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WC8 Mechatronics and Automation

Halla, 16:10~17:40

WC8-1	Mechatronic Architecture Development of UX-1 <u>Soheil Zavari</u> , Olli Usenius, Tuomas Salomaa, Jose Villa Escusol, Arttu Heininen, Jussi Aaltonen, Kari Koskinen(tampere university of technology, Finland)	460
WC8-2	Coarse Alignment of Lunar Exploration Rover Using Accelerometer and Sun Sensor <u>Jaehyuck Cha</u> , Sejong Heo, Chan Gook Park(Seoul National University, Korea)	465
WC8-3	Enabling an Automation Architecture of CPPs based on UML combined with IEC-61499 <u>Marcelo V Garcia</u> (Basque Country University, Spain), Carlos A García, Esteban X Castellanos(Universidad Fuerzas Armadas - ESPE, Ecuador), Cesar Rosero, Carlos Sanchez(Universidad Tecnica de Ambato, Ecuador)	471
WC8-4	Path planning for remotely controlled UAVs using Gaussian process filter <u>Jaehyun Yoo</u> (KTH Royal institute of technology, Sweden), H. Jin Kim(Seoul National Univ, Korea), Karl H. Johansson(KTH Royal institute of technology, Sweden)	477
WC8-5	Validation of CAN-CAN Gateway in the Automotive Network System <u>Junwon Kim</u> , KeyHo Kwon(Sungkyunkwan University, Korea)	483
WC8-6	Comparison of IEEE802 and AVB in multi switch Environment in Embedded system <u>JungHwan Seo</u> , Jaewook Jeon(Sungkyunkwan University, Korea)	489

TA1 Information and Intelligent Systems			Ballroom2, 10:20~11:50
TA1-1	Real time Depth Measurement using FPGA <i>DaJin Lee(Sungkyunkwan University, Korea), HyunBin Joo(SungKyunKwan University, Korea), Jae Wook Jeon(Sungkyunkwan University, Korea)</i>	494	
TA1-2	Correlation and Interdependence Structure in Stock Market : Based on Information Theory and Complex Networks <i>He Jianmin, Jin Wang(southeast university, China)</i>	498	
TA1-3	Adaptive Regulation of Sampling Rates for Power Efficient Embedded Control System Design <i>Rajorshee Raha(Indian Institute of Technology Kharagpur, India)</i>	505	
TA1-4	RSSI-Based Indoor Localization System with Access Points Selection Method <i>Li Dunghan(WASEDA UNIVERSITY, Japan), Shigeyuki Tateno(Waseda University, Japan), Cho Yitong(WASEDA UNIVERSITY, Japan)</i>	N/A	
TA1-5	Representation of Thai Character Features with Impulse Response of FIR System <i>Kaset Sirisantisamrid(King Mongkut's Institute of Technology Ladkrabang, Thailand)</i>	517	
TA1-6	PLC-based Industrial Temperature Controller with Different Response Times <i>Vittaya Tipsuwanporn, Arthit Srimuang(King Mongkut's Institute of Technology Ladkrabang, Thailand)</i>	522	
TA2 Industrial Applications of Control I			Ballroom3, 10:20~11:50
TA2-1	Analysis of CAN FD to CAN message routing method for CAN FD and CAN Gateway <i>Hyun Su An, Jae Wook Jeon(SungKyunKwan University, Korea)</i>	528	
TA2-2	Loop Shaping Technique for Control Design of Electrical Power Steering System <i>Dongwook Lee, Kyung-Soo Kim, Soohyun Kim(KAIST, Korea)</i>	N/A	
TA2-3	Build-up of customized test automation solutions for efficient verification of chassis systems in vehicle HILS <i>Jae Hoon Lim, Jae Jeong Kim(Hyundai Autron Ltd, Korea)</i>	540	
TA2-4	A Cylindrical Magnetic Levitation Stage for High-Precision Rotations <i>Jeong-Woo Jeon, Jong-Moon Kim(Korea Electrotechnology Research Institute, Korea)</i>	545	
TA2-5	Modeling and Simulation of Gas Turbine Engine Based on Object-oriented Approach <i>Xiaobo Zhang(Northwestern Polytechnical University, China)</i>	551	
TA2-6	Optimization on Turbofan Cycle Parameter Based on Improved Differential Evolution Algorithm <i>Xiaobo Zhang(Northwestern Polytechnical University, China)</i>	556	
TA3 Control Applications I			Ballroom4, 10:20~11:50
TA3-1	Data-driven Feedforward Control on Active Vibration Isolation System <i>Zhulin Zhang, Wensheng Yin(Tsinghua University, China)</i>	562	
TA3-2	The European Vulnerable Option Pricing Based on Jump-Diffusion Process in Fractional Market <i>Chao Wang, Jianmin He(Southeast University, China)</i>	568	

TA3-3	Adaptive Backstepping Control of Single Chamber Microbial Fuel Cell <i>Ravi Mukeshbhai Patel, Dipankar Deb(Institute of Infrastructure Technology, Research And Management, India)</i>	574
TA3-4	Radial Basis Function Neural Network Based PID Control for Quad-rotor Flying Robot <i>Shoji Furukawa, Hun-ok Lim(University, Japan)</i>	580
TA3-5	Non-Linear Fuzzy- PID Controller Design for Track Following of Hard Disk Drive Servo System <i>Vittaya Tipsuwanporn(King Mongkut's Institute of Technology Ladkrabang, Thailand), Vichipon Boonpranchoo, Arjin Numsomran(Faculty of Engineering, King Mongkut's Institute of, Thailand), P. Chaiyasith(Faculty of Science,King Mongkut's Institute of Technology Ladkrabang, Thailand)</i>	585

