2015 15th International Conference on Control, Automation and Systems (ICCAS 2015)

Busan, South Korea
13-16 October 2015

Pages 1-670

IEEE Catalog Number: CFP1510D-POD
ISBN: 978-1-4799-9976-7

Copyright © 2015, Institute of Control, Robotics and Systems (ICROS) of Korea
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: CFP1510D-POD
ISBN (Print-On-Demand): 978-4799-9976-7

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

Table Of Contents

WA01 Korean Student Workshop: Do's and Don'ts in Paper Writing and Presentation 101, 09:10~10:40

WA02 [OS] SICE-ICROS Joint Organized Session on Control Theory and Application 102, 09:10~10:55

WA02-1 Synchronization of linear agents with sector-bounded input nonlinearities 1
Kiyotsugu Takaba(Ritsumeikan University, Japan)

WA02-2 PI controller gain tuning with FRIT in collective blade pitch control of floating offshore wind turbines 7
Koki Kakita, Naoyuki Hara, Keiji Konishi(Osaka Prefecture University, Japan)

WA02-3 Controller Design for Liquid Level Control of Separator in an OTEC Plant with Uehara Cycle Considering Disturbances 12
Yoshitaka Matsuda, Tsukasa Shimada, Takenao Sugi, Satoru Goto, Takafumi Morisaki, Yasuyuki Ikegami(Saga University, Japan)

WA02-4 Data-driven PID Gain Tuning for Liquid Level Control of a Single Tank Based on Disturbance Attenuation Fictitious Reference Iterative Tuning 16
Shiro Masuda(Tokyo Metropolitan University, Japan)

WA02-5 The Evaluation of Scratch Reduction in Velocity Synchronization of Flying Touch Method by Using SMCSPO 21
Sung jin Kim, Min Cheol Lee, Hyun hee Kim, Sung min Yoon(Pusan National University, Korea, Republic of)

WA02-6 Vibration control of a nuclear fuel rod maneuvering under water 24
Umer Hameed Shah, Mingxu Piao, Gyoung-Hahn Kim, Keum-Shik Hong(Pusan National University, Korea, Republic of)

WA02-7 A Basis Function Approach to Scheduled Locally Weighted Regression for On-line Modeling of Nonlinear Dynamical Systems 30
Kenji Sugimoto, Lorlynn Asuncion Mateo(Nara Institute of Science and Technology, Japan)

WA03 Adaptive Robust Control 103, 09:10~10:40

WA03-1 Robustness based Comparison between a Sliding Mode Controller and a Model Free Controller with the approach of synchronization of nonlinear systems 36
Philippe Faradja(Tshwane University of Technology, South Africa), Guoyuan Qi(University of South Africa, South Africa)

WA03-2 onlinear Adaptive Control of a 3D Overhead Crane 41
Quoc Chi Nguyen, Ha-Quang-Thinh Ngo(Ho Chi Minh City University of Technology, Viet Nam), Won-Ho Kim(Dong-Eui University , Korea, Republic of)

WA03-3 Robust Swing Up and Balancing Control of the Acrobot Based on a Disturbance Observer 48
Dongkyoung Chwa, Sanghyob Lee, Myunghwan Eom(Ajou University, Korea, Republic of)

WA03-4 Basic Algorithms of Adaptive Position-path Control Systems for Mobile Units 54
Vyacheslav Pshikhopov, Mikhail Medvedev, Boris Gurenko, Maksim Beresnev(Southern Federal University, Russian Federation)

WA03-5 Adaptive synchronization of two different chaotic systems containing mutually Lipschitz nonlinearities subject to state time-delays 60
Muhammad Riaz(Muhammad Ali Jinnah University, Islamabad, Pakistan), Muhammad

Ashraf(Muhammad Ali Jinnah university, Islamabad, Pakistan), Keum-Shik Hong(Pusan National University; 2 Busandaehak-ro, Geumjeong-gu, Busan 609-735, Korea, Republic of), Muhammad Rehan(Pakistan Institut of Engineering and Applied Sciences, Islamabad, Pakistan), Gyoung-Hahn Kim(Pusan National University, Korea, Republic of)

WA03-6 Active Fault Tolerant Control of an Unmanned Surface Vehicle 66
Zhixiang Liu(Concordia University, Canada), Youmin Zhang(Xi'an University of Technology and Concordia University, China), Chi Yuan(Concordia University, Canada)

WA04 Service and Field Robots

104, 09:10~10:40

WA04-1 An Intelligent Docking Station Manager for Multiple Mobile Service Robots 72
Abhijeet Ravankar, Ankit A Ravankar(Hokkaido University, Japan, Japan), Yukinori Kobayashi(Hokkaido University, Japan), Lv Jixin(Hokkaido University, Japan, Japan), Takanori Emaru(Hokkaido University, Japan), Yohei Hoshino(Kitami Institue of Technology, Kitami, Japan)

WA04-2 Foot Placement Method to Change Velocity of Running Biped Robot 79
Jaeyoung Jang, Jae Uk Cho, Jong-Hyeon Park(Hanyang University, Korea, Republic of)

WA04-3 Building Automatic Packet Report system to report position and radiation data for autonomous robot in the disaster area. 85
Nimit Hongyim(Hybrid Computing Research Laboratory, King Mongkut Institute of Technology Ladkrabang, Thailand), Sawatsakorn Chaiyasoonthorn(Faculty of Science, Ramkhamhaeng University, Bangkok 10240., Thailand), Somsak Mitatha(Faculty of Engineering, King Mongkut Institute of Technology Ladkrabang, Bangkok 10520, Thailand)

WA04-4 Robust optimal design of a tail's geometry for stable water-running robots 89
Jae Hyung Jang, Dong Gyu Lee(Yeungnam University, Korea, Republic of), TaeWon Seo(Yeungnam Univ., Korea, Republic of)

WA04-5 Kinematic parameter design of a novel compliant field robotic platform for large-obstacle overcoming 92
Sangho Lee, JaeNeung Choi(Yeungnam University, Korea, Republic of), Kyungmin Jeong(Korea Atomic Energy Research Institute, Korea, Republic of), TaeWon Seo(Yeungnam Univ., Korea, Republic of)

WA04-6 An Automated Object Retrieval System for Warehouses 95
Amna Khan, Abdul Rehman Sair, Anas Ekram, Saad Malik(Air University, Pakistan), Muhammad Raheel Afzal, Ali Bin Junaid(Gyeongsang National University, Korea, Republic of), Amre Eizad(Air University, Pakistan)

WA05 Automotive Systems and Automation

105, 09:10~10:40

WA05-1 Energy Optimal Controller for Electric Vehicles on Partially Icy Roads with Heuristic Skidding Compensation 101
Kenan AHISKA(ASELSAN Inc., Turkey), Mehmet Kemal ÖZGÖREN, Mehmet Kemal LEBLEBİCİOĞLU(Middle East Technical University, Turkey)

WA05-2 Mechanical Optimization of Series Hybrid Electric Vehicle with Plant Oil Electric generator 107
Yoshihiko Takahashi, Ryo Matsumoto, Hirotake Sasai(Kanagawa Institute of Technology, Japan)

WA05-3 Small Compact Electric Vehicle for Practical Use and its Repeated Start-Stop Tests 113
Takeharu Hayashi(National Institute of Technology, Tokyo College, Japan), Yoshihiko Takahashi(Kanagawa Institute of Technology, Japan)

WA05-4 A control algorithm for WSP valve in pneumatic brake system of railway vehicle 119

Nam-jin Lee, Chul-Goo Kang(Konkuk University, Korea, Republic of)

WA05-5 Design of a High-Speed, Short-Stroke xy-Stage with Counterbalance Mechanisms 123
Young-bong Bang(Advanced Institutes of Convergence Technology, Seoul National University, Korea, Republic of), Chang-Hyuk Lee(Seoul National University, Korea, Republic of), Sung Yon Cho(Advanced Institutes of Convergence Technology, Seoul National University, Korea, Republic of), Jiwon Choi(Seoul National University, Korea, Republic of), Kyung-min Lee(Korean Intellectual Property Office, Korea, Republic of), Bu Hyun Shin(Hanbat National University, Korea, Republic of)

WA05-6 Development and Experimental Research of Adaptive Control System for Robotic Complex 126
Igor Gornostaev, Vladimir Filaretov, Anton Gubankov(Far Eastern Federal University, Russian Federation)

WA06 Power Systems

201, 09:10~10:40

WA06-1 Modeling and Simulation of Wind Power Generation System Using Diode Bridge Rectification Circuit for Converter 132
Sirichai Tammaruckwattana(King Mongkut's Institute of Technology Ladkrabang, Thailand)

WA06-2 EKF-Based Fault Detection and Isolation for FET of Induction Motor Inverter 138
Jang ho Won(Korea tech, Korea, Republic of)

WA06-3 An Investigation on A Torque Control Method for Wind Turbines Using Both Optimal Mode Gain And An Additional Gain 144
Chaewook Lim(Hanbat National University, Korea, Republic of)

WA06-4 Optimization of a Grid-tied Microgrid Configuration using Dual Storage Systems 147
Petrus Yuri Nugraha(Institut Teknologi Bandung, Indonesia), Augie Widyotriatmo(Institut Teknologi Bandung (ITB), Indonesia)

WA06-5 Application of a Nonlinear Controller Based on Recurrent Neural Network for Coordinated of PSS and ASMES 153
Mohd Fauzi Othman(Universiti Teknologi Malaysia, Malaysia)

WA06-6 The Appropriate Voltage Mode Duty Cycle Signal Supply for Lighting LED 158
Pichkanit Sukpasri, Jirawath Parnklang(King Mongkut's Institute of Technology Ladkrabang Bangkok, Thailand)

WA07 Neural Networks and Fuzzy Systems

202, 09:10~10:40

WA07-1 Chaos in the fractional order Cellular Neural Network and its sychronization 161
Phuong Thanh Dam(Thai Nguyen University of Information and Communication Technology, Viet Nam), Cat Thuong Pham(VietNam Academy of Science and Technology, Viet Nam)

WA07-2 Intelligent Control of Space Robot System using RBF Neural Network 167
Naveen Kumar(National Institute of Technology Kurukshetra, India, India), Vikas Panwar(Gautam Budhha University, Greater Noida, India, India)

WA07-3 Proposing a GPU Based Modified Fuzzy Nearest Neighbor Rule for Traffic Sign Detection 173
Peyman Hosseinzadeh, Junhyuk Hyun, Euntai Kim(Yonsei University, Korea, Republic of)

WA07-4 Head Gimbal Assembly Circuit with Vision Technique and Fuzzy C-Means Clustering 177
Rawinun Praserttaweelap, Somyot Kiatwanidvilai(King Mongkut's Institute of Technology Ladkrabang, Thailand)

WA07-5 Dissipative Filter Design for Takagi-Sugeno Fuzzy Neural Networks 181
Myo Taeg Lim, Kyu Chul Lee, Hyun Duk Choi, Dae Ki Kim, Choon Ki Ahn(Korea University, Korea, Republic of)

WA07-6 Fuzzy Logic Self-Tuning PID Control for a Single-Link Flexible Joint Robot Manipulator in the presence of Uncertainty 186
Ali Dehghani(Azad University Of khomeinishahr, Iran, Islamic Republic of), Hamed Khodadadi(Azad University Of Khomeinishahr, Iran, Islamic Republic of)

WA08 Navigation, Guidance and Control I

203, 09:10~10:40

WA08-1 Optimal Spacecraft Rendezvous with PNG 192
Hiroyuki Takano, Mini Matsuda, Takeshi Yamasaki, Isao Yamaguchi(National Defense Academy, Japan)

WA08-2 Modified Algorithm of Predictive Ground Collision Avoidance System for the Low Level Terrain Flight 197
Seongheon Lee(Korea Advanced Institute of Science and Technology, Korea, Republic of), Dongjin Lee(Hanseo University, Korea, Republic of), Hyochoong Bang(Korea Advanced Institute of Science and Technology, Korea, Republic of)

WA08-3 Extended Kalman Filter with Multi-frequency Reference Data for Quadrotor Navigation 201
Koog-Hwan Oh, Hyo-Sung Ahn(GIST, Korea, Republic of)

WA08-4 A Study of Missile Maximum Capture Area and Fighter Minimum Evasive Range for Negotiation Team Air Combat 207
Chien-Chun Kung(Chung Cheng Institute of Technology, National Defense University, Taiwan), Feng-Lung Chiang(National Chung-Shan Institute of Science & Technology, Taiwan)

WA08-5 Pose Estimation of Head-Mounted Imaging Device by Transfer Alignment Technique in Unstructured Indoor Environment 213
MUHAMMAD ILYAS(UST, Korea, Republic of), Seung-Ho Baeg, Sangdeok Park(Korea institute of industrial Technology(KITECH), Korea, Republic of)

WA08-6 Integrated Navigation and Control for a HAUV System Using Adaptive Super-Twisting Sliding Mode Control and Indirect Kalman Filtering Estimation 219
Seong Ik Han, Jae Jun Jung, Young Sik Park, Jang Myung Lee(Pusan National University, Korea, Republic of)

WA09 Unmanned Aerial and Underwater Vehicles

204, 09:10~10:40

WA09-1 MPC-based FTC with FDD against Actuator Faults of UAVs 225
Bin Yu(Concordia University, Canada), Youmin Zhang(Xi'an University of Technology and Concordia University, China), Yaohong Qu(Northwestern Polytechnical University, China)

WA09-2 Sensing and control of a quadrotor using a visual inertial fusion method 231
Ping Li, Matthew Garratt, Andrew Lambert(The University of New South Wales, Canberra, Australia)

WA09-3 Development of a Blimp Robot Consisting of Four-divided Envelopes with Four Propellers 237
Keigo Watanabe(Okayama Univ, Japan)

WA09-4 Position and Attitude Estimation using Ultrasonic for Autonoumous Flying Robot and System Construction 243
Shotaro Sato, Chinthaka Premachandra, Kiyotaka Kato(Tokyo University of Science, Japan)

WA09-5 3D path tracking of underactuated AUVs with general form of dynamics 249
Ji-Hong Li, Jung-Tae Kim, Mun-Jik Lee, Hyung-Ju Kang(Korea Institute of Robot and Convergence, Korea, Republic of), Min-Jae Kim(Agency of Defense Development, Korea, Republic of)

WA09-6 A Study on Underwater Track Vehicle System 253
Mai The Vu, Hyeung-Sik Choi, Joon-Yong Kim, Dae-Hyeung Ji, Young-Jin Lee, Dong-Ho Choi(Korea Maritime and Ocean University, Korea, Republic of)

