya Institute of Technology, Japan), Makoto Iwasaki (Nagoya Institute of Technology, Japan)

**Adaptive Robust Precision Motion Control of Linear Motors with High Frequency Flexible Modes '399**

Zheng Chen (Zhejiang University, China), Bin Yao (Zhejiang University, China and Purdue University, USA), Qingfeng Wang (Zhejiang University, China)

**OS-5            Advanced Sensing, Estimation and Its Applications**

**Improving Bilateral Control Feedback by Using Novel Velocity and Acceleration Estimation Methods in FPGA '3: 5**

Manuel Nandayapa (Nagaoka University of Technology, Japan), Chowarit Mitsantisuk (Nagaoka University of Technology, Japan), Kiyoshi Ohishi (Nagaoka University of Technology, Japan)

**A Design of the Preference Acquisition Detection System using the EEG '3: ;**

Yuna Negishi (Keio University, Japan), Yasue Mitsukura (Keio University, Japan), Hironobu Fukai (Ritsumeikan University, Japan), Yohei Tomita (ESPCI, France)

**Walker's Motion Model Based Control of Two-Wheel Mobile Manipulator '3: 7**

Mayuko Watanabe (Keio University, Japan), Toshiyuki Murakami (Keio University, Japan)

**Optical flow generation in color images with using Color Derivative Vector '423**

Masaaki Shibata (Seikei University, Japan), Naoya Ushigome (Seikei University, Japan), Masahide Ito (Seikei University, Japan)

**Visual Posture Estimation and Control for Redundant Manipulator '429**

Naoki Oda (Chitose Institute of Science and Technology, Japan), Noriaki Fujinaga (Chitose Institute of Science and Technology, Japan)

**Recognition and Classification of Human Motion Based on Hidden Markov Model for Motion Database '434**

Yoshihiro Ohnishi (Keio University, Japan), Seiichiro Katsura (Keio University, Japan)

**OS-1-2            Haptics for Human Support**

**Manipulability Servoing Control in Null Space for Redundant Bilateral Control System with Different Degrees of Freedom '43:**

Nobuyuki Togashi (Yokohama National University, Japan), Tomoyuki Shimono (Yokohama National University, Japan), Naoki Motoi (Yokohama National University, Japan)

**Towards multimodal Haptics for teleoperation: Design of a Tactile Thermal Display '446**

Simon Gallo (LSRO EPFL, Switzerland), Laura Santos-Carreras (LSRO EPFL, Switzerland), Giulio Rognini (LSRO EPFL, Switzerland), Masayuki Hara (University of Tokyo, Japan), Akio Yamamoto (University of Tokyo, Japan), Toshiro Higuchi (University of Tokyo, Japan), Hannes Bleuler (LSRO EPFL, Switzerland)

**The Performance Validation of Disturbance Observer Based on Comparison between Motion Control Frequency and Current Control Frequency '44;**

Hiromi Ohkubo (Yokohama National University, Japan), Tomoyuki Shimono (Yokohama National University, Japan), Naoki Motoi (Yokohama National University, Japan)

**Identification and Compensation of Disturbance for Real-World Haptics '457**

Takuma Shimoichi (Keio University, Japan), Seichiro Katsura (Keio University, Japan)

**OP Sense – a robotic research platform for telemanipulated and automatic computer assisted surgery 463**

Holger Mönnich (KIT, Germany), Heinz Wörn (KIT, Germany), Daniel Stein (KIT, Germany), Heinz Wörn (KIT, Germany), Daniel Stein (KIT, Germany)

**Development of Actively-controllable Endoscopic Forceps '469**

Keisuke Sugawara (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

**OS-2-2 Smart Precise Motion Control – Disturbance modeling and compensation in mechatronic systems**

**Focusing Control System for Suppressing Multi-Harmonic Disturbances in High Speed Optical Disk Systems '475**

Tatsuya Nakazaki (Nagaoka University of Technology, Japan), Tokoku Ogata (Nagaoka University of Technology, Japan), Kiyoshi Ohishi (Nagaoka University of Technology, Japan), Toshimasa Miyazaki (Nagaoka University of Technology, Japan), Daiichi Koide (Japan Broadcasting Corporation, Japan), Yoshimichi Takano (Japan Broadcasting Corporation, Japan), Haruki Tokumaru (Japan Broadcasting Corporation, Japan)