TA4 [Mini] Medical Robots and Simulation I

Mara, 10:20~11:50

TA4-1	Stereo Endoscope System and Master Interface for Continuous Surgical Operation in Laparoscopic Surgical Robot System <i>Nhayoung Hong, Myungjoon Kim, Sungwan Kim(Seoul National University, Korea)</i>	N/A
TA4-2	Robots for Interventional Procedures <i>Jaesoon Choi(Asan Medical Center / University of Ulsan College of Medicine, Korea)</i>	N/A
TA4-3	Electromagnetically Actuated Microrobots using Temperature/pH Responsive Hydrogels <i>Gwangjun Go, Hao Li, Jong-Oh Park(Chonnam National University, Korea), Sukho Park(DGIST, Korea)</i>	N/A
TA4-4	Surgical Navigation using Augmented Reality <i>Jaesung Hong(DGIST, Korea)</i>	N/A
TA4-5	Medical Simulation <i>Doo Yong Lee(KAIST, Korea)</i>	N/A

TA5 [Mini] Technologies for the Personal Care Robot Safety I

Biyang 10:20~11:50

TA5-1	A new concept suggestion for maneuvering the self-balancing personal mobility : ATD for human-like behavior <i>Jong-Hyeok Park, Kwan-Woong Gwak(Sejong University, Korea)</i>	N/A
TA5-2	Parameter estimation for two-wheeled self-balancing personal mobility : preliminary results <i>SooYong Yun, Jong-Hyeok Park, Kwan-Woong Gwak(Sejong University, Korea)</i>	N/A
TA5-3	Comparative study for the effectiveness of ATD configurations for personal mobility : prismatic vs. rotary <i>LeeJu Choi, Jong-Hyeok Park, Kwan-Woong Gwak(Sejong University, Korea)</i>	N/A
TA5-4	System design of person carrier robot <i>Youngjae Yun, Donghyeon Seo, Donghan Kim(Kyung Hee University, Korea)</i>	N/A
TA5-5	A Proposal on Determination of Protective Stop Space of Mobile Servant Robots for ISO13482 <i>Donghyung Kim, Myoungchan Roh, Ji Sung Lee, Bumsoo Seo, Young Sook Jeoung(ETRI, Korea)</i>	608

TA6 [OS] ECTI-ICROS Joint Session on Advances of Control System Design

Udo, 10:15~12:00

TA6-1	OctoMap-Based Coverage Path Planning for Inspection of 3D Structures <i>Hyun Myung, Sungwook Jung, Seungwon Song(KAIST, Korea)</i>	N/A
TA6-2	Line-up Formation Control of Intelligent Traffic Cones <i>Seul Jung, Hyun Lee(Chungnam National University, Korea)</i>	616
TA6-3	Mechanism Design and Impedance Control of Series Elastic Actuator Driven Bi-articular Robotic Arm <i>Chan Lee, Sehoon Oh(DGIST, Korea)</i>	N/A
TA6-4	Evaluation of Explicit Model Predictive Temperature Control for On-off Air Conditioner <i>Abdulhafiz Chesof, Sungwan Boksuan, Sumit Panaudomsup, Thepjit Cheypoca(King Mongkut's Institute of Technology Ladkrabang, Thailand)</i>	621
TA6-5	Design of Model Predictive Control for Industrial Process with Input Time Delay <i>Pornthiwa Choomkasien, Peerawat Chomphooyod, David Banjerdpongchai(Chulalongkorn University, Thailand)</i>	625
TA6-6	Petri Net Modeling for Performance Analysis of FF-Based Process Control in Terms of Safety and Availability Enhancement <i>Thaksin Sangsuwan(King Mongkut's University of Technology North Bangkok, Thailand), Nophawach Whatphat(King Mongkut's Institute of Technology Ladkrabang, Thailand), Jirasak Chanwutitum(King Mongkut's University of Technology North Bangkok, Thailand), Teerawat Thepmanee(King Mongkut's Institute of Technology Ladkrabang, Thailand), Amphawan Julsereewong(King Mongkut's Institute of Technology Ladkrabang, Thailand)</i>	631
TA6-7	Safety Instrumented System Design in Consideration of Cost-Benefit Analysis : A Case Study of Tail Gas Treating Process <i>Teerawat Thepmanee(King Mongkut's Institute of Technology Ladkrabang, Thailand), Amphawan Julsereewong(King Mongkut's Institute of Technology Ladkrabang , Thailand)</i>	637

TA7 Linear and Nonlinear Control II

Tamna, 10:20~11:50

TA7-1	State estimation for switched systems with nonlinear disturbances under arbitrary switching via generalized Gronwall-Bellman inequality <i>Yazhou Tian, Yuangong Sun(University of Jinan, China), Fanwei Meng(Qufu Normal University, China)</i>	643
TA7-2	Reset Control of Nonlinear Chaotic Systems Using Describing Function <i>Masataka Iwai(MHI Nuclear Systems and Solution Engineering Co.,Ltd., Japan)</i>	647
TA7-3	Residual Load Sway Reduction Control in Double-pendulum Overhead Cranes Using Motion Trajectory Based on Adams-Matlab Joint Simulation <i>Jinxin Hu, Huimin Ouyang, Wenwei Huang, Ping Xing, Chunmin Yu, Guangming Zhang, Lei Mei, Xin Deng, Deming Wang(Nanjing Tech University Nanjing, China)</i>	650
TA7-4	Deferrable Energy/Commodity Purchase and Consumption Policy under Stochastic Prices <i>Dragan Obradovic(Siemens, Germany)</i>	655
TA7-5	A newborn anti-windup scheme based on state prediction of fractional integrator for variable speed motor <i>Sandeep Pandey(VNIT, Nagpur, India, India), Prakash Dwivedi(NIT, Uttarakhand, India), Anjali Junghare(VNIT, Nagpur, India, India)</i>	663