WB01 [OS] Experimental Studies for Nonlinear Chemical Process Controls

101, 13:30~15:00

WB01-1 n-Propanol Aqueous Solution Shows Nonlinearity in Liquid Level depending on Water Proportion 258
YoungSu Park, Yugyeong Lim, Jietae Lee(Kyungpook National University, Korea, Republic of)

WB01-2 Efficient control research in CO PROX reaction 261
JeaPil Heo, Jietae Lee(kyung pook national university, Korea, Republic of)

WB01-3 The Control of pH Neutralization Process in the Large Scale Reactor 264
Yugyeong Lim, YoungSu Park, Jietae Lee(Kyungpook National University, Korea, Republic of)

WB01-4 Optimization of hysteresis on the liquid level system and hysteresis process implemented with siphon in the liquid level system 267
inhyun kyoung, Jietae Lee(Kyungpook National University, Korea, Republic of)

WB01-5 Reduced order observer design for nonlinear system: Case of Continuous stirred-tank reactor 271
Sanghun Ahn, Jungwon Kim, Addis Lulu, Dongil Shin(Myongji University, Korea, Republic of)

WB01-6 Theoretical Formula for the Evaluation of Adsorbents in Pressure Swing Adsorption 276
Seongbin Ga(Korean Advanced Institute of Science and Technology, Korea, Republic of), Hong Jang, Jay H Lee(KAIST, Korea, Republic of)

WB02 [OS] Recent Advances of Disturbance Observer and Applications to Motion Control

102, 13:30~15:00

WB02-1 Add-on Controller Design Based on Disturbance Observer in H-infinity Framework 282
Hyung-Tae Seo, Kyung-Soo Kim, Soohyun Kim(KAIST, Korea, Republic of)

WB02-2 Nonlinear robust control of a quadrotor for point tracking based on nonlinear disturbance observer 286
Youngcheol Choi, Hyo-Sung Ahn(GIST, Korea, Republic of)

WB02-3 Robust Stabilization of Constrained Uncertain Linear Systems using Feedforward Control based on High-gain Disturbance Observer 290
Mun Chae Yoon(korea Univ., Korea, Republic of), Jung-Su Kim(SeoulTech, Korea, Republic of), Juhoon Back(Kwangwoon University, Korea, Republic of)

WB02-4 A general framework for robust stability analysis of discrete-time disturbance observer for sampled-data systems: A fast sampling approach 295
Gyunghoon Park, Hyungbo Shim(Seoul National University, Korea, Republic of)

WB02-5 A DOB based Robust Current Control of Permanent Magnet Synchronous Motor 301
Yonghun Kim, Kyung-Soo Kim, Soohyun Kim(KAIST, Korea, Republic of)

WB03 New Control Approach

103, 13:30~15:00

WB03-1 Degree of Disturbance Rejection Capability for Linear Marginally Stable Systems 307
Haemin Lee(KAIST, Korea, Republic of)

WB03-2 New Controller Design Method Based on the Data Conversion Method 311
Ryota Arimura, Chinthaka Premachandra, Kiyotaka Kato(Tokyo University of Science, Japan)

WB03-3 Impulse Controllability and Impulse Elimination in Rectangular Descriptor Systems 316
Vikas Kumar Mishra, Nutan Kumar Tomar, Mahendra Kumar Gupta(Indian Institute of Technology Patna, India)

WB03-4 A Time-Varying Control Method Based on Taylor Series Approximation 321
Shuang Zhang, Zuojun Shen(Beihang University, China)

WB03-5 Closed-Form Formulas for Continuous/Discrete-Time PIDA Controllers' Parameters 326
Thanit Trisuwannawat, Pittaya Pannil, Prapart Ukakimaparn, Numchai Narkvitul(King Mongkut's Institute of Technology Ladkrabang (KMITL), Thailand)

WB03-6 Stability analysis of genetic regulatory networks with time-varying delay via new convex combination technique 330
Feisheng Yang(Northwestern Polytechnical Universtiy (NPU), China)

WB04 Object/Human Visual Recognition

104, 13:30~15:00

WB04-1 Sliding Window based Landmark Extraction for Indoor 2D SLAM Using Forward-Looking Monocular Camera 336
Heewon Chae, Chansoo Park, Jae-Bok Song(Korea University, Korea, Republic of)

WB04-2 Parallel optical flow estimation by dividing image in section 342
Yusuke Miyajima, Teruo Yamaguchi, Hiroshi Harada(Kumamoto University, Japan)

WB04-3 Implementation of Optical Flow Measurement System with an Embedded Processor 347
Yukihiro Sugiki, Teruo Yamaguchi, Hiroshi Harada(Kumamoto University, Japan)

WB04-4 Moving object analysis with optical flow using multi-resolution images and its application in traffic environment 351
Yuta Eto, Teruo Yamaguchi, Hiroshi Harada(Kumamoto University, Japan), Takeshi Tsusue(Mitsubishi Electric Corporation, Japan)

WB04-5 Detection of 3-Dimensional Textured Object without Depth Information 356
Sangil Lee, H. Jin Kim(Seoul Nat'l University, Korea, Republic of)

WB05 Biomedical Systems

105, 13:30~15:00

WB05-1 A study on deterioration in proprioception related to low back pain and falls and postural sway response to local vibratory stimulation 361
Ayaka Yamada, Eishi Nakamura, Noritaka Sato, Yoshifumi Morita(Nagoya institute of technology, Japan), Tadashi Ito(Graduate School of International University of Health and Welfare, Japan), Yoshihito Sakai(National Center for Geriatrics and Gerontology, Japan), Kazunori Yamazaki(Fujita Health University, Japan)

WB05-2 Changes in Granger Causality for Brain Connectivity Depending on the Concentration Levels of Isoflurane in Rat Study 366
Dongrae Cho, Boreom Lee(Gwangju Institute of Science and Technology, Korea, Republic of)

WB05-3 Smartphone based fall detection system 370

Stefan Madansingh, Timothy A. Thrasher, Charles S. Layne, Beom-Chan Lee(University of Houston, United States)

WB05-4 Identification of flight task using ensemble empirical mode decomposition based analysis method 375
Biting Yu, Bo Jia, QI Wu, Yanyu Lu, Dan Huang, Shan Fu, Zhengxiang Cai(Shanghai Jiao Tong University, China)

WB05-5 Detection of Event Related Optical Signal (EROS) in Episodic Memory Retrieval Task Using ICA-Based Kalman Filter 380
Sunghee Dong(Korea university, Korea, Republic of), Jaeyoung Shin(Berlin institute of technology, Germany), Jichae Jeong(Korea university, Korea, Republic of)

WB05-6 Evaluation of pleasant and unpleasant emotions evoked by visual stimuli using NIRS 383
Kazuki Yanagisawa, Hitoshi Tsunashima(Nihon University, Japan)

WB06 Sensor Fusion and Signal Processing

201, 13:30~15:00

WB06-1 Self-Recovering Extended Kalman Filter for Frequency Tracking 389
Myo Taeg Lim, Jung Min Pak, Choon Ki Ahn(Korea University, Korea, Republic of)

WB06-2 Integrated Particle Rauch-Tung-Striebel Backward Smoothing for Single Target Tracking in Clutter 393
Yi Fang Shi, Taek Lyul Song(Hanyang University, Korea, Republic of), Tae Yoon Um(Agency for Defense Development, Korea, Korea, Republic of)

WB06-3 Acoustic Classification and Tracking of Multiple targets using Wireless Sensor Networks 399
Joonghyun Lee, H.jin Kim(Seoul National University, Korea, Republic of)

WB06-4 Error Analysis of Multidimensional Evaluation of Pilot's Workload Based on Objective Measures 405
Chan Wei, Liming Wei, Zhengxiang Cai, Yanyu Lu, Qi Wu, Dan Huang, Shan Fu(Shanghai Jiao Tong University, China)

WB06-5 Muti-sensor Fusion for Localization in Real Environment 411
Daesung Jeon, Hoimyung Choi(Adavanced Institues of Convergence Technology, Korea, Republic of)

WB06-6 The measurement uncertainty evaluation of a reversal error source for the ALSM 416
Vittaya Tipsuwanporn(King Mongkut's Institute of Technology Ladkrabang, Thailand)

WB07 Communication and Embedded Systems

202, 13:30~15:00

WB07-1 The Improved Sensitivity of Remote Robot Control via Parallel Method 420
Vittaya Tipsuwanporn(King Mongkut's Institute of Technology Ladkrabang, Thailand)

WB07-2 Remote Monitoring System with Multi Sensors on Mobile Communication for Rescue Operations 424
Masaomi Oyama, Yusuke Onuki, Yize Zhang, Shigeyuki Tateno(Waseda University, Japan)

WB07-3 ZigBee Based Wireless Temperature Monitoring System For Shrimp Farm 428
Apinai Rerkratn(King Mongkut's Institute of Technology Ladkrabang, Thailand), Anucha Kaewpoonsuk(Naresuan University, Thailand)

WB07-4 Real-Time Brain Activation Detection by FPGA Implemented Kalman Filter 432
Muhammad Shahid Nazir, Muhammad Aqil, Ambreen Mustafa, Ameer Hamza Khan, Fatima

Shams(Pakistan Institute of Engineering & Applied Sciences, Pakistan)

WB07-5 FPGA based Multiprocessor Embedded System for Real-Time Image Processing 436
Nauman Masud, Jahanzeb Nasir, Muhammad Shahid Nazir, Muhammad Aqil(Pakistan Institute of Engineering & Applied Sciences, Pakistan)

WB07-6 Demonstration of Visible light Text data transmission system using LED lamp. 439
SUCHITRA JEENAWONG, SITHICHAI JEENAWONG(Rajamangala University of Technology Lanna Chiangrai, Thailand)

WB08 [OS] Navigation, Guidance, and Control II

203, 13:30~15:15

WB08-1 Robust Marker Tracking Algorithm For Precise UAV Vision-based Autonomous Landing 443
Youeyun Jung, Hyochoong Bang(Korea Advanced Institute of Science and Technology, Korea, Republic of), Dongjin Lee(Hanseo University, Korea, Republic of)

WB08-2 One Chip Controller Design for Actuator's Power Driving Circuit using FPGA 447
Minho Yoon, Taesam Kang(Konkuk university, Korea, Republic of)

WB08-3 Three-Dimensional Impact Angle Control Guidance Law Using Quaternion 452
Kuk-Kwon Park, Sang-Sup Park, Chang-Kyung Ryoo(Inha University, Korea, Republic of)

WB08-4 Pedestrian Motion Classification on Omnidirectional Treadmill 457
Soyoung Park, Hojin Ju(Seoul National University, Korea, Republic of), Min Su Lee(Navgiation Electronic System Lab., Korea, Republic of), Jin Woo Song, Chan Gook Park(Seoul National University, Korea, Republic of)

WB08-5 Satellite Celestial Navigation using Star-tracker and Earth Sensor 461
Hyun-Seung Kim, Ju-Hyeon Hong, Woo-Sung Park, Chang-Kyung Ryoo(Inha University, Korea, Republic of)

WB08-6 Guidance Algorithm for Satisfying Terminal Speed and Impact Angle Constraints with The Neural Network Technique 466
Kyujin Moon, Sang-Sup Park, Chang-Kyung Ryoo(Inha University, Korea, Republic of)

WB08-7 Linear Quadrotor Modelling and Attitude Controller Design Based On Experimental Data 472
Nguyen Khoi Dang, Taesam Kang(Konkuk University, Korea, Republic of)

WB09 [OS] Autonomy of Unmanned Marine Vehicles

204, 13:30~15:00

WB09-1 PLL controller for precise velocity tracking of UUV : a new AUV model and its control 477
jun hee lee(Sung Kyun Kwan University, Korea, Republic of), Hyunsu Kim(SungKyunKwan University, Korea, Republic of), Jong-gu Park, Tae-Yong Kuc(Sung Kyun Kwan University, Korea, Republic of), Yong-Seon Moon(Sunchon National University, Korea, Republic of), Nak Yong Ko(Chosun University, Korea, Republic of)

WB09-2 Navigation of an Underwater Vehicle Using AHRS and Depth Sensor 482
Nak Yong Ko, Seokki Jeong(Chosun University, Korea, Republic of), Hyun Taek Choi(Korea Research Institute of Ships & Ocean Engineering, Korea, Republic of)

WB09-3 Direct Drive Thruster: Reduction of Magnetic Field Distortion for Navigation of an Underwater Robot 485
Nak Yong Ko(Chosun University, Korea, Republic of), Yong Seon Moon(Sunchon National University,, Korea, Republic of), Yong-Gu Park(Redone Technologies, Co., Ltd., Korea, Republic of), Hyun Taek Choi(Korea Research Institute of Ships & Ocean Engineering, Korea, Republic of)

WB09-4 A PLL controller for precise velocity tracking of UUV: a new ROV model and its control design 488
Hee-Jun Lee, Seon-Je Yang, Jong-Gu Park, Tae-Yong Kuc(Sung Kyun Kwan University, Korea, Republic of), Nak Yong Ko(Chosun University, Korea, Republic of), Yong-Seon Moon(SUnchon National University, Korea, Republic of)

WB09-5 Performance Evaluation of ToA-based Sensor Localization System in Underwater Sensor Networks 493
ChangHo Yu, SuHong Min, Jae Weon Choi(Pusan National University, Korea, Republic of)

WB09-6 Path Planning Algorithm to Minimize an Overlapped Path and Turning Number for an Underwater Mining Robot 499
Pandu Sandi Pratama, Jin Wook Kim, Hak Kyeong Kim(Pukyong National University, Korea, Republic of), Suk Min Yoon, Tae Kyeong Yeu, Sup Hong(Korea Research Institute of Ship and Ocean Engineering, Korea, Republic of), Sang Bong Kim(Pukyong National University, Korea, Republic of), Sea June Oh(Korea Maritime and Ocean University, Korea, Republic of)

WC01 Advances in Underwater Vehicle

101, 16:30~18:00

WC02 [OS] Vehicle Control

102, 16:30~18:00

WC02-1 Three-Dimensional Time-Space Grid Allocation Algorithm for Traffic Control of Autonomous Vehicles at an Intersection 505
Jaeyong Kim, Jin Gyu Lee, Seungjoon Lee, Hyuntae Kim, Hyungbo Shim(Seoul National University, Korea, Republic of), Yongsoon Eun(Daegu Geyeongbuk Institute of Science & Technology, Korea, Republic of), KangWon LEE(Korea Polytechnic University, Korea, Republic of)

WC02-2 A Method of Digital Map Construction with Road Feature Extraction Using 2-Dimensional Laser Range Finder 509
Kyung Jae Ahn(Graduate School of Kookmin University, Korea, Republic of), Taekgyu Lee, Yeonsik Kang(Kookmin University, Korea, Republic of)