**Friction Compensation Using Time Variant Disturbance Observer Based on the LuGre Model 47;**

Daiki Hoshino (Tokyo Denki University, Japan), Norihiro Kamamichi (Tokyo Denki University, Japan), Jun Ishikawa (Tokyo Denki University, Japan)

**High Precision Control of Ball Screw Driven Stage Using Sharp Roll-off Learning Q Filter '487**

Tadashi Takemura (University of Tokyo, Japan), Hiroshi Fujimoto (University of Tokyo, Japan)

**Model-Based Feedforward Compensation for Disturbance Caused by Rotational Motion in 2-Dimensional Shaking Table Systems '493**

Kenta Seki (Nagoya Institute of Technology, Japan), Makoto Iwasaki (Nagoya Institute of Technology, Japan)

**Head Positioning Control System Design Based on Dynamic Characteristic of Rolling Friction in HDDs. '499**

Motohiro Kawafuku (Nagoya Institute of Technology, Japan), Masato Mizoguchi (Nagoya Institute of Technology, Japan), Makoto Iwasaki (Nagoya Institute of Technology, Japan)

**A Smoothed GMS Friction Model for Moving Horizon Friction State and Parameter Estimation '4: 5**

Max Boegli (K.U.Leuven, Belgium), Tinne De Laet (K.U.Leuven, Belgium), Joris De Schutter (K.U.Leuven, Belgium), Jan Swevers (K.U.Leuven, Belgium)

**OS-6-1 Musculoskeletal Structure based Robotics**

**Leg Space Observer on Biarticular Actuated Two-Link Manipulator for Realizing Spring Loaded Inverted Pendulum Model '4: ;**

Yasuto Kimura (University of Tokyo, Japan), Sehoon Oh (University of Tokyo, Japan), Yoichi Hori (University of Tokyo, Japan)

**Force Control of Musculoskeletal Manipulator '4: 7**

Ahmad Zaki Shukor (Yokohama National University, Japan), Yasutaka Fujimoto (Yokohama National University, Japan)

**Development of a Physical Therapy Robot for Rehabilitation Databases '523**

Tomonori Yokoo (Saitama University, Japan), Toshiaki Tsuji (Saitama University, Japan), Sho Sakaino

(Saitama University, Japan), Shigeru Abe (Saitama University, Japan)

**Analysis of Actuator Redundancy Resolution Methods for Bi-articularly Actuated Robot Arms '529**  
Valerio Salvucci (University of Tokyo, Japan), Sehoon Oh (University of Tokyo, Japan), Yoichi Hori (University of Tokyo, Japan)

**Total Harmonic Distortion of Haptic Modal Information for Analysis of Human Fingertip Motion '535**  
Tomoyuki Shimono (Yokohama National University, Japan), Yoshiyuki Hatta (Yokohama National University, Japan), Naoki Motoi (Yokohama National University, Japan)

**Force Control of a Spiral Motor and Its Application to Musculoskeletal Biped Robot '53;**  
Yasutaka Fujimoto (Yokohama National University, Japan), Tsubasa Suenaga (Yokohama National University, Japan), Yuuki Wakayama (Yokohama National University, Japan), Kengo Sawai (Yokohama National University, Japan), Ahmad Zaki (Yokohama National University, Japan)

## **ED-1 Electric Drives**

**Event-Driven Approach to Control Mechatronic System with FPGA '547**  
Robert Horvat (FERI, University of Maribor, Slovenia), Karel Jezernik (FERI, University of Maribor, Slovenia), Milan Čurkovič (FERI, University of Maribor, Slovenia)