TA8 Biomedical Instruments and Systems

Halla, 10:20~11:50

TA8-1	A tool for the design of DNA base sequences for molecular circuits <i>Yuki Yoshida, Takashi Nakakuki(Kyushu Institute of Technology, Japan)</i>	669
TA8-2	Stability Analysis of Wnt-ERK cellular signalling by using Nyquist Criterion <i>Taisei Hidaka, Takashi Nakakuki(Kyushu Institute of Technology, Japan)</i>	675
TA8-3	Effects of a soft wearable robotic suit on metabolic cost and gait characteristics in healthy young subjects <i>Shanhai Jin(Yanbian University, China), Shijie Guo(Hebei University of Technology, China), Kazunobu Hashimoto(Ningbo Institute of Intelligent Manufacturing Industry, China), Motoji Yamamoto(Kyushu University, Japan)</i>	680
TA8-4	Design for Walking Rehabilitation of a Lower Limb Exoskeleton Based on Interaction Torque <i>Kai-Tai Song, Agus Lesmana(National Chiao Tung University, Taiwan)</i>	685
TA8-5	Designing Self-feeding System for Increasing Independence of Elders and Parkinson People <i>Nguyen Trong Tuan(Ho Chi Minh City University of Technology and Education, Viet Nam), Nguyen Trung Thinh(Ho Chi Minh City University of Technology and Education, Viet Nam)</i>	691

TB1 [OS] Military Application of Intelligent Control and Information System

Ballroom2, 13:10~14:40

TB1-1	A Comparison of Convolutional Object Detectors for Real-time Drone Tracking Using a PTZ Camera <i>Jihun Park, Dae Heo Kim, Young Sook Shin, Sang-ho Lee(Agency of Defense Development, Korea)</i>	696
TB1-2	Learning drone-control actions in surveillance videos <i>Sunyoung Cho, Dae Hoe Kim, Yong Woon Park(Agency for Defense Development, Korea)</i>	700
TB1-3	Optimal Experimental Design Approach for Machine Learning Process <i>Se-Yoon Oh, Hunmin Yang, Sung-Baek Cho(Agency for Defense Development, Korea)</i>	N/A
TB1-4	Robust path control of an unmanned ground vehicle in rough terrain <i>Jongho Shin, Dong Jun Kwak, Taehyung Lee, Kiho Kwak(Agency for Defense Development, Korea)</i>	N/A
TB1-5	Incremental Model Learning and Building of Unknown Objects <i>Kiho Kwak, Jihong Min, Seongyong Ahn(Agency for Defense Development, Korea)</i>	711
TB1-6	Nonground objects modeling using cube voxels and texture mapping <i>Phuong Minh Chu, Hieu Trong Nguyen, Seoungjae Cho(Dongguk University-Seoul, Korea), Yong Woon Park(Agency for Defense Development, Korea), Kyungeun Cho(Dongguk University-Seoul, Korea)</i>	N/A

TB2 [OS] Field Application of Robot Technologies

Ballroom3, 13:10~14:40

TB2-1	Application of SLAM for 3 Dimensional Ground Navigation <i>Nak Yong Ko(Chosun University, Korea), Tae Gyun Kim(GEO1004 Co. Ltd., Korea), Wonkeun Youn, Taesik Kim(Korea Aerospace Research Institute, Korea)</i>	720
TB2-2	Attitude Estimation of an Unmanned Surface Vehicle Using MEMS-AHRS and GNSS <i>Nak Yong Ko(Chosun University, Korea), Seong Ju Lee, Seokki Jeong(Redone Technologies, Korea), Yong Seon Moon(Sunchon National University, Korea), Kyeonghyi Park(Redone Technologies, Korea)</i>	723
TB2-3	Robust Neural Network Control of Neural Synchronization in the Mutually Coupled Network	726

Jung Eun Son, Seoyoung Nam(LG Electronics, Korea)

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|-------|---|-----|
| TB2-4 | Real-time Air Conditioner Zone Temperature Control by Cascaded Intelligent PI
<u>Seoyoung Nam</u> , Jung Eun Son, Nakhoon Kim(LG Electronics, Korea) | 732 |
| TB2-5 | Object Following Method For A Differential Type Mobile Robot Based on Ultra Wide Band Distance Sensor System
<u>Dong Jin Seo</u> , Tae Gyun Kim(Geo1004 Co., Ltd, Korea), Sung Woo Noh(You Friend Co., Ltd, Korea), Hui Hyon Seo(Gwangju Information and Culture Industry Promotion Agency, Korea) | 736 |