WC02-3 An Smart Key-initiated Multiple Operating System for Personalized Connected Cars 513
Sangho Lee, Shiho Kim(Yonsei University, Korea, Republic of)

WC02-4 High-level Automated Driving on Complex Urban Roads with Enhanced Environment Representation 516
Beomjun Kim, Dingwook Kim, Kyuwon Kim, kyongsu yi(seoul national university, Korea, Republic of)

WC02-5 Decision Making for Automated Driving at Unsignalized Intersection 522
Dong-Kyoung Kye, Seong-Woo Kim, Seung-Woo Seo(Seoul National University, Korea, Republic of)

WC03 Sliding Mode Control

103, 16:30~18:00

WC03-1 Adaptive Sliding Mode Control of a Transport Aircraft for Heavyweight Airdrop 526
Ri Liu, Xiuxia Sun, Wenhan Dong, Guangzhi Xu(Air Force Engineering University, China)

WC03-2 Disturbance-Estimation-Based Hierarchical Sliding Mode Control of Hovercraft with Wind Disturbance 532
Dongkyoung Chwa, Seongchan Jeong, Myunghwan Eom(Ajou University, Korea, Republic of)

WC03-3 The Features of Variable Structure System Application in Conditions of Control Signal Saturation 538
Alexander Lebedev(Far Eastern Federal University, Russian Federation)

WC03-4 An adaptive modified super-twisting sliding mode controller: Applied to the active suspension system 544
Jagat Jyoti Rath, Suneel Kumar Kommuri, Kalyana Chakravarthy Veluvolu(Kyungpook National University, Korea, Republic of), Michael Defoort(Univ. Lille Nord de France, France), Sivanagaraja Tatinati(Kyungpook National University, Korea, Republic of)

WC03-5 A Sliding Mode Based Model Predictive Control Structure for Permanent Magnet Synchronous Motor 550
Ilro Lee(Hanyang univ. System & Control labatory, Korea, Republic of), Youngwoo Lee, Donghoon Shin(Hanyang university, Korea, Republic of), Chung Choo Chung(Hanyang University, Korea, Republic of)

WC03-6 Sliding mode controller for Sawyer Motors based on singular perurbation theory 556
Jeonghwan Gil, Donghoon Shin, Youngwoo Lee, Chung Choo Chung(Hanyang University, Korea, Republic of)

WC04 Mobile Robots and Navigation

104, 16:30~18:00

WC04-1 UML-Based Design of a Robotic Wheelchair System for Indoor Navigation Using a Visual Marker 562
Bong Keun Kim(National Institute of Advanced Industrial Science and Technology, Japan)

WC04-2 Current Status of Indoor Positioining System Based on Visible Light 565
Kun Yan, Haiyan Zhou, Hailin Xiao, Xiangli Zhang(Guilin Univ. of Electronic Technology, China)

WC04-3 Balancing Control of a Single-wheel Robot Considering Power-efficiency and Gyroscopic Instability Suppression 570
Sangdeok Lee, Seul Jung(Chungnam National University, Korea, Republic of)

WC04-4 The navigation method of wheeled mobile robot based on data fusion obtained from onboard sensors and camera 574
Aleksandr Novitsky(Institute of Automation and Control Processes FEB RAS, Russian Federation), Dmitry Yukhimets(Far Eastern Federal University, Russian Federation)

WC04-5 A modified Cricket method for mobile robots using Zigbee and ultrasonic sensors 580
Kwangsoo Kim(Hanbat National University, Korea, Republic of), Banseok Kang(SOLETOP, Korea, Republic of), Dong-il Cho(Seoul National University, Korea, Republic of)

WC04-6 Research of Graph-analytical Methods for a Vehicle Motion Planning 585
Igor Olegovich Shapovalov, Victor Vladimirovich Soloviev, Valeriy Ivanovich Finaev, Evgeny Yurievich Kosenko, Yury Arturovich Zargaryan(Southern Federal University, Russian Federation)

WC05 Information and Networking

105, 16:30~18:00

WC05-1 A Big Data System Design to Predict the Vehicle Slip 592
Joohyoung Jeon, Woosik Lee, Hyojoo Cho, Hongchul Lee(Korea University, Korea, Republic of)

WC05-2 Optimal internal force design for formation control of multi-agent systems 597
Yoichi Masuda, Kenji Nagase(Wakayama University, Japan)

WC05-3 Leader-follower type formation control using local displacement measurements: Velocity observer-based approach 603
Hyo-Sung Ahn(GIST, Korea, Republic of)

WC05-4 A Mobile Robot Tracking using Kalman Filter-based Gaussian Process in Wireless Sensor Networks 609
Jinhong Lim, Jaehyun Yoo, Hyounjin Kim(Seoul National University, Korea, Republic of)

WC05-5 Selection of Network Topologies at Solving Certain Class of Problems on Distributed Computer Systems 614
Aliya Ualievna Kalizhanova(Kazakh National Technical University after K.I.Satpaev, Kazakhstan)

WC05-6 A new text representation model enriched with semantic relations 619
Aliya Nugumanova, Yerzhan Baiburin, Kurmash Apaev(East Kazakhstan State Technical University, Kazakhstan)

WC06 Process Systems and Data Fusion

201, 16:30~18:00

WC06-1 (formatted)Recursive decomposition as a method for integrating heterogeneous data sources 623
Raissa Uskenbayeva(International IT University, Kazakhstan), Yong Im Cho(Gachon University, Korea, Republic of), Gulnar Bektemyssova(International IT University, Kazakhstan), Zaure Uskembayeva(KazNTU after name K.Satpayeva, Kazakhstan), Tolganay Temirbolatova(international IT University, Kazakhstan), Aizhan Kassymova(International IT University, Kazakhstan)

WC06-2 Sparse Principal Component Analysis For Feature Selection of Multiple Physiological Signals from Flight Task 627
Dongbo Bai, Liming Wei, Chan Wei, Qi Wu, Dan Huang, Shan Fu(Shanghai Jiao Tong University, China)

WC06-3 Managing Algorithm of Graph Structured Scenario for Robot 632
Mi-sook Kim, Hong Seong Park, Woo-Min Park(Kangwon National University, Korea, Republic of)

WC06-4 Procurement scheduling under supply and demand uncertainty: Case study for comparing classical, reactive, and proactive scheduling 636
Joohyun Shin(Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of), Jay H Lee(KAIST, Korea, Republic of)

WC06-5 Design and control of the off-gas recovery plant with periodic disturbances 642
Hyuncheol Ryu, Jong Min Lee(Seoul National University, Korea, Republic of)

WC06-6 Mobile business process construction principles on the mobile robot system platform 648
Raissa Uskenbayeva, Bikesh Kurmangaliyeva(International IT University, Kazakhstan)

WC07 [OS] Statistical Inference and Data Mining

202, 16:30~18:00

WC07-1 Monte Carlo Simulation for Phase Unwrapping Using Super-resolution for Remote Sensing 651
Yohei Saika(National Institute of Technology, Gunma College, Japan)

WC07-2 Evaluation of Impressions and Movements Related to Negative Emotional Expressions in Dance 657
Nao Shikanai(Japan Women's University, Japan), Kozaburo Hachimura(Ritsumeikan University, Japan)

WC07-3 Sparse Representation Approach to Inverse Halftoning by Means of K-SVD Dictionary 661
Masahiro Hirao, Toshiaki Aida(Okayama University, Japan)

WC07-4 Development of Ranging Method for Inter-Vehicle Distance using Visible Light Communication and Image Processing 666

Nobuo Sasaki, Naoyuki Iijima, Daiki Uchiyama(National Institute of Technology, Gunma College, Japan)

WC07-5 Wireless communication in mobile robot system 671
Jang Myung Lee, Minh Nhat Hoang, Dongeon Kim, Seongik Han, Hyunuk Ha(Pusan National University, Korea, Republic of)

WC08 [OS] Navigation and Control Application for Military Robot Systems

203, 16:30~18:00

WC08-1 Whole-Body Motion Control for a Rescue Robot using Robust Task-Priority based CLIK 675
Wonsuk Lee, Youngwoo Lee, Gyuheyun Park, Seongil Hong, Byunghun Choi, Younsik Kang(Agency for Defense Develoment, Korea, Republic of)

WC08-2 Optimization of Multiple Sensor Data Pipeline for Real-time 3D Terrain Reconstruction 680
Seoungjae Cho, Seongjo Lee, Kyhyun Um, Kyungeun Cho(Dongguk University-Seoul, Korea, Republic of), Sungdae Sim, Yong Woon Park(Agency of Defense Development, Korea, Republic of)

WC08-3 Satellite and Street Map Matching Method Using Iterative Closest Point 684
Kang Jeong Min, Park Jin Bae(Yonsei Universiity, Korea, Republic of)

WC08-4 Vertical Channel Damping Loop Design using Vertical Position and Velocity Information 688
TOK SON CHOE(Yonsei University, Korea, Republic of), Won Sang Ra(Handong Global University, Korea, Republic of), Jin Bae Park(Yonsei University, Korea, Republic of), Kwanghoon Kim, Myonghwan Ahn(LIG Nex1 Co., Ltd., Korea, Republic of)

WC08-5 Localization of UGV Based on 2-Point Absolute Pose Algorithm 693
Sung-In Choi, Pathum Rathnayaka, Soon-Yong Park(Kyungpook National University, Korea, Republic of)

WC08-6 Numerical singularity analysis of a tire model for real-time Traversability Simulation 696
Samuel Jung, Wan-Suk Yoo(Pusan national university, Korea, Republic of)

WC09 Unmanned Ground Vehicles

204, 16:30~18:00

WC09-1 Adaptive sliding mode for the control of a wheeled mobile robot 699
Smain Azzeddine Tchenderli-Braham(Centre for Development of Advanced Technologies, Algeria)

WC09-2 Formation Control of Multi-Vehicle Systems using Cooperative Game Theory 704
Amin Aghajani, Ali Doustmohammadi(Amirkabir University of Technology (Tehran Polytechnic), Iran, Islamic Republic of)

WC09-3 Development of a Full Speed Range Path-following System for Autonomous Vehicle 710
Chang Il Kim, Moon-sik Kim, Kwang-soo Lee, Moon-hyung Song(Korea Automotive Technology Institute, Korea, Republic of), Hyung-soo Jang, Tae-seok Park(Ssangyong Motor Company, Korea, Republic of)

WC09-4 Adaptive sliding mode controller applied on an underactuated wheeled mobile robot 716
Smain Azzeddine Tchenderli-Braham(Centre for Development of Advanced Technologies, Algeria)

WC09-5 Posture stabilization using a model free controller 720
Smain Azzeddine Tchenderli-Braham(Centre for Development of Advanced Technologies, Algeria)

WC09-6 Development of FPGA-based system for control of an Unmanned Ground Vehicle with 5-DOF Robotic Arm 724
Abdullah Afaq, Mohammad Ahmed, Ahmed Kamal, Umar Masood, Muhammad Shahzaib, Nasir Rashid, Mohsin Tiwana, Javaid Iqbal, Asadullah Awan(National University of Sciences and Technology(NUST), Pakistan)

TA01 [OS] Control Techniques for Mechanical Systems

101, 09:10~10:40

TA01-1 Robust Backstepping Control Strategy of Limiting DC-link Voltage Fluctuation for DFIG-based WECS Under Harmonically Distorted Grid Voltage 730
Hyoungwoo Kim, Joon Young Choi(Pusan National University, Korea, Republic of)

TA01-2 Computational Delay and Real-time Performance of Industrial Network 735
Young-Hun Song(Korea Electrotechnology Research Institute, Korea, Republic of), Kyung Chang Lee(Pukyong National University, Korea, Republic of), Suk Lee(Pusan National University, Korea, Republic of), Hong-Ju Kim(Korea Electrotechnology Research Institute, Korea, Republic of)

TA01-3 Development of Hexapod Robot for Machining 738
Sunghee Choi, Chang Nho Cho, Hong-Ju Kim(KERI, Korea, Republic of)

TA01-4 Emotion Expression of Humanoid Robot by Modification of Biped Walking Pattern 741
Jong-Wook Kim, Chien Van Dang(Dong-A Univ., Viet Nam)

TA01-5 Way-point tracking for a Hovering AUV by PID controller 744
moon joo(Pukyong National Universiry, Korea, Republic of)

TA02 [OS] Sensing and Control System Application for Marine Systems

102, 09:10~10:40

TA02-1 Accuracy Evaluation of Camera-based Position and Heading Measurement System for Vessel Positioning at a Very Close Distance 747
Yoshiaki Mizuchi, Tadashi Ogura(Soka University, Japan), Young-Bok Kim(Pukyong National University, Korea, Republic of), Yoshinobu Hagiwara(Ritsumeikan University, Japan), Yongwoon Choi(Soka University, Japan)

TA02-2 A Study on Floating Unit Motion Control Strategy 752
Youngbok Kim, Abh-Minh D. Tran, Jung-In Yun, Kwang-Hwan Choi, Chang-Hyo Son(Pukyong National University, Korea, Republic of)

TA02-3 An Easy Learning and Regeneration Strategy of Robot Motion 758
Youngbok Kim(Pukyong National University, Korea, Republic of), Dac-Chi Dang(the Graduate School, Pukyong National University, Korea, Republic of), Suk-Ho Jung(Pukyong National University, Korea, Republic of), Yong-Woon Choi(Soka University, Japan)

TA02-4 Highly Accurate Stereo-based Measuring and Tracking System for Vessel Control 763
Tadashi Ogura, Yoshiaki Mizuchi(Soka University, Japan), Young-Bok Kim(Pukyong National University, Korea, Republic of), Yongwoon Choi(Soka University, Japan)

TA02-5 Railway Track Structural Health Monitoring System 769
Fatima Imdad, Muhammad Tabish Niaz, Hyung Seok Kim(Sejong University, Korea, Republic of)

TA02-6 Active Control of an Offshore Container Crane 773
Ngo Phong Nguyen, Quang Hieu Ngo(Can Tho University, Viet Nam), Quang Phuc Ha(University of Technology Sydney, Australia)

TA03 Robot Mechanism and Control

103, 09:10~10:40

TA03-1 Wall Following Control for Car-Like Wheeled-Mobile Robot with Differential-Wheels Drive 779
Lafin Hari Prayudhi(Pusan National University, Indonesia), Augie Widyotriatmo(Institut Teknologi Bandung (ITB), Indonesia), Keum-Shik Hong(Pusan National University, Korea, Republic of)