**Fault-tolerant Control of a Wind Turbine with a Squirrel-cage Induction Generator and Stator Interturn Faults '553**  
Vinko Lešić (University of Zagreb, Croatia), Mario Vašak (University of Zagreb, Croatia), Nedjeljko Perić (University of Zagreb, Croatia), Gojko Joksimović (University of Montenegro, Montenegro), Thomas Wolbank (Vienna University of Technology, Austria)

**Design and Realization of Hybrid Drive with Supercapacitor and Power Flow control '559**  
Marijan Španer (FERI Uni Maribor, Slovenia), Andreja Rojko (FERI Uni Maribor, Slovenia), Karel Jezernik (FERI Uni Maribor, Slovenia)

**Disturbance estimation of high dynamics sensorless PMSM drive with Unscented Kalman Filter '565**  
Dariusz Janiszewski (Poznan University of Technology, Poland)

**Frequency analysis of mechanical resonance in direct drive '572**  
Dominik Luczak (Poznan University of Technology, Poland)

**Parameter Estimation of Two-Mass Mechanical Loads in Electric Drives '577**  
Seppo Saarakkala (Aalto University, Finland), Tuomo Leppinen (ABB Drives, Finland), Marko Hinkkanen (Aalto University, Finland), Jorma Loumi (Aalto University, Finland)

**Drivetrain of Electric Car: Development of Virtual Laboratory for E-learning '583**  
Venugopal Prasanth (Delft University of Technology, The Netherlands), Pavol Bauer (Delft University of Technology, The Netherlands), Pšenáková Ildikó (Univerzita Konštantína Filozofa, Slovakia)

## **OS-2-3 Smart Precise Motion Control – Industrial applications of precision motion control**

**Anti-sway Sliding-mode with Trolley Disturbance Observer for Overhead Crane system '589**  
Jadesada Maneeratanaporn (Keio University, Japan), Toshiyuki Murakami (Keio University, Japan)

**High Accurate Modeling of Vehicle Dynamics Considering Three-Dimensional Rotating Motion '595**  
Wataru Kubota (Nagoya Institute of Technology, Japan), Motohiro Kawafuku (Nagoya Institute of Technology, Japan), Makoto Iwasaki (Nagoya Institute of Technology, Japan), Hirotaka Tokoro (DENSO Corporation, Japan)

**Vibration Control of Flexible System With Communication Delay Using Wave Compensator '59;**  
Eiichi Saito (Keio University, Japan), Seiichiro Katsura (Keio University, Japan)

**FPGA Implementation of the Bilateral Control Algorithm for a High Performance Haptic Teleoperation '5: 7**

Marko Franc (Isomat d.o.o., Slovenia), Aleš Hace (University of Maribor, Slovenia)

**Force Sensorless Pressure Control Considering Nonlinear Friction Phenomenon for Electric Injection Molding Machine '5; 3**

Ryo Furusawa (Nagaoka University of Technology, Japan), Kiyoshi Ohishi (Nagaoka University of Technology, Japan), Koichi Kageyama (Niigata Machine Techno CO., LTD, Japan), Masaru Takatsu (Niigata Machine Techno CO., LTD, Japan), Shiro Urushihara (Kagawa National College of Technology, Japan)

**Study on re-adhesion control by monitoring excessive angular momentum in electric railway tractions '5; 9**  
Takafumi Hara (University of Tokyo, Japan), Takafumi Koseki (University of Tokyo, Japan)

## **OS-6-2 Musculoskeletal Structure based Robotics**

**Model-based Compensation of Wire Elongation for Tendon-driven Rotary Actuator '625**

Yuki Saito (Keio University, Japan), Takahiro Nozaki (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

**A Method of Joint Torque Control for a Tendon-Driven System '62;**

Uichiro Nishio (Keio University, Japan), Takahiro Nozaki (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

**Application of Tension Control into Linear Motor-Actuated Cable Differential-Driven Joint '637**

Tomoko Kawase (Keio University, Japan), Keita Shimamoto (Keio University, Japan), Kazuki Tanida (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