TB3 Control Applications II

Ballroom4, 13:10~14:40

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|-------|--|-----|
| TB3-1 | The Modification of Yaw Sensor for Length Standard Calibration System
Vittaya Tipsuwanporn(King Mongkut's Institute of Technology Ladkrabang, Thailand), Wanchai Chinchusak (Bangkok, Thailand), <u>Arjin Numsomran</u> (King Mongkut's Institute Technology Ladkrabang , Thailand) | 739 |
| TB3-2 | Applying Audioanalytics for Determining Contingencies
<u>Bakhytzhhan Omarov</u> (Khoja Akhmet Yassawi International Kazakh-Turkish University, Kazakhstan) | 744 |
| TB3-3 | Leak Detection In Pipeline via Sliding Motion
<u>Wan Rahiman</u> (Universiti Sains Malaysia, Malaysia) | 749 |
| TB3-4 | An Application of Nonlinear High-Gain Observer for the n-link Robot Manipulator which has Measurement Noise in a Feedback Control System
Muhammad Saad, <u>Muwahida Liaquat</u> (College of Electrical and Mechanical Engineering, NUST, Pakistan) | 755 |
| TB3-5 | Nonlinear Optimal Control of a 3-D Overhead Crane with Varying Rope Length
<u>Quoc Chi Nguyen</u> , Huynh Phi Long Nguyen(Ho Chi Minh City University of Technology, Viet Nam) | 760 |
| TB3-6 | A PI λ D μ Controller Design for Peltier-Thermoelectric Cooling System
Vittaya Tipsuwanporn, <u>Pranai Kungwalrut</u> , Arjin Numsomran, P. Chaiyasith(King Mongkut's Institute of Technology Ladkrabang, Thailand) | 766 |

TB4 [Mini] Medical Robots and Simulation II

Mara, 13:10~14:40

- | | | |
|-------|--|-----|
| TB4-1 | Development of Soft Wearable Hand Rehabilitation Device
<u>Hyung-Soon Park</u> , Dong Hyun Kim(KAIST, Korea) | N/A |
| TB4-2 | Commercialization of Rehabilitation Robots
<u>Won-Kyung Song</u> (National Rehabilitation Center, Korea) | N/A |
| TB4-3 | KIMM Robotic Ankle-Foot Prosthesis for Lower Limb Amputee
<u>Hyun Soo Woo</u> , Yongkoo Lee, Jiuk Jung, Jun-Uk Chu, Chang Won Kim(KIMM, Korea) | N/A |
| TB4-4 | Design and Control of Robotic Orthosis with Cable Differential Mechanism
<u>Junho Choi</u> , Jaehwan Park(Korea Institute of Science and Technology, Korea) | N/A |
| TB4-5 | Development of Brain-Machine Interface Training System for Anthropomorphic Robotic Arm Control
<u>Yoon Jae Kim</u> (Seoul National University, Korea), Woo Hyung Lee, Hyung Seok Nam(Seoul National University College of Medicine, Korea), Sungwan Kim(Seoul National University, Korea) | N/A |

TC1 [OS] Advances in Intelligent Mechatronics

Ballroom2, 16:10~17:40

TC1-1	A Methodology on the Efficiency of Wireless Power Transfer for the Low Power System <i><u>Young Hwan Lho</u>, Sang Yong Lee(Woosong University, Korea), Jong Dae Kim, Yil-Suk Yang(ETRI, Korea)</i>	781
TC1-2	A Cascaded Model Identification Technique by RLS-Based Monte Carlo Simulation : Application to a Gyroscopic Actuator <i><u>Sang D. Lee</u>, Seul Jung(Chungnam National University, Korea)</i>	N/A
TC1-3	Event-based Real-time Optical Flow Estimation <i><u>Alex Junho Lee</u>, Ayoung Kim(KAIST, Korea)</i>	787
TC1-4	Dynamic Map Management for Vehicle Localization in Large Scale Area <i><u>Hyungjin Kim</u>, Hyun Myung(KAIST, Korea)</i>	N/A
TC1-5	Development of Aerial Image Transmitting Sensor Platform for Disaster Site Surveillance <i><u>Kyukwang Kim</u>, Jieum Hyun, Hyun Myung(KAIST, Korea)</i>	794

TC2 Industrial Applications of Control II

Ballroom3, 16:10~17:40

TC2-1	Maneuverability Evaluation of Skid Steer Welfare Vehicle for Robust Assistance Control with Model Error Compensator <i><u>Shoichi Sakamoto</u>, Tomoki Tanaka, Hiroshi Okajima(Kumamoto University, Japan), Nobutomo Matsunaga(Kumamoto university, Japan)</i>	797
TC2-2	Demand Response Considering Participation Rate in Smart Grid: Two Level Optimal Management for DisCo and Customers <i><u>Ryuto Shigenobu</u>(University of the Ryukyus, Japan)</i>	803
TC2-3	Study on Power Control Methodology of the Accelerator Driven Sub-critical Reactor System <i>Yuxin Yang(Talent Exchange Service Centre of Haidian District, China), Zhiwei Zhou, Ting He, <u>Zhenlong Wu</u>(Tsinghua University, China), Donghai Li(Tsinghua Univ, China)</i>	809
TC2-4	Output Feedback Control for Local Power System Stability based on Sum of Square Programming <i><u>Yong Wan</u>, Hongxing Tian(Nanjing University of Aeronautics and Astronautics, China)</i>	815
TC2-5	Decentralized Control with Neural Network of Cooperative Robot Manipulator For Object Balancing Task on Flat Plate <i><u>Nattapon Jaisumroum</u>(kmitl.ac.th, Thailand)</i>	819
TC2-6	Stimuli-Induced Equilibrium Point: A Psychological Field Theory Application in Ramp Merging Systems <i><u>Kendrick Amezcuita</u>, Peter Chao Yu Chen(National University of Singapore, Singapore), Weihai Chen, Zheng Zhao(Beihang University, China)</i>	825

TC3 Process Control Systems

Ballroom4, 16:10~17:40

TC3-1	Optimal Design and Operating Conditions of Solid Oxide Fuel Cell based Auxiliary Power Unit Systems According to Cell Characteristics <i><u>Daewook Kim</u>(Korea Advanced Institute of Science and Technology (KAIST), Korea), Jay H Lee(KAIST, Korea)</i>	N/A
TC3-2	Supervisory Optimization of the MGT-CCHP System Using Model Predictive Control <i><u>Yi Zhang</u>, Fan Zhang, Xiao Wu, Junli Zhang, Li Sun, Jiong Shen(Southeast university, China)</i>	836