TA03-2 Physical Modelling of Energy Consumption of Industrial Articulated Robots 784
Akeel Othman(FEE, Department of Control Engineering, Czech Republic), Kvetoslav Belda(Czech Academy of Sciences, UTIA, Czech Republic), Pavel Burget(Czech Technical University in Prague, Czech Republic)

TA03-3 Predict Position of Delta Parallel Robot Using Anfis 790
Tuong Phuoc Tho, Nguyen Truong Thinh, Nguyen Trong Tuan, Ma Ngoc Thanh Nhan(Ho Chi Minh City University of Technology and Educational, Viet Nam)

TA03-4 Automation of slewing motions for forestry cranes 796
Szabolcs Fodor, Carlos Vazquez, Leonid Freidovich(Umeå University, Sweden)

TA03-5 Balancing control of Mobile Manipulator with Sliding mode Controller 802
Jang Myung Lee, Yudong Zhao, Changjun Woo(Pusan National University, Korea, Republic of)

TA03-6 Inverse Kinematics Control of Redundant Planar Manipulator with Joint Constraints Using Numerical Method 806
Raabid Hussain(National University of Sciences and Technology, Islamabad, Pakistan, Pakistan), Asim Qureshi, Rasheeq Ali Mughal, Raafay Ijaz, Nasir Rashid, Mohsin Islam Tiwana, Javaid Iqbal(National University of Sciences and Technology, Pakistan, Pakistan)

TA04 Biorobotics and Medical Robots

104, 09:10~10:40

TA04-1 An Experimental Study on the Relationship between the Components and Movement of the Human Knee Using an Android Model - Measurement of Internal-External Rotation and Anterior-Posterior Tibial Translation - 811
Daichi Yamauchi, Noritaka Sato, Yoshifumi Morita(Nagoya Institute of Technology, Japan)

TA04-2 Quantitative Evaluation Support System of Shoulder Joint Function using Three-Dimensional Force Display Robot 816
Ryosuke Takeichi, Noritaka Sato, Yoshifumi Morita, Kenji Komori(Nagoya Institute of Technology, Japan)

TA04-3 A Method for Fluoroscopy Based Navigation System to Assist Needle Insertion Concerning Reduced Radiation Exposure for Endoscopic Disc Surgery 820
Jinkon Park, Hyon Min Yoon, Siyeop Yoon, Malinda Vania, Deukhee Lee(Korea Institute of Science and Technology, Korea, Republic of)

TA04-4 Development of Prototype Supporting Mechanism Based on Measurement of Standup Motions 825
Naoya Nakanishi, Taigi Suzuki, Yuta Hongo, Satoshi Iso, Takashi Oogawara, Nobuto Matsuhira(Shibaura Institute of Technology, Japan)

TA04-5 Design of an Assistance Robot for Patients Suffering from Paraplegia 830
Shakir Khan, Muhammad Fahad Zeb, Nouman Ghafoor, Saad Jamshed(Air University, Pakistan), Muhammad Raheel Afzal(Gyeongsang National University, Korea, Republic of), Amre Eizad(Air University, Pakistan)

TA05 [OS] Electro-Hydraulic System

105, 09:10~10:40

TA05-1 Adaptive Output Feedback Control of an Electro-hydraulic System 835

Dang Xuan Ba, Ahn Kyoung Kwan(University of Ulsan, Korea, Republic of)

TA05-2 Development of the Flexible Observation System for a Virtual Reality Excavator Using the Head Tracking System 841
Quang Hoan Le(university of ulsan, Korea, Republic of), Soon-Yong Yang(university of Ulsan, Korea, Republic of), Young-Man Jeong, Chi Thanh Nguyen(university of ulsan, Korea, Republic of), Jong-Il Bae(Pukyong University, Korea, Republic of)

TA05-3 Time Delay Control of a Pump-controlled Electro-hydraulic Actuator 847
Maolin Jin(Research Institute of Industrial Science and Technology (RIST), Korea, Republic of), Jinwook Kim(Korea Electrotechnology Research Institute (KERI), Korea, Republic of), Dang Xuan Ba, Hyung Gyu Park, Kyoung Kwan Ahn(University of Ulsan, Korea, Republic of), Jong Il Yoon(Korea Construction Equipment Technology Institute, Korea, Republic of)

TA05-4 Performance improvement of electro-hydraulic servo valve based on pole placement 851
Kim Ji-U, Yun So-Nam, Jung Eun-A, Tanaka Yoshito(Korea Institute of Machinery & Material, Korea, Republic of)

TA05-5 Grey Prediction Based Adaptive Sliding Mode Control for Electro-Hydraulic Actuator System 857
Thanh Liem Dao, Kyoung Kwan Ahn(University of Ulsan, Korea, Republic of)

TB01 How to Achieve Successful Technology Transfer

101, 13:00~14:30

TB02 [OS] SICE-ICROS Joint Organized Session on Intelligent Robot System

102, 13:00~14:30

TB02-1 Group-Based Particle Swarm Optimization for Multiple-Vehicles Trajectory Planning 862
Anugrah K Pamosoaji(University of Atma Jaya Yogyakarta, Indonesia), Keum-Shik Hong(Pusan National University, Korea, Republic of)

TB02-2 Survival Probability Map Based Path Planning of Mobile Robots 868
Se Hong Park, Beom Seok Cho, Min ho Kim, Min Cheol Lee(Pusan National University, Korea, Republic of)

TB02-3 Flight Evaluation of Solar Powered Unmanned Flying Vehicle Using Ground Testbed 871
Hyeon Bo Park, Joo Seok Lee, Kee Ho Yu(Chonbuk national university, Korea, Republic of)

TB02-4 Position Determination of a Popup Menu on Operation screens of a Teleoperation System using a Low Cost Head Tracker 875
Ryosuke Sugai, Masamitsu Kurisu(Tokyo Denki University, Japan)

TB02-5 Extraction of actions and objects from instruction manual for executable robot planning 881
Ngoc Hung Pham, Takashi Yoshimi(Shibaura Institute of Technology, Japan)

TB03 Nonlinear Systems

103, 13:00~14:30

TB03-1 Design of Nonlinear Model Predictive Control for Regenerative Thermal Oxidizer System 886
Sasita Anucha, David Banjerdpongchai(Chulalongkorn University, Thailand)

TB03-2 A Multi-dimensional Taylor Network (MTN)-Based Approach for Nonlinear Stochastic Systems Tracking Control 892

Yuqun Han, Hongsen Yan(Southeast University, China)

TB03-3 ADRC Applied in Chaotic Arrhythmic Heartbeats Control 897
HE TING, LI DONGHAI(Tsinghua University, China)

TB03-4 Asymptotically Tracking and Dynamic Regulation of SISO Nonlinear System Based on Multi-dimensional Taylor Network Controller 903
An ming Kang, Yan Hong Sen(Southeast University, China)

TB03-5 Optimal Tracking Control of MISO Nonlinear Systems Based on Multi-dimensional Taylor Network Only by Output Feedback 909
Sun Qiming, Yan Hong Sen(Southeast University, China)

TB03-6 Prediction of Limit Cycle in Nonlinear Systems with Reset Controllers Using Describing Function 913
Masataka Iwai, Toshimitsu Ushio(Osaka University, Japan)

TB04 [OS] Machine Vision Applications

104, 13:00~14:30

TB04-1 Image-based Guidance System for Intravascular Microrobot: Fiducial Marker-based Registration using Biplanar Fluoroscopy Images & CTA Images 919
Jinsik Oh, Jong-Oh Park, Sukho Park, Seong Young Ko(Chonnam National University, Korea, Republic of)

TB04-2 A Sensor Fusion Method to Solve the Scale Ambiguity of Single Image by Combining IMU 923
onecue Kim(Pusan National University, Korea, Republic of), Dong-Joong Kang(Pusan National Univ, Korea, Republic of)

TB04-3 Improvement of traffic sign recognition by accurate ROI refinement 926
Sungho Kim(Yeungnam University, Korea, Republic of), Soon Kwon(DGIST, Korea, Republic of)

TB04-4 Region-based Pringting Quality enhancement 929
Hyun-Seung Lee, Ji-young Yi, YoungSu Moon(Samsung Electronics (SEC), Korea, Republic of)

TB04-5 Indoor Localization of Quadropter using Vision based Sensor fusion 932
Wangheon Lee(Hansei University, Korea, Republic of), Byoung kyun Kim, Hyun gyu Kang(Hansei University of Korea, Korea, Republic of)

TB05 [OS] Image based Ambient Intelligence

105, 13:00~14:30

TB05-1 The Car Washing Control Method using 3D Contour Segmentation 935
Yang Yu(Intelligent Systems Lab, Korea, Republic of), Laksono Kurnianggoro(Intelligent Systems Lab., Korea, Republic of), Kanghyun Jo(University of Ulsan, Korea, Republic of)

TB05-2 Framework of Real-time Car Detection using Calibrated Camera and LRF 938
Laksono Kurnianggoro, Kang-Hyun Jo(Intelligent Systems Lab., Korea, Republic of)

TB05-3 Localization of Pedestrian Area from Hybrid Camera System 943
Joko Hariyono, Kanghyun Jo(University of Ulsan, Korea, Republic of)

TB05-4 Smartphone-based sensory augmentation technology for home-based balance training 947
Beom-Chan Lee, Alberto Fung(University of Houston, United States)

TB05-5 Pilot Cognitive State Recognition using Wavelet Singular Entropy and Gaussian Process Classification via Full Flight Simulation 953
Zhengxiang Cai, Qi Wu, Shan Fu, Dan Huang, Biting Yu(Shanghai Jiao Tong University, China)

TB05-6 A Novel Flag-Language Remote Control Design for a Laparoscopic Camera 959

Holder Using Image Processing

Kateryna Zinchenko, Kai-Tai Song(National Chiao Tung University, Taiwan), Wayne Shi-Wei Huang(Show Chuan Memorial Hospital, Taiwan), Kai-Che Liu(Asian Institute of TeleSurgery, IRCAD, Taiwan)

TB06 [OS] State Estimation and Applications

206, 13:00~14:30

TB06-1 Exponential Stabilization for Discret-Time Uncertain 2-D Switched Systems 964

Rongni Yang(Shandong University, China), Peng Shi(The University of Adelaide, Australia)

TB06-2 H∞ FIR Filter Design With Missing Measurements 971

Seo Won Lee, Chang Joo Lee, Myo Taeg Lim(Korea Univ., Korea, Republic of), Choon Ki Ahn(Korea University, Korea, Republic of)

TB06-3 Fault detection for a class of stochastic systems with unknown disturbance 975

Yanhao Zhan, Zehui Mao, Bin Jiang, Mou Chen(Nanjing University of Aeronautics and Astronautics, China)

TB06-4 Stabilization Analysis for Discrete-Time Fuzzy Systems via Nonuniform Delay Partitioning Technique 980

Fengqin Xia, Xiaojie Su(Chongqing University, China), Peng Shi(The University of Adelaide, Australia)

TB06-5 Observer-Based Control Design for a Class of Nonlinear Systems Subject to Unknown Inputs: LMI Approach 984

Saleh Sayyaddelshad, Thomas Gustafsson(Luleå University of Technology, Sweden), Hamid Reza Karimi(University of Agder, Norway), Ali Zemouche(University of Lorraine, France)

TP01 Control Theory and Applications

201~204, 17:00~18:30

TP01-1 H∞ State-Feedback Control for Continuous-Time Markovian Jump Systems with Partly Unknown Transition Probabilities 990

In Seok Park, Nam Kyu Kwon, POOGYEON PARK(POSTECH, Korea, Republic of)

TP01-2 Stochastic stability analysis of semi-Markovian jump linear systems via a relaxation technique for time-varying transition rates 995

Sung Hyun Kim, Ngoc Hoai An Nguyen(University of Ulsan, Korea, Republic of)

TP01-3 Improved H∞ state-feedback control for discrete-time Markovian jump systems with incomplete knowledge of transition probabilities 999

Nam Kyu Kwon, BumYong Park, POOGYEON PARK(POSTECH, Korea, Republic of)

TP01-4 Analysis and Control of Capacitive-coupled Wireless Power Transmission System 1005

Hee-Su Choi, Jun-Young Park, Sung-Jin Choi(University of Ulsan, Korea, Republic of)

TP01-5 Grey prediction method for forecasting the capacity of lithium-ion batteries 1010

Daehyun Kim, Taedong Goh, Minjun Park, Minhwan Seo, Sang Woo Kim(POSTECH, Korea, Republic of)

TP01-6 H_∞ control based on LPV for load torque compensation of PMSM 1013

Hoonyoung Lee(Systems and control Lab. Hanyang University, Korea, Republic of), Youngwoo Lee, Donghoon Shin(Hanyang university, Korea, Republic of), Chung Choo Chung(Hanyang University, Korea, Republic of)

TP01-7 A New Filtering Method for Discrete-Time Delay Control 1019

Jong-Min Yoon, Wook Bahn(Seoul National University, Korea, Republic of), Sang-Sub Lee, Sang-Hoon Lee(RS Automation Co., Ltd., Korea, Republic of), Dong-Il Dan Cho(Seoul National University, Korea, Republic of)