**Function Separation for 2-DOF Haptic Surgical Forceps Robots driven by Multi Drive Linear Motors '643**

Kazuki Tanida (Keio University, Japan), Takahiro Mizoguchi (Keio University, Japan), Fumiya Mitome (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

**A Numerical Simulation Using The Optimal Control Can Estimate Stiffness Profiles of A Monkey Arm during Reaching Movements '649**

Yuki Ueyama (Tokyo Institute of Technology, Japan), Eizo Miyashita (Tokyo Institute of Technology, Japan)

**Model-based compensation of hysteresis in the force characteristic of pneumatic muscles '655**

Dominik Schindele (University of Rostock, Germany), Harald Aschemann (University of Rostock, Germany)

## **HR-1 Humanoid Robots I**

**Disturbance Observer that estimates External Force acting on Humanoid Robots '65;**

Kenji Kaneko (AIST, Japan), Fumio Kanehiro (AIST, Japan), Mitsuharu Morisawa (AIST, Japan), Eiichi Yoshida (AIST, Japan), Jean-Paul Laumond (LAAS-CNRS, France)

**Falling Risk Evaluation Based on Plantar Contact Points for Biped Robot '667**

Hisashi Ono (Keio University, Japan), Takahiko Sato (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

**Stable Landing Method for Biped Robot by Using Switching Control '673**

Kenta Sasahara (Yokohama National University, Japan), Naoki Motoi (Yokohama National University, Japan), Tomoyuki Shimono (Yokohama National University, Japan), Atsuo Kawamura (Yokohama National University, Japan)

**Gyroscopic Assistance for Human Balance '679**

Dustin Li (KUSTAR, United Arab Emirates), Heike Vallery (KUSTAR, United Arab Emirates)

**Verification of biped robot using point-contact type foot with springs for walking on rough terrain '685**

Moyuru Yamada (Toyohashi University of Technology, Japan), Shigenori Sano (Toyohashi University of Technology, Japan), Naoki Uchiyama (Toyohashi University of Technology, Japan)

**Towards integrated walking and jumping motion planning in complex environments: Jumping**

**trajectory generation '68;**

Kirill Van Heerden (Yokohama National University, Japan), Atsuo Kawamura (Yokohama National University, Japan)

## **BC-1          Bilateral Control I**

**An Approach to Controller Design of Bilateral Control with Dimensional Scaling '697**

Takahiro Kosugi (Keio University, Japan), Seiichiro Katsura (Keio University, Japan)

**Position/Force Decoupling for Micro-Macro Bilateral Control based on Modal Space Disturbance Observer '6: 3**

Takahiro Nozaki (Keio University, Japan), Takahiro Mizoguchi (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

**Separated Master System to Decrease Operational Force of Bilateral Control '6: 9**

Haruya Sato (Keio University, Japan), Takahiro Mizoguchi (Keio University, Japan), Fumiya Mitome (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

**A Novel Dimensional Scaling Bilateral Control for Realization of Mobile-Hapto '6; 5**

Shunsuke Yajima (Keio University, Japan), Wataru Yamanouchi (Keio University, Japan), Seiichiro Katsura (Keio University, Japan)

**Transparency Analysis of Motion Canceling Bilateral Control under Sensing Constraints '6; ;**

Yu Nakajima (Keio University, Japan), Takahiro Nozaki (Keio University, Japan), Takahiro Mizoguchi (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

**Scaling Bilateral Controls with Impedance Transmission Using Transfer Admittance '727**

Takahiro Mizoguchi (Keio University, Japan), Takahiro Nozaki (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

## **RO – 1          Robotics I**

**Experiment-Based Kinematic Validation of Numeric Modeling and Simulated Control of an Untethered Biomimetic Microrobot in Channel '733**

Ahmet Fatih Tabak (Sabanci University, Turkey), Serhat Yesilyurt (Sabanci University, Turkey)