TC3-3	Chemical Dosing Control for Ultrafiltration Water Treatment System <i>Vittaya Tipsuwanporn, <u>Pranai Kungwalrut</u>, Jutarat Chaoraingern, P. Chaiyasith, Arjin Numsomran(King Mongkut's Institute of Technology Ladkrabang, Thailand)</i>	842
TC3-4	The Comparison of Two U-shaped Lines with an Individual Variance on some Tasks <i><u>Suthep Varnasilpin</u>(King Mongkut's Institute of Technology Ladkrabang, Thailand)</i>	846
TC3-5	The Implementation of PI Controller for Evaporative Cooling System in Controlled Environment Greenhouse <i><u>Maitree Thumma</u>(Ratchamangala University of Technology Isan Nakhon Ratchasima, Thailand), Witchupong Wiboonjaroen, Thanat Sooknuan(Ratchamangala University of Technology Isan Nakhonratchasima, Thailand)</i>	852
TC3-6	A Study of Flow-Level Cascade Control with WirelessHARTTM Transmitter using LabVIEW <i>Vittaya Tipsuwanporn, <u>Pongsakorn Somkane</u>(King Mongkut's Institute of Technology Ladkrabang, Thailand)</i>	856

TC4 Human Robot Interaction

Mara, 16:10~17:40

TC4-1	Admittance Control for Robot Assisted Retinal Vein Micro-Cannulation under Human-Robot Collaborative Mode <i><u>He Zhang</u>(Harbin Institute of Technology, China), Berk Gonenc, Julian Iordachita(Johns Hopkins University, United States)</i>	862
TC4-2	Critical Contact Pressure and Transferred Energy for Soft Tissue Injury by Blunt Impact in Human-Robot Interaction <i><u>Tatsuo Fujikawa</u>(Japan Automobile Research Institute, Japan), Ryuji Sugiura(Nihon University, Japan), Rie Nishikata(Fukushima Medical University, Japan), Tetsuya Nishimoto(Nihon University, Japan)</i>	867
TC4-3	Response to Assist Torque Failure of Physical-Assistant Robots <i><u>Yoichi Asano</u>, Koji Matsumoto, Hiroyuki Jinbo(Japan Automobile Research Institute, Japan)</i>	873
TC4-4	Does Size Matter in the Speed and Accuracy on Image Identification? <i><u>Kleddao Satcharoen</u>(King Mongkut's Institute of Technology Ladkrabang, Thailand)</i>	878
TC4-5	Teleoperation of an UAV by a 6-DOF Parallel Manipulator with Hybrid Mapping for Inspection of Industrial Structures <i><u>Amit Shukla</u>, Hamad Karki(The Petroleum Institute, Abu Dhabi, UAE, United Arab Emirates)</i>	883
TC4-6	Robot Supporting for Deaf and Less Hearing People <i><u>Nguyen Truong Thinh</u>, Tuong Phuoc Tho(HCMC University of Technology and Education, Viet Nam), Tran Thi Thuy Nga(Thu Dau Mot University, Viet Nam)</i>	889

TC5 [Mini] Technologies for the Personal Care Robot Safety II

Biyang 16:10~17:40

TC5-1	Preliminary experimental results for chest compression in mobile robot-human unconstrained-collision <i><u>Ho-Yeon Kim</u>, Jong-Hyeok Park, SooYong Yun, Seungbin Moon, Kwan-Woong Gwak(Sejong University, Korea)</i>	893
TC5-2	Low cost pressure sensor characteristics comparison for pressure sensing in wearable robots-preliminary result <i><u>Chang-Hwan Lee</u>, Sunghoon Kim(Sejong university, Korea), Deukhwan Ahn, Kwan-Woong Gwak(Sejong University, Korea)</i>	N/A

TC5-3	Low Cost Insole Sensor for Measuring COP in Wearable Robot <i>Sunghoon Kim, Chang-Hwan Lee(Sejong university, Korea), Deukhwan Ahn, Kwan-Woong Gwak(Sejong University, Korea)</i>	N/A
TC5-4	Design and PID Force Control of the Calibration Equipment for the Precise Calibration of FSR Sensor <i>Deukhwan Ahn(Sejong University, Korea), Chang-Hwan Lee, Sunghoon Kim(Sejong university, Korea), Kwan-Woong Gwak(Sejong University, Korea)</i>	N/A
TC5-5	Strategy for Ergonomic Safety Design of Personal Care Robots in accordance with ISO 13482 <i>Hyung-Taek Baek, Sang-Jong Lee, Jinwoo Jeon(KIRIA, Korea)</i>	N/A
TC5-6	A study on the risk investigation and safety of personal care robots <i>Gi en Yu, Seung-Taek Hong, Ki-Yeop Sung, Joon-Ho Seo(Korea Association of Robot industry (KAR), Korea)</i>	904

TC6 Robot Mechanism and Control

Udo, 16:10~17:40

TC6-1	System Design for Autonomous Table Tennis Ball Collecting Robot <i>Gilhyun Ryou(Seoul National University / NAVER LABS, Korea), Seong Ho Yeon(NAVER LABS, Korea), Dayeon Kim(POSTECH / NAVER LABS, Korea), Youngwoo Sim(Seoul National University / NAVER LABS, Korea)</i>	909
TC6-2	Numerical and Practical Experiments of Acceleration-Level Fault-Tolerant Scheme for Redundant Manipulator MPaC <i>Huihui Gong, Ziyu Yin, Dechao Chen, Long Jin, Yunong Zhang(Sun Yat-sen University, China)</i>	915
TC6-3	Adaptive Motion Planning in Bin-Picking with Object Uncertainties <i>Thomas Fridolin Iversen, Lars-Peter Ellekilde(University of Southern Denmark, Denmark), Jaime Valls Miro(University of Technology Sydney, Australia)</i>	921
TC6-4	Development of Wheeled Balancing Wheelchair for Lower Limb Disabled Person: Design of Wheelchair Platform <i>Seonghee Jeong(Osaka Electro-Communication Universty, Japan)</i>	929