TP01-8	Scenario Based Robust Control Design for Uninterruptible Power Supplies *Aisha Qamar(College of E&ME, National University of Sciences and Technology, Pakistan), Asad Ullah Awan, Kunwar Faraz Ahmed Khan, Muwahida Liaquat(College of E&ME, National University of Sciences and Technology Islamabad, Pakistan)*	1024
TP01-9	Robust Integrated Guidance and Control Design Method For UCAV Based on Trajectory Linearization Control *Huan Zhou, Hui Zhao, Han Qiao Huang, Tong Han(Aeronautics and Astronautics Engineering College, Air Force Engineering University, China)*	1030
TP01-10	LuGre Model-Based Adaptive Robust Control of Mechanical Systems Using Only Position Measurement *Cho Won Lee, In Hyuk Kim(Myongji University, Korea, Republic of), Young Ik Son(Myongji Univ., Korea, Republic of)*	1036
TP01-11	On Performance Recovery and Bumpless Switch of Disturbance Observer based Control *Li Sun, Donghai Li(Tsinghua University, China), Kwang. Y. Lee(Baylor University, United States)*	1042
TP01-12	State Estimation for a Carbon Nanotube-based Sensor Array System *Hong Jang, Jay H Lee(KAIST, Korea, Republic of), Richard D Braatz(MIT, United States)*	1046
TP01-13	System Identification and Parameter Estimation of a Multi-rotor flying Machine *Mohammad Harun Or Rashid, Beom-Soo Kang(Pusan National University, Korea, Republic of)*	1052
TP01-14	Approximate Bisimulations for Constrained Discrete-Time Linear Systems *Guoqi Ma, Linlin Qin, Xinghua Liu, Chun Shi, Gang Wu(University of Science and Technology of China, China)*	1058
TP01-15	Short-Term Prediction of Disturbance Inputs of the Greenhouse System: A Case Study on Outside Humidity *Guoqi Ma, Linlin Qin, Liu Xinghua, Chun Shi, Gang Wu(University of Science and Technology of China, China)*	1064
TP01-16	Proportional multiple-Integral observer based Sliding Mode Control for Linear Systems with Mismatched Disturbance *Hyoung-woong Lee, Jaepil Ban, Sangchul Won(POSTECH, Korea, Republic of)*	1070
TP01-17	The Ultimate Bound of a Sampled-Data Sliding Mode Control System for a Second-Order Systems *Ho Suk Yeon, Kang-Bak Park, Soon Hong Kwon(Korea Univ., Korea, Republic of)*	1075
TP01-18	Terminal sliding mode control of master-slave system with Markovian jump parameters *Liu Xinghua, Ma Guoqi, Xi Hongsheng, Wang Weidong(University of Science and Technology of China, China)*	1078
TP01-19	Iterative Generalized-α Method for the Dynamic Analysis of Flexible Multibody System *Wei Sun(Xijing University, China)*	1084
TP01-20	Stability analysis of uncertain switched systems via delay partitioning *Wenxiu Zhao, Yuangong Sun(University of Jinan, China)*	1088
TP01-21	New criteria on finite-time stability of nonautonomous systems with delay and disturbance *Yanan Li, Yuangong Sun(University of Jinan, China)*	1092
TP01-22	Stabilization of an Inhomogeneous Heat Equation Subject to Constraint *Shuang Zhang(University of Electronic Science and Technology of China, China), Chuan Yang, Shuangxi Nie(University of Electronic and Technology of China, China), Wei He(University of Science and Technology Beijing, China)*	1096
TP01-23	Sliding Mode Control with Friction Observer and Load Observer of PMSM	1102

Linyuan Chai, Fenxi Yao(Beijing Institute of Technology, China)

TP01-24 Control capability：from two-loop autopilot to three-loop autopilot 1107
Jun-fang FAN, Xiao-qian AN(Beijing Information Science & Technology University, China)

TP01-25 T-S Fuzzy Control of IPMSM Using Backstepping Integral Sliding Mode 1113
Seungkyu Park, Abner Asignacion(Changwon National University, Korea, Republic of)

TP01-26 Cluster Consensus for Heterogeneous Multi-agent Systems 1119
Jae Man Kim, Jin Bae Park(Yonsei University, Korea, Republic of), Yoon Ho Choi(Kyonggi University, Korea, Republic of)

TP01-27 Stochastic Stability of Dynamical Systems Driven by Levy Processes 1123
T. Agustinus Tamba(Bandung Institute of Technology, Indonesia), Arjon Turnip(Indonesian Institute of Sciences, Indonesia)

TP01-28 Observer Design for a Class of Nonlinear Systems Driven by Stochastic ProcessWith Bounded Covariance 1128
T. Agustinus Tamba(Bandung Institute of Technology, Indonesia), Arjon Turnip(Indonesian Institute of Sciences, Indonesia)

TP01-29 Adaptive Synergetic Control about Attitude Tracking of Rigid Spacecraft with Disturbances and Parameter Uncertainties 1133
Yanlong Jia, Xuebo Yang(Bohai University, China)

TP02 Robotics

201~204, 17:00~18:30

TP02-30 Inverse Dynamic Modeling of a Stair-Climbing Robotic platform with Flip Locomotion 1139
Jae Neung Choi(Yeungnam Univ., Korea, Republic of), Kyungmin Jeong(Korea Atomic Energy Research Institute, Korea, Republic of), TaeWon Seo(Yeungnam Univ., Korea, Republic of)

TP02-31 Design of Roller-Cam Clutch Mechanism for Energy Efficiency and High BackDrivability of Lower Extremity Exoskeleton 1144
Ho Jun Kim, Chang Soo Han(Hanyang Univ., Korea, Republic of)

TP02-32 Modeling and Dynamic Analysis of the Biped Robot 1149
Muhammad Rameez(Air University, Pakistan), Liaquat Ali Khan(Muhammad Ali Jinnah University, Pakistan)

TP02-33 Design of a Heavy Duty Manipulator for Dismantling of a Nuclear Power Plant 1154
Changhoi Kim, Yongchil Seo, Sung-uk Lee, Byung-seon Choi, Jei-kwon Moon(Korea Atomic Energy Research Institute, Korea, Republic of)

TP02-34 Stability Analysis of Reference Compensation Technique of Neural Network Control for Robot Manipulators 1159
Seul Jung(Chungnam National University, Korea, Republic of)

TP02-35 Development of a New Hybrid Link Based Mobile Platform 1162
Heeseung Hong(Seoul National Universitiy, Korea, Republic of), Hwa Soo Kim(Kyonggi University, Korea, Republic of), Jongwon Kim, Youngjae Jeon(Seoul National University, Korea, Republic of)

TP02-36 Inverse Optimal Design of Graphical Formation Control of Mobile Robots Considering Their Kinematics and Dynamics 1166
Jae Young Lee(Yonsei University, Korea, Republic of), Yoon Ho Choi(Kyonggi University, Korea, Republic of), Jin Bae Park(Yonsei University, Korea, Republic of)

TP02-37 Tracking Control of Wheeled Mobile Robot Using Iterative Learning Controller 1172
Xiaochun Lu, Juntao Fei(Hohai University, China)

TP02-38 Three Designs of Mobile Robot Traveling Simulator Using Optical Mice 1177
Sungbok Kim, Chanhyeok Lee(Hankuk Univ. of Foreign Studies, Korea, Republic of)

TP02-39	Evolutionary Algorithm-based Formation Control and Collision Avoidance for Multiple Mobile Robots *Seung-Mok Lee, Hyun Myung(KAIST, Korea, Republic of)*	1183
TP02-40	Polynomial Curve-based Longitudinal Motion Planning for Safe Deceleration *Byungjae Park(ETRI, Korea, Republic of)*	1186
TP02-41	Fall detection algorithm for elderly based-on Human characteristic matrix and SVM *Rui-dong Wang, Yong-liang Zhang, Ling-ping DONG , Jia-wei Lu , Zhi-qin ZHANG , Xia HE (Zhejiang University of Technology, China)*	1190
TP02-42	Fast object detection via re-use mechanism *Daeha Lee(ETRI, Korea, Republic of)*	1196
TP02-43	Perimeter Intrusion Detection Based on Intelligent Video Analysis *Zhang ZhiQin, Zhang YongLiang, Xiao Gang, Wang RuiDong, He Xia(Zhejiang University of Technology, China)*	1199
TP02-44	A Study on the Compensation of Image Rotation for Optical Three-Dimensional Microscope *Yeon-Beom Choi, Jun-Ho Kim(Korea Polytechnic University, Korea, Republic of), Woo-Jun Kim(Glonik, Korea, Republic of), Doo-Hee Jung(Korea Polytechnic University, Korea, Republic of)*	1205
TP02-45	Vision Based Robot for Recognizing and Grasping Fast Moving Conveyor Products *Jang Myung Lee, Longtan Wang, Zhitao Wang, Hoyun Yu, Hwimyung Ha, Yunki Kim(Pusan National University, Korea, Republic of)*	1211
TP02-46	Inverse Perspective Mapping Technique Based on a Virtual-Vertical Plane Model for Obstacle Detection with Mono Camera *Dong-Hoon Yi, Tae-Jae Lee, Dong-Il Dan Cho(Seoul National University, Korea, Republic of)*	1216
TP02-47	Simplified Assistive Devices for Upper Limbs *Ryoichi Suzuki, Nobuaki Fujiki, Shigehiko Furuya, Eidai Ito, Nobuaki Kobayashi, Eberhard P Hofer(Kanazawa Institute of Technology, Germany)*	1220
TP02-48	Evaluation of remote operability and maintainability of pyroprocessing equipment *Kiho Kim(Korea Atomic Energy Research Institute, Korea, Republic of)*	1224
TP02-49	Ceiling Work Scenario Based Hardware Design and Control Algorithm of Supernumerary Robotic Limbs *Changyeob Shin, Jangho Bae, Daehie Hong(Korea University, Korea, Republic of)*	1228
TP02-50	Variable impedance control with stiffness for human-robot cooperation system *Jangho Bae, JongHyeon Ko, Daehie Hong(Korea University, Korea, Republic of)*	1231
TP02-51	Image Stabilization Using FIR Filters *Myo Taeg Lim, Richard Y. Park, Jungmin Park, Choon Ki Ahn(Korea University, Korea, Republic of)*	1234
TP02-52	Mobile Robot Position Control Algorithm Based on Multiple Ultrasonic Distance Sensors *Baeksuk Chu(Kumoh National Institute of Technology, Korea, Republic of)*	1238
TP02-53	A Robust Control of Mobile Robot Based on Sonar Sensors *Byung Kyun Shim(Kyungnam University, Korea, Republic of)*	1241
TP02-54	A Study on Precise Control of Mobile Robot with Dual-Arm *Woo-Song Lee(Sungsanam Deco Co.,Ltd, Korea, Republic of)*	1244
TP02-55	A Study on Grasping Control of Hand Fingers with 12 Joints *Sang-Young Jo(Kyungnam University, Korea, Republic of)*	1247
TP02-56	A Study on Travelling Control of Mobile Robot by Voice Commend	1250

Young-Mok Koo(KyungNam University, Korea, Republic of)

TP02-57 A Study on Robust Control of Articulated Robot Arm with Seven Joints 1253
Jun Seok Yang(KyungNam University, Korea, Republic of)

TP02-58 A Stable Control of Legged Robot Based on Ultrasonic Sensor 1256
Eun-Tae Ha(Future Technology Institute Co., Ltd, Korea, Republic of)

TP02-59 A Reel-Time Control for Precise Walking of Bipped Robot 1259
In-Man Park(Intem Co., Ltd., Korea, Republic of)

TP02-60 A Study on Robust Motion Control of Humanoid Type Robot for Cooperative Working 1262
Won-Jun Hwang(Gyeongnam Technopark Co. Ltd, Korea, Republic of)

TP02-61 A Precise Position Control of Robot Manipulator with Eight Joints 1265
Yang-Keun Jeong(Sinla Information Technology Co., Ltd., Korea, Republic of)

TP02-62 A Study on Visual Feedback Control of SCARA Robot Arm 1268
Hyun-Suk Sim(Dongsan Tech co,.Ltd, Korea, Republic of)

TP02-63 Active Safety System for Personal Mobility Vehicles 1271
Changwon Kim(Korea Institute of Machinery and Materials, Korea, Republic of), Kang Hyun Ye, Seung Kyu Park(Keimyung University, Korea, Republic of)

TP02-64 An automated Point-of-Care Instrument for Molecular Testing 1275
Ohwon Kwon, Kangho Lee, Dongkyu Lee(Korea Institute of Machinery and Materials, Korea, Republic of)

TP02-65 An Alternating Current-driven Control for Biomolecule Detection 1279
Kang-Ho Lee(Korea Institute of Machinery and Materials, Korea, Republic of)

TP02-66 Development of Prototype System for Robot-assisted Ultrasound Diagnosis 1285
Joonho Seo, Jangho Cho, Hyunsoo Woo, Yongkoo Lee(Korea Institute of Machinery & Materials, Korea, Republic of)

TP02-67 Hybrid Mode Impedance Control for Rehabilitation System 1289
Youngwoo Kim(Korea Institute of Machinery & Materials (KIMM), Korea, Republic of), Goro Obinata(Chubu University, Japan, Japan)

TP02-68 Home-Legacy Device Intelligent Control Using ANFIS with Data Regeneration and Resampling 1294
Jun ho Chung, In Hwan Choi, Sung Hyun Yoo, Myo Taeg Lim(Korea Univ., Korea, Republic of), Hyun Kook Lee(eZEX Corporation, Korea, Republic of), Moon Kyu Song(Wonkwang Univ., Korea, Republic of), Choon Ki Ahn(Korea University, Korea, Republic of)

TP02-69 A Binary Based HMAX Model for Object Recognition 1297
Tae-Koo Kang(Sangmyung University, Korea, Republic of), HuaZhen Zhang, Dong-Sung Pae, Myo-Taeg Lim(Korea University, Korea, Republic of)

TP02-70 Humanoid Robot Based on the Middleware CORBA 1302
Dong W. Kim(Inha Tech., Korea, Republic of)

TP03 Signals and Intelligent Systems

201~204, 17:00~18:30

TP03-71 Bluetooth-based Tree Topology Network for Wireless Industrial Applications 1305
Joonkyo Kim, Shin-kwang Kang, Jaehyun Park(Inha University, Korea, Republic of)

TP03-72 Development of methods for receiving analytical data from different SQL/NoSQL databases and leading to uniform format 1309
Nurzhan Kakenovich Mukazhanov, Raissa Kabilevna Uskenbayeva, Abu Abdykadyrovich Kuandykov(International Information Technology University, Kazakhstan)

TP03-73 Nolinear Multi-component Spectroscopy Analysis Based on Evolutionary Construction Optimazation 1315
Boyan Cai, Hui Cao, Yanbin Zhang, Lixin Jia, Gangquan Si(Xian Jiao Tong University, China), Zhongjian Li(Northwestern Polytechnical University, China)

TP03-74 Weak False Label Learning Model for Sensor Data Recognition 1321
SUNG JUNE CHANG, HUN JOO LEE(ETRI, Korea, Republic of)

TP03-75 Artificial Neural Network-Based Model for Quality Estimation of Refined Palm Oil 1324
Nurul Sulaiha Sulaiman, Khairiyah Mohd Yusof(Universiti Teknologi Malaysia, Malaysia)

TP03-76 Entropy Estimation of the Position of the Barrier Dimension: Applicability Nearsighted and Farsighted Iterative Algorithms for Processing High-Dimensional Data 1329
Berik Akhmetov(Hoja Ahmet Yasaui International Kazakh-Turkish University, Kazakhstan), Alexander Ivanov(Penza Research Electrotechnical Institute, Russian Federation), Anis Gilmutdinov(A.N.Tupolev Kazan National Research Technical University, Russian Federation), Ivan Ognev(Moscow Power Engineering Institute (National Research University), Russian Federation), Kaiyrkhan Mukapil(Kazakh National Research Technical University named after K.I.Satpayev, Kazakhstan)