**Miniaturized Modular Manipulator Design for High Precision Assembly and Manipulation Tasks '739**

Emrah Deniz Kunt (Sabanci University, Turkey), Ahmet Teoman Naskali (Sabanci University, Turkey), Asif Sabanovic (Sabanci University, Turkey)

**Derivation of Nonlinear Dynamic Model of Novel Pneumatic Artificial Muscle Manipulator with a Magnetorheological Brake '745**

Hiroki Tomori (Chuo University, Japan), Yuichiro Midorikawa (Chuo University, Japan), Taro Nakamura (Chuo University, Japan)

**Two Approaches to Bounded Jerk Trajectory Planning '753**

Branislav Konjević (HEP Plomin, Croatia), Mario Punčec University of Applied Science, Varaždin, Croatia), Zdenko Kovačić (University of Zagreb, Croatia)

**Workspace analysis of parallel mechanisms through neural networks and genetic algorithms '75:**

Zeynep Ekicioglu Kuzeci (Yildiz Technical University, Turkey), Huseyin Alp (ISBAKInc, Turkey), Vasfi Emre Omurlu (Yildiz Technical University, Turkey), Ibrahim Ozkol (Istanbul Technical University, Turkey)

**Fuzzy Controller Scheduling for Robotic Manipulator Force Control '766**

Mireia Perez Plius (Sabanci University, Turkey), Metin Yilmaz (Sabanci University, Turkey), Utku Seven (Sabanci University, Turkey), Kemalettin Erbatur (Sabanci University, Turkey)



## **CO - 2            Control II**

### **Position Control of a Seesaw like Platform by Using a Thrust Propeller '774**

Erol Uyar (Dokuz Eylul University, Turkey), Turgay Akdogan (Dokuz Eylul University, Turkey), Onur Keskin (Dokuz Eylul University, Turkey), Lutfi Mutlu (Dokuz Eylul University, Turkey)

### **Interpolated gain-scheduled controllers for an Over-head Crane '77:**

Keivan Zavari (K.U.Leuven, Belgium), Goele Pipeleers (K.U.Leuven, Belgium), Jan Swevers (K.U.Leuven, Belgium)

### **Subliminal Calibration for Machine Operation with Prediction based Filtering '786**

Hiroshi Igarashi (Tokyo Denki University, Japan)

### **Acceleration Control of Stacked Piezoelectric Actuator utilizing Disturbance Observer and Reaction Force Observer '792**

Shinnosuke Yamaoka (Keio University, Japan), Takahiro Nozaki (Keio University, Japan), Daisuke Yashiro (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

### **Sliding-Mode Control of a Flexure Based Mechanism Using Piezoelectric Actuators '798**

Merve Acer (Sabanci University, Turkey), Asif Sabanovic (Sabanci University, Turkey)

### **Design and Control of Laser Micromachining Workstation '7: 4**

Edin Golubovic (Sabanci University, Turkey), Islam S.M. Khalil (Sabanci University, Turkey), Ahmet Ö. Nergiz (Sabanci University, Turkey), Eray A. Baran (Sabanci University, Turkey), Asif Sabanovic (Sabanci University, Turkey)

## **HR-2            Humanoid Robots II**

### **Circular Arc-Shaped Walking Trajectory Generation for Bipedal Humanoid Robots 7: :**

Metin Yilmaz (Sabanci University, Turkey), Utku Seven (Sabanci University, Turkey), Kaan Can Fidan (Sabanci University, Turkey), Tunc Akbas (Sabanci University, Turkey), Kemalettin Erbatur (Sabanci University, Turkey)

### **Gyroscope Integrated Environmental Mode Compliance Control for Biped Robot '7; 8**

Takahiko Sato (Keio University, Japan), Hisashi Ono (Keio University, Japan), Kouhei Ohnishi (Keio University, Japan)

### **A Robotic Walker for Standing Assistance with Realtime Estimation of a Patient's Load '824**

Daisuke Chugo (Kwansei Gakuin University, Japan), Yusuke Morita (Kwansei Gakuin University, Japan), Yuki Sakaida (RIKEN, Japan), Sho Yokota (Setsunan University, Japan), Kunikatsu Takase (The University of Electro-Communications, Japan)