TC7 Adaptive and Robust Control

Tamna, 16:10~17:40

TC7-1	Quick Recovery after Feedback Loss: Delay-Differential Systems <i>Ho-Lim Choi(Dong-A University, Korea), Jacob Hammer(University of Florida, United States)</i>	933
TC7-2	On the H_2 and H_{inf} Performance of Uncertain Positive Systems <i>Maryam Babazadeh(Sharif University of Technology, Iran, Islamic Republic of)</i>	939
TC7-3	Convex Parametrization of H_{inf} Controllers for Positively Dominated Systems <i>Maryam Babazadeh(Sharif University of Technology, Iran, Islamic Republic of)</i>	945
TC7-4	Robust Adaptive Gain for Suppression of Chattering in Sliding Mode Controller <i>Saadi Abbas Alobaidi, Ali Amer ALRawi(Dijlah University College, Iraq), Stevica Graovac (University of Belgrade, Serbia)</i>	951
TC7-5	Robust Variable Stiffness Control of McKibben Type Pneumatic Artificial Muscle Arm by using Multiple Model Error Compensator <i>Yuto Yamamoto, Nobutomo Matsunaga, Hiroshi Okajima(Kumamoto University, Japan)</i>	957
TC7-6	Bottom Hole Pressure Control for Oil Well Drilling using Model Reference Adaptive Control	963

TC8 [OS] Inference, Data Mining, Control and Measurement

Halla, 16:10~17:40

TC8-1	A Consideration of Step Pattern Extraction and Personal Identification from Gait Vibration Data <u>Yuichi Nakamura</u> , Hiroto Ikeshita, Tatsuji Tanaka, Tatsuo Hasegawa, Shin Itami(National Institute of Technology, Anan College, Japan), Yohei Saika(National Institute of Technology, Gunma College, Japan), Masahiro Nakagawa(Nagaoka University of Technology, Japan)	N/A
TC8-2	Dynamics of Predicting Temperature-Humidity Index and Power Consumption in Small-scale System Utilizing Bayesian Inference Via the EAP Estimation <u>Yohei Saika</u> (Natl.Inst.Tech.GC, Japan), Masahiro Nakagawa(Nagaoka University of Technology, Japan)	975
TC8-3	Effects of the Presence of an Audience on Dance Movements: A Trial analysis of male and female dancers <u>Nao Shikanai</u> (Japan Women's University, Japan)	N/A
TC8-4	Influence of Wheel--Terrain Contact Point Information Errors on the Accuracy of Three-Dimensional Space Odometry Using Tactile Wheels and Gyros <u>Tomoyasu Ichimura</u> , Woong Choi(National Institute of Technology, Gunma College, Japan)	985
TC8-5	Compressed Sensing for Phase Unwrapping of Interferometric SAR Data <u>Toshiaki Aida</u> (Okayama University, Japan)	989
TC8-6	Development of Inter-Vehicle Distance Measurement System using Camera-Equipped Portable Device <u>Nobuo Sasaki</u> , Syuhei Tomaru, Shiori Nakamura(National Institute of Technology, Gunma College, Japan)	994

TP-B Interactive Poster Session I

2F Lobby, 13:00~14:00

TP-B-1	Real Time Road Lane Detection for Outdoor Autonomous Navigation of Mobile Robot <u>Wonje Jang</u> , Minho Cho, Jhonghyun An(Yonsei University, Korea), Euntai Kim(Yonsei Univ., Korea)	N/A
TP-B-2	Deep Learning Based Vehicle and Pedestrian Detection Using Embedded GPU System Yeong-Cheol Cho, Hyeon-Seok Kim, Won-Il Son, Min-Gyu Park1, Seung-Woo Kim, <u>Seongkeun Park</u> (Soonchunhyang University, Korea)	N/A
TP-B-3	Vehicle detection using a laser range finder on the basis of SVDD(Support Vector Data Description) <u>Seungho Hyeong</u> , Woojin Chung(Korea University, Korea)	N/A
TP-B-4	Probabilistic Approach to k-Nearest Neighbor Rule <u>Heesung Lee</u> (Korea National University of Transportation, Korea)	N/A
TP-B-5	Depth-Hybrid Speeded-Up Robust Features <u>Hyungjin Kim</u> (KAIST, Korea), Donghwa Lee(Daegu University, Korea), Hyun Myung(KAIST, Korea)	N/A
TP-B-6	Initial dip-based brain area identification for right-hand finger movement <u>Amad Zafar</u> , Muhammad Jawad Khan, Keum-Shik Hong(Pusan National University, Korea)	1007
TP-B-7	Utilization of fNIRS signals as feedback for sensory decoding Muhammad Raheel Bhutta, <u>Seong-Woo Woo</u> , Sohyeon Yoo, Jongseo Park, Keum-Shik	1012

Hong(Pusan National University, Korea)