TP03-77 Perspectives of Multiple Reduction of Biometrical Test Selection Scopes While Increasing Network Dimension of Pearson's Private Criteria 1333
Bakhytzhan Akhmetov(Kazakh National Research Technical University named after K.I.Satpayev, Kazakhstan), Alexander Ivanov(Penza Research Electrotechnical Institute, Russian Federation), Alexander Malygin(Penza State University, Russian Federation), Zhibek Alibiyeva, Kaiyrkhan Mukapil(Kazakh National Research Technical University named after K.I.Satpayev, Kazakhstan)

TP03-78 The Family of Chi-Square Molecules Pearson: Software-Continuum Quantum Accelerators of High-Dimensional Calculations 1337
Bakhytzhan Akhmetov(Kazakh National Research Technical University named after K.I.Satpayev, Kazakhstan), Alexander Ivanov(Penza Research Electrotechnical Institute, Russian Federation), Anis Gilmutdinov(A.N.Tupolev Kazan National Research Technical University, Russian Federation), Alexander Bezyaev(Penza Research Electrotechnical Institute, Russian Federation), Yulia Funtikova(Penza State University, Russian Federation)

TP03-79 Dynamic function allocation method for aircraft cockpit based on operator functional state 1342
Wenhao Bi, An Zhang, shuida bao(Northwestern Polytechnical University, China)

TP03-80 Performances Evaluation and Comparison of PID Controller and Fuzzy Logic Controller for Process Liquid Level Control 1347
Deepa shivshant Bhandare(Modern college of Engineering ,University of Pune, India)

TP03-81 Interval Type-2 Fuzzy Maximum Power Point Tracking for Solar Photovoltaic Power Charging Systems 1353
Ching-Chih Tsai(National Chung Hsing University, Taiwan)

TP03-82 Design of GNSS Jamming Propagation Simulator using ITU-R P.1546 Propagation Model 1359
inone joo(ETRI, Korea, Republic of)

TP03-83 GNSS Interference Signal Generation Scenario for GNSS Interference Verification Platform 1363
Seongkyun Jeong, Cheon Sig Sin, Jaehoon Kim(Electronics and Telecommunications Research Institute, Korea, Republic of)

TP03-84 Experimental Studies of Autonomous Driving of a Vehicle on the Road Using LiDAR and DGPS 1366
Jeong Ku Kim(Hyundai Mobis, Korea, Republic of), Jin Wook Kim, Jin Hyung Kim, Yun Ho Ko(Chungnam National University, Korea, Republic of), Tae Hyung Jung(Hyundai Mobis, Korea, Republic of), Seul Jung, Young Jun Park(Chungnam National University, Korea, Republic of)

TP03-85 Calibration of the Drift Error in GPS using Optical Flow and Fixed Reference 1370

Station
Kyukwang Kim, Whimin Kim, Duckyu Choi, Hyun Myung(KAIST, Korea, Republic of)

TP03-86 INS Ground Alignment Through Observable Degree Analysis Based on Information Theory 1374
qiang fang(National University of Defense Technology, China)

TP03-87 EGI/IMU Integration Using Multiple IMUs and Error Damping Loop for SAR Motion Compensation 1380
Jin Woo Song, Chul Woo Kang, Young Bum Park, Yong-gonjong Park, Chan Gook Park(Seoul National University, Korea, Republic of)

TP03-88 Adaptive Code Decision Algorithm for Real-Time Software Signal Generator 1384
Tae Hee Kim(ETRI, Korea, Republic of)

TP03-89 Matching of Thermal and Color Images with Application to Power Distribution Line Fault Detection 1389
hahyoung jung, Joon Lyou(Chungnam National University, Korea, Republic of)

TP03-90 Afocal Optical Flow Sensor for Mobile Robot Odometry 1393
Dong-Hoon Yi, Tae-Jae Lee, Dong-Il Dan Cho(Seoul National University, Korea, Republic of)

TP03-91 Infrared System for Intermittent Automatic Train Protection 1398
Ahmad Sugiana(Kwangwoon University, Korea, Republic of), Mulyo Sanyoto, Par Wito, M. Rachmat Gunawan(PT. Industri Telekomunikasi Indonesia, Indonesia), Key Seo Lee(Kwangwoon University, Korea, Republic of)

TP03-92 Mathematical modeling of a six-axis force/moment sensor 1404
Chao Yuan(Hanyang University/ CnR Lab, Korea, Republic of), Gang Xue(Hanyang University, Korea, Republic of), Mei-Zhi Yang(Hebei University, China), Lu-Ping Luo, Kyoo-Sik Shin(Hanyang University, Korea, Republic of), Xue-Wei Zhang(China Academy of Aerospace Aerodynamics, China)

TP03-93 A computationally efficient suboptimal smoother for attitude and position estimation using inertial sensors 1410
Toan Huu Duong, Young Soo Suh(University of Ulsan, Korea, Republic of)

TP03-94 Performance Test and Analysis of Infrared Gas Sensors and a Combustible Gas Detector 1413
SEUNGHO HAN, Gyoutae Park, Geunjun Lyu, Yeonjae Lee(Korea Gas Safety Corporation, Korea, Republic of), Hiesik Kim(University of Seoul, Korea, Republic of)

TP03-95 Field Test and Performance Analysis of Integrated Cathodic Protection Monitors 1417
Seung Lak Kim, Gyou Tae Park, Gyun jun Lyu, yeon jae Lee(Korea Gas Safety Corporation, Korea, Republic of)

TP03-96 Design of a Portable Ammonia Detector for Supporting Gas Safety Fields 1421
TAEHO NAM, Gyoutae Park, Geunjun Lyu, Yeonjae Lee(Institute of Gas Safety R&d, Korea Gas Safety Corporation, Korea, Republic of)

TP03-97 Fast Magnetic Field Simulation with Linear System Approach 1425
Jaeho Lim, Chang-Beom Kim, Sunglok Choi, HyoBong Hong(Electronics and Telecommunications Research Institute (ETRI), Korea, Republic of), Jong Won Park(ChungNam National University (CNU), Korea, Republic of)

TP03-98 Design of Mobile Sensor Robot using Non-Linear Fault Recognizer Algorithm 1429
Rajaram P(Maha Barathi Engineering College, India), Prakasam Periasamy(United Institute of Technology, India)

TP03-99 SYNCHRONIZING NUMEROUS SAMPLING TASKS BY GEOMETRIC SERIES IN SENSOR FIELD 1435
Rajasekar Rangasamy(Tagore Institute of Engineering and Technology, India), Prakasam Periasamy(United Institute of Technology, India)

FA01 Bio-inspired Robot Design

101, 09:10~10:40

FA02 Control Applications I

102, 09:10~10:40

FA02-1 Control Strategy of Slack Enabling Tendon Actuator for the Soft Wearable Robot using Feedback Linearization 1441
Useok Jeong, Haemin Lee, Hyunki In, Kyu-Jin Cho(Seoul National University, Korea, Republic of)

FA02-2 Stability and Performance of Classical Digital Phase-Locked Loop in Discrete-time Settings 1445
Nur Syazreen Ahmad, Widad Ismail(Universiti Sains Malaysia (USM), Malaysia)

FA02-3 Research on Online rumor Based on SEIR Model with Nonlinear Incidence Rates 1451
Xiaojing Lin, Yaming Zhuang(Southeast University, China)

FA02-4 Backstepping and Backstepping Sliding Mode Controller for Droplet Position in Electrowetting on Dielectric System 1457
Arsit Boonyaprapasorn, Eakachai Pengwang, Thavida Maneewarn, Parinya Sa Ngiamsunthorn, Chadchawarn Pongsomboon, Wishanuruk Wechsathol, Rardchawadee Silapunt(King Mongkut's University of Technology Thonburi, Thailand)

FA02-5 A new method of synthetic jet actuator-based LCO suppression using an output feedback control strategy 1463
Natalie Ramos Pedroza, William MacKunis, Vladimir Golubev(Embry Riddle Aeronautical University, United States)

FA02-6 Model Predictive Control for Floating Offshore Wind Turbines with Failure Compensation using Individual Blade Pitch Control 1469
THIERY Flavien, Naoyuki Hara, Keiji Konishi(Osaka Prefecture University, Japan)

FA03 [OS] Time Delay and Their Applications

103, 09:10~10:40

FA03-1 State Dependent Disturbance Compensation Method for Motor Control Systems with Unknown Input Time Delay 1474
junmin Park(postech, Korea, Republic of), Daesung Jung(Samsung Electronics, Korea, Republic of), Wookyong Kwon, Soohee Han, Sangchul Won(postech, Korea, Republic of)

FA03-2 A New Adaptive Sliding Mode Control Scheme 1480
Jaemin Baek(POSTECH, Korea, Republic of)

FA03-3 A Robust Extended Kalman Filtering with Linearization Error 1485
Bokyu Kwon(Kangwon National University, Korea, Republic of), Soohee Han(Postech, Korea, Republic of)

FA03-4 Delay-dependent Stability Analysis of Time-delay Systems by Utilizing A New Integral Inequality and Delay-decomposition Approach 1488
Haiyang Zhang(Yunnan Minzu University, China), Lianglin Xiong(Yunnan University, China)

FA03-5 Unfalsified Adaptive Controller Design for Pilot-Aircraft System 1494
Wei Liming, Fu Shan, Huang Dan(Shanghai Jiao Tong University, China)

FA04 [OS] Medical Robotics and Simulation

104, 09:10~10:40

FA04-1 Control Configuration for Upper Limb Rehabilitation Robotic Systems 1500

Jang Ho Cho, Hyun Soo Woo, Hyuk Jin Lee, chul seung Kim(KIMM, Korea, Republic of)

FA04-2 Friction-Model-Based Estimation of Interaction Force of a Surgical Robot 1503
Subon Kim, Doo Yong Lee(KAIST, Korea, Republic of)

FA04-3 Improvement of Robotic Mechanism for Automated Biopsy 1508
Youngjin Moon(Asan Medical Center, Korea, Republic of), Jongseok Won(Seou National University, Korea, Republic of), Sanghoon Park, Jaesoon Choi(Asan Medical Center, Korea, Republic of)

FA04-4 3D Registration Using Inertial Navigation System And Kinect For Image-Guided Surgery 1512
JoonYoung Bang(Kyungpook National University, Korea, Republic of)

FA04-5 Endoscopic Camera Manipulation Planning of a Surgical Robot using Rapidly-Exploring Random Tree Algorithm 1516
Jaehyeon Park, Woojung Park, Chiwon Lee, Myungjoon Kim, Sungwan Kim, H. Jin Kim(Seoul National University, Korea, Republic of)

FA04-6 Design of an MRI-Compatible Modularized Needle Driver for In-bore MRI-Guided Prostate Interventions 1520
Kiyoung Kim(Imperial college London, Hamlyn Centre, United Kingdom), Meng Li, Berk Gonenc(Johns Hopkins University, United States), Weijian Shang(Worcester Polytechnic Institute, United States), Sohrab Eslami, Iulian Iordachita(Johns Hopkins University, United States)

FA05 [OS] Health Care Technology

105, 09:10~10:40

FA05-1 Research Trend and Future Perspective of Plasma-Assisted Health Care Technology 1526
Hae June Lee(Pusan National University, Korea, Republic of), Kiwon Song(Yonsei University, Korea, Republic of)

FA05-2 Medical device industry and the medical cluster in Daegu, Korea 1529
Jeong-Woo Sohn, Suk Tae Seo, Sang Il Lee(Daegu-Gyeongbuk Medical Innovation Foundation, Korea, Republic of)

FA05-3 Design of A Microneedles Array With Swellable Tips For Mechanical Interlocking With Soft Tissues 1532
Keum-Yong Seong, Seung Yun Yang(Pusan National University, Korea, Republic of)

FA05-4 Effective and Long-lasting Tooth Bleaching by Non-Thermal Atmospheric Pressure Plasma: A 6-month Evaluation 1535
Seoul Hee Nam, Jin Woo Hong, Gyoo-Cheon Kim(Pusan National University, Korea, Republic of)

FA06 [OS] Signal and Image Processing

206, 09:10~10:40

FA06-1 Posture Estimation from Kinect Image Using RVM Regression Analysis 1540
hiroyuki fujimura, Hyounseop Kim, Joo Kooi Tan, Seiji Ishikawa(Kyushu Institute of Technology, Japan)

FA06-2 Development of Image Viewer for Analyzing of Temporal Subtraction from Chest CT Images 1543
Masashi Kondo, Hyoungseop Kim, Yuriko Yoshino, Joo Kooi Tan, Seiji Ishikawa(Kyushu Institute of Technology, Japan), Seiichi Murakami(Univerty of Occupational & Environmental Health, Japan), Takatoshi Aoki(University of Occupational & Enviromental Health, Japan)

FA06-3 Automatic Segmentation of Phalanges Regions on MR Images Based on MSGVF Snakes 1547
Koji Shigeyoshi, Hyoungseop Kim(Kyushu Institute of Technology, Japan), Seiichi

Murakami(University of Occupational & Environmental Helth, Japan), Joo Kooi Tan, Seiji Ishikawa(Kyushu Institute of Technology, Japan)

FA06-4 Development of A Supporting System for Visual Inspection of IGBT Device Based on Statistical Feature and Complex Multi-Resolution Analysis 1551
daisuke yuki(kyushu institute of technology, Japan), Hyoungseop Kim(kyutech institute of technology, Japan), Joo Kooi Tan, Seiji Ishikawa, Masanori Tsukuda, Ichiro Omura(kyushu institute of technology, Japan)

FA06-5 A Glove-Based Gesture Recognition System for Vietnamese Sign Language 1555
Lam Tung Phi(Institute of Information Technology-VAST, Viet Nam), Hung Duc Nguyen(The College of Mechanics and Metallurgy, Viet Nam), Quyen T.T. Bui(Institute of Information Technology, Vietnam Academy of Science and Technology, Viet Nam), Thang Tat Vu(Institute of Information Technology -VAST, Viet Nam)

FA06-6 3D Vision for Mobile robot Manipulator on Detecting and Tracking Target 1560
Hieu Trong Luu, Hung Thanh Tran(Can Tho University, Viet Nam)

FB01 fNIRS Forum : Toward a Mobile Brain Imager

101, 13:30~15:50

FB02 Control Applications II

102, 13:30~15:00

FB02-1 Hybrid Magnetic Bearing Regulation via Super Twisting Control 1566
Mohamed S. Kandil(Universite de Sherbrooke, Canada), Philippe Micheau(Université de Sherbrooke, Canada), João P. Trovão(Universite de Sherbrooke, Canada), Loicq S. Bakay(Alstom Power, Canada), Maxime R. Dubois(Universite de Sherbrooke, Canada)