### **High Mobility Control for Wheel-Legged Mobile Robot Based on Resolved Momentum Control '82:**

Akihiro Suzumura (Yokohama National University, Japan), Yasutaka Fujimoto (Yokohama National University, Japan)

### **Robot motion planning considering the utterance-timing and its experimental evaluation '836**

Satoshi Suzuki (Tokyo Denki University, Japan), Jun Goto (Tokyo Denki University, Japan), Hiroshi Igarashi (Tokyo Denki University, Japan), Harumi Kobayashi (Tokyo Denki University, Japan), Tetsuya Yasuda (Tokyo Denki University, Japan), Fumio Harashima (Tokyo Metropolitan University, Japan)

## **BC-2            Bilateral Control II**

### **Coding and Decoding Scheme for Wide-band Bilateral Teleoperation 842**

Mariko Mizuochi (Hitachi, Ltd, Japan), Kouhei Ohnishi (Keio University, Japan)

### **Data Transmission with Multiple-Routes for Wireless Haptic Communication System '848**

Nozomi Suzuki (Keio University, Japan), Seiichiro Katsura (Keio University, Japan)

**Positive Feedback of Reaction Force for Environmental Embedded Haptic System '854**

Hiroyuki Nagai (Keio University, Japan), Seiichiro Katsura (Keio University, Japan)

**Novel Fuzzy – Smith predictor hybrid scheme for periodic disturbance reduction in linear time delay systems '85:**

Ahmet Kuzu (Tubitak-Bilgem-Bte, Turkey), Ozgur Songuler (Tubitak-Bilgem-Bte, Turkey)

**Predictive Input Delay Compensation for Motion Control Systems '866**

Eray A. Baran (Sabanci University, Turkey), Asif Sabanovic (Sabanci University, Turkey)

**Low-Noise and Fine-Efficiency Motor Drive for Motion Control '872**

Yuki Yokokura (Nagaoka University of Technology, Japan), Kiyoshi Ohishi (Nagaoka University of Technology, Japan), Seiichiro Katsura (Keio University, Japan)

**RO – 2      Robotics II**

**Four-wheel Driving-force Distribution Method for Instantaneous or Split Slippery Roads for Electric Vehicle with In-wheel Motors '878**

Kenta Maeda (University of Tokyo, Japan), Hiroshi Fujimoto (University of Tokyo, Japan), Yoichi Hori (University of Tokyo, Japan)

**Terrace Climbing of the Alacrane Mobile Robot with Cooperation of its Onboard Arm '884**

Javier Serón (University of Malaga, Spain), Jorge L. Martinez (University of Malaga, Spain), Anthony Mandow (University of Malaga, Spain), Alfonso Garcia-Cerezo (University of Malaga, Spain), Jesus Morales (University of Malaga, Spain), Antonio Reina (University of Malaga, Spain), Jesus Garcia (Universidad Nacional experimental del Tachira, Venezuela)

**Modified Histogramic Techinque for Mobile Robot Indoor Environment Mapping Based on Uniform Random Distribution '88:**

Dinko Osmanović (ETF University of Sarajevo, BiH), Jasmin Velagić (ETF University of Sarajevo, BiH)

**Coefficient of Agility and Sampling Frequency issues in Mobile Agents Collision Detection with Dynamic Obstacles in 3D Space '896**

Elmir Babović (FIT Mostar, BiH)

**Zero Moment Point Based Pace Reference Generation for Quadruped Robots via Preview Control '8: 2**

Tunc Akbas (Sabanci University, Turkey), Sefik Emre Eskimez (Sabanci University, Turkey), Selim Ozel (Sabanci University, Turkey), Omer Kemal Adak (Sabanci University, Turkey), Kaan C. Fidan (Sabanci University, Turkey), Kemalettin Erbatur (Sabanci University, Turkey)