TP-B-8	Active vibration control of a flexible rod in water <u>Umer Hameed Shah</u> , Mingxu Piao, Gyoung-Hahn Kim, Keum-Shik Hong(Pusan National University, Korea)	1018
TP-B-9	Development of a dual wavelength 32-channel functional near-infrared spectroscopy based neuroimaging system <u>M. Atif Yaqub</u> , M. Raheel Bhutta, Jongseo Park, Keum-Shik Hong(Pusan National University, Korea)	1024
TP-B-10	Learning to Grasp Objects based on Ensemble Learning Combining Simulation Data and Real Data <u>Yong-Ho Na</u> , HyunJun Jo, Jae-Bok Song(Korea University, Korea)	1030
TP-B-11	Data Augmentation using Synthesized Images for Object Detection <u>HyunJun Jo</u> (Korea university, Korea), Yong-Ho Na, Jae-Bok Song(Korea University, Korea)	1035
TP-B-12	Copper Foil Surface Defects Classification Algorithm Based on Convolutional Neural Networks <u>Yongsik Jin</u> (Korea Institute of Industrial Technology / Kyungpook National University, Korea), Sangmoon Lee(Kyungpook National University, Korea), Chungki Lee(YUJIN INSTECH CO.,LTD, Korea), Jong Pil Yun(Korea Institute of Industrial Techonlogy, Korea)	N/A
TP-B-13	Recurrent Neural Network Based Lane Change Prediction Using ADAS Sensors and V2X <u>Wansik Choi</u> , Changsun Ahn(Pusan National University, Korea)	N/A
TP-B-14	Automatic Age and Gender Classification for Korean <u>SeungChul Ha</u> , Jongeun Choi(Yonsei Univ., United States)	N/A
TP-B-15	Lane Detection and Vehicle Localization based on Particle Filter <u>Yang Yu</u> , Kang-Hyun Jo(University of Ulsan, Korea)	N/A
TP-B-16	Data Association Approach to Mobile Robot Localization Using Non-Unique Landmarks <u>Daniel Hong</u> , Geon Heo, Cheol-Woo Myung, Won-Sang Ra(Handong Global University, Korea)	1049
TP-B-17	Lane Localizatoin based on Line Fitting <u>Hwan Heo</u> , Min-Gyu Park, Youngbae Hwang(Korea Electronics Technology Institute, Korea)	N/A
TP-B-18	Finding efficient paths for multi-robot path coverage <u>Hyeun Jeong Min</u> (Yonsei University, Wonju, Korea)	1055
TP-B-19	PID Control for Formation Flight in Presence of Disturbance <u>Rebecca Thien</u> , Yoonsoo Kim(Gyeongsang National University, Korea)	1059
TP-B-20	Source Seeking of Multi-UAV Based on Extremum Seeking Algorithm <u>Shuo Zhuo</u> (Zhejiang University, China)	1062
TP-B-21	Lennard-Jones Potential Field-based Swarm Systems for aggregation and obstacle avoidance <u>Ji-Hwan Son</u> (ETRI, Korea)	1068
TP-B-22	Integrated Chassis Control of suspension and steering systems for LKAS <u>Sungwook Lee</u> , Jahanghyon Park(HANYANG UNIVERSITY, Korea)	N/A
TP-B-23	Sensor Fusion for Vehicle Tracking with Camera and Radar Sensor <u>Kyeong-Eun Kim</u> , Changjoo Lee, Dong Sung Pae, Myo Taeg Lim(Korea University, Korea)	1075
TP-B-24	A Novel Approach to the Enhancement of Lane Estimator by using Kalman Filter <u>Moon-Hyung Song</u> , Chang-il Kim, Jong-min Kim, Kwang-soo Lee, Hyun-Bae Park, Jae-soek Jeon, Su-jin Kwag, Moon-sik Kim(Korea Automotive Technology Institute, Korea)	1078
TP-B-25	A Distributed Coverage Algorithm for Multi-UAV with Average Voronoi Partition <u>Sai Chen</u> (Zhejiang University, China)	1083