FB02-2 Decentralized H-infinity Control of Large-scale Descriptor Systems using Proportional-plus-derivative State Feedback 1572
SungBin Kim, wookyong Kwon, Jaepil Ban, Sangchul Won(POSTECH, Korea, Republic of)

FB02-3 Image Stitching Algorithm for Camber Measurement in Hot Rolling Process : Cross-Correlation Approach 1577
Min Su Kim, Won Il Lee, JinWoo Yoo, POOGYEON PARK(POSTECH, Korea, Republic of)

FB02-4 To Prevent Crack for Thin-wall Workpieces during Milling Process by Torque Feedback 1581
Mu-Ping Tsai, Nan-Chyuan Tsai, Chun-Chi Lin, Hsin-Lin Chiu(National Cheng Kung University, Taiwan)

FB02-5 Efficient Algorithm for Evacuation Problem Solving 1587
Ainur Kholdasovna Kozbakova, Aliya Kalizhanova(Kazakh National Technical University after K.I.Satpaev, Kazakhstan), Zhazira Amirgaliyeva(Kazakh National University named after al-Farabi, Kazakhstan), Yedilkhan Amirgaliyev(Institute of Information and Computing technologies, Kazakhstan)

FB02-6 Experimental Analysis of Electromagnetic Vibration Damping of a Cantilever Beam 1593
Muhammad Rizwan Siddiqui, Iftikhar Ahmad, Masroor Khan, Sarwat Mushtaq Ahmad(Ghulam Ishaq Khan Institute of engineering sciences and technology, Pakistan)

FB03 Identification and Estimation

103, 13:30~15:00

FB03-1 Evaluation of a Possibility of Estimation of Reaction Force of Simple Hydraulic System using Sliding Perturbation Observer 1598

Hyun Cheol Lee, Keum Gang Cha, Min Cheol Lee(Pusan National University, Korea, Republic of)

FB03-2 Average Consensus of Multi-agent System With Binary-valued Observations 1601
Ximei Wang, Ting Wang, Changbao Xu, Yanlong Zhao(Chinese Academy of Sciences, China)

FB03-3 Inequality Constrained Kalman Filter for Bearing-Only Target Motion Analysis 1607
jonghoek kim, Taeil Suh, Jonha ryu(agency for defense development, Korea, Republic of)

FB03-4 Performance Comparison of Sliding Mode Observers for Back EMFs based Speed Estimation in PMSM 1612
Suneel Kumar Kommuri, Jagat Jyoti Rath, Kalyana Chakravarthy Veluvolu(Kyungpook National University, Korea, Republic of), Michael Defoort(Univ. Lille Nord de France, France), Sivanagaraja Tatinati(Kyungpook National University, Korea, Republic of)

FB03-5 Road Profile Modeling by Subspace Identification Methods 1618
semiha turkay(anadolu university, Turkey)

FB03-6 The Identification Method of Robot Actuator Parameters 1624
Alexander Laray(Far Eastern Federal University, Russian Federation), Dmitry Yukhimets(Institute of automation and control processes, Russian Federation)

FB04 Human-Robot Interaction and Visual Servoing

104, 13:30~15:00

FB04-1 Sensitivity Analysis of Detection and Discrimination Transparency for Haptic Teleoperation 1629
Sangsoo Park, Riaz Uddin, Jeha Ryu(Gwangju Institute of Science and Technology, Korea, Republic of)

FB04-2 A Psychological Framework to Objectively Evaluate Socially Capable Robots for Interactive Tutoring Systems 1633
Barnabas Takacs, Klara Csizinszky, Lajos Simon(Semmelweis Medical University, Hungary), Daniele Mazzei(University of Pisa, Italy)

FB04-3 Design and development of the sorting system based on robot 1639
Tuong Phuoc Tho, Nguyen Truong Thinh(Ho Chi Minh City University of Technology and Educational, Viet Nam)

FB04-4 CAD-Based Pose Estimation for Random Bin-Picking of Multiple Objects Using a RGB-D Camera 1645
Cheng-Hei Wu, Sin-Yi Jiang, Kai-Tai Song(National Chiao Tung University, Taiwan)

FB04-5 Kinect Camera Sensor-based Object Tracking and Following of Four wheel Independent Steering Automatic Guided Vehicle Using Kalman Filter 1650
Amruta Vinod Gulalkari(Pukyong National University, Korea, Republic of), Dongbo Sheng, Pandu Sandi Pratama, Hak Kyeong Kim, Gi Sig Byun, Sang Bong Kim(Pukyong National Univesity, Korea, Republic of)

FB05 Civil and Urban Systems

105, 13:30~15:00

FB05-1 Research on Decoupling and Driving Factors of Industrial Ecosystem in Jiangsu Province 1656
wenwen Li, wenping wang, tiantian zhou, yingbo qin(Southeast University, China)

FB05-2 Transforming unitary habitats to multi-habitats in the Ladkrabang District of Bangkok Metropolitan Area 1662
Pastraporn - Thipayasothorn(King Mongkut's Institute of Technology Ladkrabang, Thailand)

FB05-3 Countermeasure Research of Green Logistics Development in Shandong Province 1672

Li Xue(Linyi University, China)

FB05-4 Flux Oriented Control of Active Mass Damper Induction Motor for of Buildings Under Seismic Excitation 1676
Lakhdar GUENFAF(USTHB University of Technology, Algeria), Sofiane Allaoua(University of etchnology, Algeria)

FB05-5 Development of Electronic Library for Mobile Devices on Android Platforms 1682
Aliya Ualievna Kalizhanova, Ainur Kozbakova, Samal Tolepbergenova(Kazakh National Technical University after K.I.Satpaev, Kazakhstan)

FB05-6 GMV Control Algorithm for Structures under Recorded Strong Earthquakes including Soil Characteristics 1687
Mohamed AZIRA, Lakhdar GUENFAF(LSEI/USTHB, Algeria)

FB06 Sensors and Instrumentation

206, 13:30~15:00

FB06-1 Implementation of Input Shaping Control to Reduce Residual Vibration in Industrial Network Motion System 1693
Ha Quang Thinh Ngo(Ho Chi Minh city University of Technology, Viet Nam), Quoc Chi Nguyen(Ho Chi Minh City University of Technology, Viet Nam), Won-Ho Kim(Dong-Eui University, Korea, Republic of)

FB06-2 Low-Cost Resolver-to-DC Converter 1699
Jakkapun Tongcharoen, Wandee Petchmaneelumka, Vanchai Riewruja(Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Thailand)

FB06-3 Design of an Advanced Wearable Sensor Platform for Multi Applications 1703
Anh-Tuan Nguyen, Tung Hoang(Institute of Information Technology-Vietnam Academy of Science and Technology, Viet Nam), Quang-Vinh Thai, Quyen T.T. Bui(Institute of Information Technology, Vietnam Academy of Science and Technology, Viet Nam)

FB06-4 Paddy Rice Moisture Content Meter 1709
Wirot - Ponglangka(Faculty of Electrical Engineering, Rajamangala University of Technology Lanna ChiangRai,57120, Thailand)

FP01 Autonomous Vehicles

201~204, 16:30~18:00

FP01-1 The Cognitive Driving Framework: Joint Inference for Collision Prediction and Avoidance in Autonomous Vehicles 1714
Alan J Hamlet, Patrick O Emami, Carl D Crane(University of Florida, United States)

FP01-2 On-Road Vehicle Detection based on Appearance Features for Autonomous Vehicles 1720
Tae young Lee, Jung ha Kim(University, Korea, Republic of)

FP01-3 Night time Vehicle Detection By Using Color Information Based on Tail-Light 1724
ZHANG JUNJIE junger, Jung-Ha Kim(Kookmin Unmanned vehicle reserch Lab(KUL), Korea, Republic of)

FP01-4 Lateral Control for Autonomous Lane Keeping System on Highways 1728
Chang Mook Kang, Jeehyung Lee, Sung Gu Yi, Soo Jung Jeon(Hanyang University, Korea, Republic of), Youngseop Son(MANDO corporation, Korea, Republic of), Wonhee Kim(Dong-A University, Korea, Republic of), Seung-Hi Lee, Chung Choo Chung(Hanyang University, Korea, Republic of)

FP01-5 Estimation of the Maximum Lateral Tire-Road Friction Coefficient Using the 6-DoF Sensor 1734
Kyoungseok Han, Eunjae Lee, Seibum Choi(KAIST, Korea, Republic of)

FP01-6	Power Management Strategy of Hybrid Electric Vehicle using Power Split Ratio Line Control Strategy based on Dynamic Programming *Heeyun Lee, Sukwon Cha(Seoul National University, Korea, Republic of), Yeong-il Park(Seoul National University of Science and Technology, Korea, Republic of)*	1739
FP01-7	Computed Torque Control of an Aerospace Craft Using Nonlinear Inverse Model and Rotation Matrix *Jong Tai Jang, Hyeon Cheol Gong(Korea Aerospace Research Institute (KARI), Korea, Republic of), Joon Lyou(Chungnam National University (CNU), Korea, Republic of)*	1743
FP01-8	Simulation based on Motion Platform for Tilt Rotor UAV Shipboard Landing *Changsun Yoo(Korea Aerosapce Research Institute, Korea, Republic of)*	1747
FP01-9	Reducing Routing Overhead of AODV Protocol in Multi-hop Tactical Airborne Networks *Modassir Ishfaq, Hasan Wajahat, Hyung Seok Kim(Sejong University, Korea, Republic of)*	1751
FP01-10	Mechanism and system design of MAV(micro aerial vehicle)-type wall-climbing robot for inspection of wind blades and non-flat surfaces *Sungwook Jung, Hyun Myung(KAIST, Korea, Republic of), Jae-Uk Shin(Rastech Inc., Korea, Republic of), Wancheol Myeong(KAIST, Korea, Republic of)*	1757
FP01-11	Study on Multi-path Planning and Tracking Control of the UCAV Based on Evolutionary Algorithm *Hanqiao Huang, Huan Zhou, Ya Wei Cai(Aeronautics and Astronautics Engineering College, Air Force Engineering University, China)*	1762
FP01-12	Actuator reconfiguration control of a robotic vehicle with four independent wheel driving *Taewan Kim, Jaemann Park, Hyounjin Kim(Seoul National University, Korea, Republic of)*	1767
FP01-13	Vehicle Backward Driving Control with Obstacle Avoidance *ChangWoo Son, Changsun Ahn(Pusan National University, Korea, Republic of)*	1771
FP01-14	Ground Vehicle Localization based on Inertial Measurement Signals *JUHUI GIM, Changsun Ahn(Pusan National University, Korea, Republic of)*	1775
FP01-15	Pattern Recognition for Underwater Docking of Unmanned Underwater Vehicle (UUV) *Jung-Tae Kim, Ji-Hong Li, Sung Chul Jee, Mun-Jik Lee, Hyung-Joo Kang(Korea Institute of Robot and Convergence, Korea, Republic of), Min-Jae Kim(Agency of Defense Development, Korea, Republic of)*	1780
FP01-16	Sonar Image Processing Algorithms for Object Recognition using Hovering-type AUV “Cyclops” *Jeonghwe Gu, Juhyun Pyo, Son-Cheol Yu(Pohang university of science and technology, Korea, Republic of)*	1785

FP02 Bio-Systems

201~204, 16:30~18:00

FP02-17	EEG Characteristics Related to Prediction of What Others Prefer *Jonghyeok Park, Taeyang Yang(UNIST, Korea, Republic of), Hakjin Kim(Korea university, Korea, Republic of), Sung-phil Kim(UNIST, Korea, Republic of)*	1790
FP02-18	Classification performance analysis of combined fNIRS-polygraph system using different temporal windows *Muhammad Raheel Bhutta, Keum-Shik Hong(Pusan National University, Korea, Republic of), Melissa Jiyoun Hong(FIRST 5 Santa Clara County, United States), Yun-Hee Kim(Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea, Republic of)*	1795
FP02-19	EEG Signal Analysis for Measuring the Quality of Virtual Reality	1801

Jinsung Chun, Netiwit Kaongoen(Korea Advanced Institute of Science and Technology, Korea, Republic of), Sungho Jo(KAIST, Korea, Republic of)

FP02-20 Experiments on classification of electroencephalography (EEG) signals in imagination of direction using a wireless portable EEG headset 1805
Kenta Tomonaga, Sou Wakamizu, Jun Kobayashi(Kyushu Institute of Technology, Japan)

FP02-21 Drowsiness Detection in Dorsolateral-Prefrontal Cortex using fNIRS for a Passive-BCI 1811
Muhammad Jawad Khan, Keum-Shik Hong, Noman Naseer, Muhammad Raheel Bhutta(Pusan National University, Korea, Republic of)

FP02-22 Comparison of Artificial Neural Network and Support Vector Machine Classifications for fNIRS-based BCI 1817
Noman Naseer, Keum-Shik Hong, Muhammad Jawad Khan, Muhammad Raheel Bhutta(Pusan National University, Korea, Republic of)

FP02-23 Separation of the Hemodynamic Responses in a Simultaneous Audio-Stimuli using ICA: An fNIRS Study 1822
Hendrik Santosa, Keum-Shik Hong(Pusan National University, Korea, Republic of)

FP02-24 Multi-Optodes Configuration for Measuring the Absolute Hemodynamic Response Using Spatially Resolved Spectroscopy Method: An fNIRS Study 1827
Hoang-Dung Nguyen, Keum-Shik Hong(Pusan National University, Korea, Republic of)

FP02-25 Ferrofluid Soft-robot Bio-inspired by Amoeba Locomotion 1833
Hernando Leon-Rodriguez, Le Viet Ha, Seong Young Ko, Jong-Oh Park, Sukho Park(Chonnam National University, Korea, Republic of)

FP02-26 Design and Evaluation Setup of a Novel Steerable Flexible Needle for Percutaneous Therapy 1839
Van Khuyen Bui, Sukho Park(Chonnam National University, Korea, Republic of), Jong Oh Park(Robot Research Initiative, Chonnam National University, Korea, Republic of), Seong Young Ko(Chonnam National University, Korea, Republic of)

FP02-27 A Paddling Mechaism based Robotic Colonoscope Harnessing Flexible Shaft 1843
Seonggun Joe, Dongkyu Lee, Byungkyu Kim(Korea Aerospace University, Korea, Republic of)

FP02-28 Characterization of polymer electrolyte membranes for application of glucose biofuel cell 1846
Bohee Maeng, Jungyul Park(Sogang University, Korea, Republic of)

FP02-29 BACTERIA-BASED MICROROBOT FOR CHEMOTAXIS DELIVERY 1848
Keon Huh, Darong Oh, Hyung Jung Yoo, Byeonghwa Song, Dong-il Dan Cho, Jong-Mo Seo, Sung Jae Kim(Seoul National University, Korea, Republic of)

FP02-30 Heat Transfer Simulation for Design of Electrothermal Bipolar Vessel Sealing Device 1853
Seongjun Kim, Jaesoon Choi(Asan Medical Center, Korea, Republic of)

FP02-31 Paper-Based Printed Circuit Boards 1857
Kyungjin Kim, Hyangwon Jang, Chan Won Park(Kangwon National University, Korea, Republic of), Hun-Kuk Park, Samjin Choi(Kyung Hee University, Korea, Republic of)

FP02-32 A Low-Cost Ion Detecting Device with Paper-Based Disposal Sensor 1860
Hyangwon Jang, Kyeongjin Kim, Chan Won Park(Kangwon National University, Korea, Republic of), Gi-Ja Lee, Samjin Choi(Kyung Hee University, Korea, Republic of)

FP02-33 High speed optical coherence tomography image guided femto-second laser cataract surgery system 1863
Tae Joong Eom(Gwangju Institute of Science and Technology, Korea, Republic of), Chang-Seok Kim(Pusan National Universtiy, Korea, Republic of), Beop-Min Kim(Korea University, Korea, Republic of), Choun Ki Joo(Seoul St. Mary's Hospital, Korea, Republic of)

FP02-34 Triple cascade high output impedance current stimulator with dynamic element 1866

matching for retinal prostheses
Haryong Song(Chungnam National University, Korea, Republic of), Gyungtae Kim(National Nanofab Center, Korea, Republic of), Hyoungho Ko(Chungnam National University, Korea, Republic of)

FP02-35 EEG-SSVEP Signals Extraction with Nonlinear Adaptive Filter for Brain-Controlled Wheelchair 1870
Arjon Turnip, Demi Soetraprawata(Indonesian Institute of Sciences, Indonesia), T. Agustinus Tamba(Bandung Institute of Technology, Indonesia)

FP02-36 Development of a Multi-nozzle Bioprinting System for 3D Tissue Structure Fabrication 1874
Sanghoon Park, Seongjun Kim, Jaesoon Choi(ASAN Medical Center, Korea, Republic of)

FP02-37 Development of a Dance Rehabilitation System using Kinect and a Vibration Feedback Glove 1878
Hyunkyu Park, Jeongsoo Lee, Joonbum Bae(UNIST, Korea, Republic of)

FP02-38 Human-Machine Interaction Tool Review in Defense Area: Introduction of AWARE and DaViTo 1881
Ji Hyun Yang(Kookmin University, Korea, Republic of)

FP02-39 Trajectory Image based Dynamic Gesture Recognition with Convolutional Neural Networks 1885
Jiting Hu, Chunxiao Fan, Yue Ming(Beijing University of Posts and Telecommunications, China)

FP02-40 Development of a Postural Analysis System for Dinghy Yacht Simulators 1890
Sangseung Kang(ETRI, Korea, Republic of)

FP02-41 Spasticity Mathematical Modeling in compliant with Modified Ashworth Scale and Modified Tardieu Scale 1893
Noor Ayuni binti Che Zakaria(Shibaura Institute of Technology, Japan)

FP02-42 Study on Automatic Speed Adaptation Treadmills 1898
Hee Jin Park, Hyun Ju Lee(DGIST, Korea, Republic of), Tae Hun Kang(Daegu Gyeongbuk Institute of Science & Technology, Korea, Republic of), Jeon IL Moon(DGIST, Korea, Republic of)

FP02-43 Trends in National Standardization of Usage Environment Safety and Performance Evaluation of Gait Training Equipment 1901
Hyun Ju Lee(DGIST, Korea, Republic of), Tae Hun Kang(Daegu Gyeongbuk Institute of Science & Technology, Korea, Republic of), Hee Jin Park, Jeon IL Moon(DGIST, Korea, Republic of)

FP02-44 Towards a Unified Control Framework for Humanoid Robots and their Virtual Avatars in Physical and Virtual Reality-based Interactions 1905
Barnabas Takacs, Gergely Richter, Klara Csizinszky, Lajos Simon(Semmelweis Medical University, Hungary), Daniele Mazzei(University of Pisa, Italy)

FP03 Industrial Applications

201~204, 16:30~18:00

FP03-45 An Study on the Energy Regeneration System of Boom for Hybrid Hydraulic Excavator 1910
YU YINGXIAO, Debdattta Das, B. N. M Truong, Kyoung Kwan Ahn(Uinversity of Ulsan, Korea, Republic of)

FP03-46 Investigation on optimization the performance of a wave energy converter using Dielectric electro-active polymers 1915
Phan Cong Binh, Kyoung Kwan Ahn(Ulsan University, Korea, Republic of)

FP03-47 Modeling and Controlling the Descent Operation of a Fish Robot using Neural Networks 1920
NGUYEN PHI LUAN(University of Ulsan Daehak-ro 93, Nam-gu, Ulsan 680-749, South Korea,, Korea, Republic of), Lee Byung Ryong, Ahn Kyung Kwan(University of Ulsan Daehak-ro 93, Nam-

gu, Ulsan 680-749, South Korea, Korea, Republic of)

FP03-48 A study on wave energy converter using 5 cylinders system 1924
Tri Dung Dang, Kyoung Kwan Ahn(University of Ulsan, Korea, Republic of), Phan Cong Binh(Ulsan University, Korea, Republic of)

FP03-49 A Novel Energy Recuperation System for Hybrid Excavator using Hybrid Actuator 1930
Debdatta Das, Puja Chowdhury, B. N. M Truong, KyoungKwan AHN(University of Ulsan, Korea, Republic of)

FP03-50 Research on Energy Regeneration and Effect of Dynamic Characteristics of Secondary Control Swing for Hydraulic Excavator System 1936
Puja Chowdhury, Dabdatta Das, B. N. M Truong , KyoungKwan AHN(University of Ulsan, Korea, Republic of)

FP03-51 Study on Energy Regeneration for Swing Motion in Electro-Hydraulic Excavator 1941
Se-Young Lee, Truong B. N. M., Kyoung-Kwan Ahn(University of Ulsan, Korea, Republic of)

FP03-52 Mathematical Modeling of a Variable Displacement Vane Pump for Engine Lubrication 1946
Bui Ngoc Minh Truong, Kyoung Kwan Ahn, Dinh Quang Truong, Nguyen Thanh Trung(University of Ulsan, Korea, Republic of)

FP03-53 Evaluation of directional mechanical properties of 3D printed polymer parts 1952
Jung-Ho Yang, ZHIJUN ZHAO, Sanghu Park(Pusan National University, Korea, Republic of)

FP03-54 Fabrication of Functionally Graded Properties by Direct Laser Melting of Compositionally Selective Metallic Powder. 1955
Won Jong Ji, Young Hoon Moon(Pusan National University, Korea, Republic of)

FP03-55 Development of 3D Printed Biomimetic Scaffold for Tissue Engineering 1958
Suk Hee Park(Korea Institute of Industrial Technology, Korea, Republic of), Ung Hyun Koh, Dong Yol Yang(Korea Advanced Institute of Science and Technology, Korea, Republic of), Nak kyu Lee(Korea Institute of Industrial Technology, Korea, Republic of), Jennifer H Shin(Korea Advanced Institute of Science and Technology, Korea, Republic of)

FP03-56 Direct fabrication of polymer-metal microstructures for micro coils 1961
Yong Son(Korea Institute of Industrial Technology (KITECH), Korea, Republic of), Cheol woo Ha(KAIST, Korea, Republic of)

FP03-57 Module With Circuit Lines Fabricated by Direct Write Technology 1964
haeyong yun, hochan kim, seunggyu lim(andong national university, Korea, Republic of), inhwan lee(Chungbuk National University, Korea, Republic of)

FP03-58 New ICT trends in solving the problem of accelerated population aging 1969
Ravil I. Muhamedyev(Institute of Information and Computational Technologies (Almaty, Kazakhstan), Kazakhstan), Ruslan Butin(International IT University, Kazakhstan), Elena L. Muhamedyeva(Riga Technical University, Latvia), Nazgul Rakhizhanova(International IT University, Kazakhstan), Alma T. Mansharipova(Kazakh-Russian Medical University, Kazakhstan)

FP03-59 An Investigation on Steering Optimization for Minimum Turning Radius of Multi-Axle Crane Based on MPC Algorithm 1974
Kwangseok Oh(Seoul National University, Korea, Republic of), Jaho Seo(KIMM, Korea, Republic of), Jinho Kim(JUNJINCSM, Korea, Republic of), Kyongsu Yi(Seoul National University, Korea, Republic of)

FP03-60 The Prediction of Ship Motions and Added Resistance based on RANS 1978
Ketai He, Jiao Yan(University of Science and Technology Beijing, China)

FP03-61 Modeling and control strategy of an oscillating water column-wave energy converter with an turbine module 1983
Seung Kwan Song, Jin Bae Park(Yonsei Univ, Korea, Republic of)

FP03-62 Modeling and Vibration Control of a Coupled Floating Wind Turbine System 1989

Shuang Zhang, Hui Qin, Xiuyu He(University of Electronic and Technology of China, China), Wei He(University of Science and Technology Beijing, China)

FP03-63 Development of the Software Component Architecture for Motor-Driven Power Steering Control System using AUTOSAR Methodology 1995
Jae-Woo Kim(Kookmin university, Korea, Republic of), Kyung-Jung Lee, Hyun-Sik Ahn(kookmin university, Korea, Republic of)

FP03-64 Advanced Control Strategy for Electric Power Steering System to Improve Steering Assist Torque Stability 1999
Seunghwan Chung, Hyeongcheol Lee(Hanyang University, Korea, Republic of)

FP03-65 Estimating Desired Yaw Rate and Control Strategy Analysis on Developed Air ESC System for Performance Evaluation 2005
Seunghwan Chung, Hyeongcheol Lee(Hanyang University, Korea, Republic of)

FP03-66 Improvement of Driver-State Estimation Algorithm Using Multi-Modal Information 2011
Ji Hyun Yang, Hyeon Bin Jeong(Kookmin University, Korea, Republic of)

FP03-67 Toward highly automated driving by vehicle-to-infrastructure communications 2016
Samyeul Noh, Kyounghwan An, Wooyong Han(Electronics and Telecommunications Research Institute (ETRI), Korea, Republic of)

FP03-68 Vehicle detection and classification in the Scala sensor by using binary classification 2022
MInho Cho, Baehoon Choi, Jhonghyun An(Yonsei University, Korea, Republic of), Euntai Kim(Yonsei Univ., Korea, Republic of)

FP03-69 Nonlinear Tire Inverse Model for Integrated Chassis Control System 2026
Boryeon Kang(Pusan University, Korea, Republic of), Wanki Cho(Hyundai Motor Group, Korea, Republic of), Changsun Ahn(Pusan National Univ., Korea, Republic of)

FP03-70 A Build Smart Island System 2031
Seung Cheol Kim(Gyeongnam Technopark, Korea, Republic of), Young Chan Kim(Human & Tech. Corp., Korea, Republic of)

FP03-71 A comparative study of an energy-balanced routing in various wireless sensor network models 2037
Xiao Hui Li, Zhi Wen Shang(Wuhan University of Science and Technology, China), Seung Ho Hong(Hanyang University, Korea, Republic of), Bing Zhao, Xiaobing Liang(China Electric Power Research Institute, China)

FP03-72 Bridge for Exchange of Data/Service between Robot Software Platforms - OPRoS and ROS 2043
KiWon Lee, Hong Seong Park(Kangwon National University, Korea, Republic of)

FP03-73 Wireless packet header compression techniques for Ship Area Sensor Network(SASN) 2048
Sang-Joon Nam, Jonggu Kang, Daekeun Moon(Hyundai Heavy Industries, Korea, Republic of)

FP03-74 The Development of Remote Maintenance Technology based on Voyage Data Recorder 2053
Chanmin Jung, Jonggu Kang, Minjung Jin(Hyundai Heavy Industries, Korea, Republic of)

FP03-75 3-Dimensional Position Control Scheme for Mobile Harbor Crane 2058
Dongho Kim(KAIST, Korea, Republic of)

FP03-76 A Study on Controlling of Vibration Characteristic of the Harmonic Drive to Obtain the Optimized Performance 2062
In-Gyu Park, Il-Kyeom Kim, Min-Gyu Kim(Korea Institute of Robot and Convergence, Korea, Republic of)

FP03-77 A Field Calibration Method of Robotic Inspection System for Coating Thickness 2066
Xiang WU, Tianfei CHEN(Henan University of Technology, China)

FP03-78	Model Predictive Control for the Power Control of Three-Phase AC/DC Converters using a Disturbance Observer *Seok-Kyoon Kim(LG Electronics, Korea, Republic of), Young Il Lee(SeoulTech, Korea, Republic of)*	2070
FP03-79	Applying of Process Management in the “e-license” project *Didar Yedilkhan, Gulnara Bektemysova(International Information Technology university, Kazakhstan)*	2076
FP03-80	A study on temperature control of induction brazing coil *Sung Ho Ahn, Jntae Hong, Chang Young Joung, Sung Ho Heo, Tae Ho Yang, Seo Yun Jang(Korea Atomic Energy Research Institute, Korea, Republic of)*	2080
FP03-81	Automatic Cell Production for Cellular Phone Packing Using Two Dual-arm Robots *Hyunmin Do(KIMM, Korea, Republic of)*	2083
FP03-82	Analysis of Precision Positioning Of Multi-Axis Robot System *Youn-Ho Choi(DGIST, Korea, Republic of), Duck-Han Sun(Presto Solution, Korea, Republic of), Oh-Seok Kwon(DGIST, Korea, Republic of)*	2087
FP03-83	Operation Reliability Evaluation with Control Patterns of Digital Control Systems *Kwang Dae Lee, Hee Taek Lim(Central Research Institute, KHNP, Korea, Republic of)*	N/A
FP03-84	Performance Testing of Harmonic Reduction Gear with Plastic Mechanical Components *In-Gyu Park, Min-Gyu Kim(Korea Institute of Robot and Convergence, Korea, Republic of)*	N/A
FP03-85	eCAT based teaching pendant for collaborative robots *geun-youn kim, daesik kwak(DAINCUBE, Korea, Republic of)*	N/A
FP03-86	HANBACK ELECTRONICS COMPANY PROFILE *Angela Yoon(HANBACK ELECTRONICS.CO., LTD., Korea, Republic of)*	N/A
FP03-87	Smart Teaching Pendant for On/Offline Programming and Direct Teaching of Industrial Robots *Jonghoon Park, Guhee Jung(Neuromeka, Korea, Republic of)*	N/A