TP-B-26	Verification of Energy Model of Solar Powered UAV using Virtual Flight Evaluation <i>Seong-Hwan Kim, Giancarlo Eder Guerra Padilla, Kee-Ho Yu(Chonbuk National University, Korea)</i>	1087
TP-B-27	Implementation of High-Speed Autonomous Driving based on Low cost GPS and NTRIP <i>Minho Lee, Seokhoon Ryu, Sunwung Lee, Kyung Yeop Han, Young-Sup Lee(Incheon National University, Korea)</i>	N/A
TP-B-28	UAVs Cooperative Attack Based on Archimedes Spiral <i>LI Zhenming(Zhejiang University, China)</i>	1094
TP-B-29	Traffic light recognition with HUV-histogram from daytime driving-view images. <i>Gyeongmin Bak, Daijin Kim(POSTECH, Korea)</i>	1099
TP-B-30	Auto-Guided Combine Harvester simulation and its Validation test <i>Chan Woo Jeon(Seoul National University, Korea), Hak-Jin Kim(Soul National University, Korea), Xiongze Han(Texas A&M Scoates Hall, China), Jung Hun Kim(Tong Yang Moolsan Co, Korea)</i>	N/A
TP-B-31	The Smart Wearable Bio Temperature Regulation Sensor for Improving Human Wellness <i>Jong-Ha Lee(Keimyung University School of Medicine, Korea), Hyung Jin Kim(Convergence Medical Device Research Center, Gumi Electronics and Information Technology Research Ins, Korea)</i>	N/A
TP-B-32	Automated Extraction of Optic Disc Regions from Fundus Images for Preperimetric Glaucoma Diagnosis <i>Jisang Park, Hyeon Sung Cho, Jae Il Cho(Electronics & Telecommunication Research Institute, Korea)</i>	1107
TP-B-33	Locomotion identification under load and various walking environment using surface electromyography and ground reaction force <i>Won Dong Kim, Seulki Kyeong, Jung Kim(KAIST, Korea)</i>	N/A
TP-B-34	Real-time ECG and Respiration Monitoring System in Rehabilitation Robot for Gait training <i>EunKyung Bae, Sang-Eun Park, DongJun Kim(Asan Institute for Life Sciences, Korea), Youngjin Moon(Asan Medical Center & University of Ulsan, Korea), Jaesoon Choi(Asan Medical Center / University of Ulsan College of Medicine, Korea)</i>	N/A
TP-B-35	Methods of Selecting Electroencephalographic Features for Personal Authentication <i>Chunggho Lee, Jae-Hwan Kang, Sung-phil Kim(UNIST, Korea)</i>	1115
TP-B-36	Study on the Innovation Efficiency of China's High - tech Industry Considering the Enterprise Nature <i>Li Qian, Wen-ping Wang(Southeast University, China), Ren-qiao Xiao(Anhui University of Finance and Economics, China)</i>	1120
TP-B-37	A Study on the Stability of a Trans-admittance Amplifier as Synthetic Admittance for Piezoelectric Shunt Damping <i>Hideyuki Ichiwara, Kentaro Takagi, Toru Ikegame(Nagoya University, Japan)</i>	1125
TP-B-38	Study on Novel Structure and Control of Energy Saving of Hydraulic Hybrid Excavator <i>Yu Yingxiao(University of Ulsan, Korea), Kyoung Kwan Ahn(University of Ulsan, Korea)</i>	1127
TP-B-39	Robust Hydraulic Position Control based on Uncertainty and Disturbance Estimation <i>HeeJee Sung(Pusan National University, Korea), JiHoon Lee(Korea testing Laboratory, Korea), Hyung-Ki Min, Myeong-Kwan Park(Pusan National University, Korea)</i>	1132
TP-B-40	Robust Control of Electro-Hydraulic Load Simulator Using Sliding Mode Control with Perturbation Estimation <i>Hyongki Min, HeeJee Sung(Pusan National University, Korea), Jihoon Lee(Korea testing Laboratory, Korea), MyeongKwan Park(Pusan National University, Korea)</i>	1137

TP-B-41	Operability with Total Steering Wheel Revolution for Electric Control Steering System of Pleasure Boat <i>Kazuya Kawamata, Shigehiro Toyama, Fujio Ikeda(National Institute of Technology, Nagaoka College, Japan)</i>	N/A
TP-B-42	A Study on control system of dual turbo blower operating with air-foil bearing <i>Si young Park(Neuros co.,ltd, Korea)</i>	N/A
TP-B-43	Backstepping Control for Electro-Hydrostatic Actuation Systems With Mismatched Disturbances Via a Disturbance Observer <i>Hyung-Tae Seo, Yun-Pyo Hong, Jihyuk Park, Kyung-Soo Kim(KAIST, Korea)</i>	N/A
TP-B-44	Experiments and Characteristic Analysis of a Large-Capacity Prismatic Cell for Electric-Powered Application <i>Jonghoon Kim(Chungnam National University, Korea)</i>	1148
TP-B-45	A Research on Junction Temperature Measurement of MOSFETs <i>Bum-Su Jun(University of Sungkyunkwan, Korea), Joon Sung Park(Korea Electronics Technology Institute, Korea)</i>	N/A
TP-B-46	Current Measurement Module for Inexpensive DC Motor Torque Control System <i>Jun Kobayashi, Tsuyoshi Mori(Kyushu Institute of Technology, Japan)</i>	N/A
TP-B-47	Memory Space Adjustable Iterative Learning Controller for Flyback Inverter <i>Hyosin Kim(Pohang University of Science and Technology, Korea), Seok-Min Wi(Department of, Korea), Byeongcheol Han, Sungho Son, Minsung Kim(Pohang University of Science and Technology, Korea)</i>	N/A
TP-B-48	Design of Plug-In Repetitive Controller for Unfolding-Type Cuk Inverter <i>Byeongcheol Han, Minsung Kim(Pohang University of Science and Technology, Korea)</i>	N/A
TP-B-49	Transient Improvement of Cuk Converter based Fuel-Cell Power Conditioning System <i>Seok-Min Wi, Hyosin Kim, Byeongcheol Han, Sungho Son, Minsung Kim(Pohang University of Science and Technology, Korea)</i>	N/A
TP-B-50	Robust Proportional-Type Position Tracking Controller for DC Motor with Disturbance Observers <i>Seok-Kyoon Kim, Young Seok Lee(Hanbat National University, Korea)</i>	1161
TP-B-51	Bounded Control of a Ball and Beam System in the Absence of Feedback <i>Kyung-Tae Lee, Sang-Young Oh, Ho-Lim Choi(Dong-A University, Korea)</i>	1167
TP-B-52	A Switching Action for PID Controller to Improve Trajectory Tracking Performance <i>MyoungHo Kim, SungUk Lee(Korea Atomic Energy Research Institute, Korea)</i>	1170
TP-B-53	Output regulation based rejection of harmonic disturbances in grid tied inverter <i>Jung-Su Kim(SeoulTech, Korea)</i>	N/A
TP-B-54	Unambiguity of Delay-and-Multiply Acquisition Method for GPS L1C Signal <i>Duk-Sun Shim, Jin-Seok Jeon(Chung-Ang University, Korea)</i>	N/A

TP-C Interactive Poster Session I

2F Lobby, 14:00~15:00

TP-C-1	Global Fast Terminal Sliding Mode Control for Quadrotor UAV <i>Qualid Doukhi, AbdurRazzaq Fayjie, Deok Jin Lee(Kunsan National University, Korea)</i>	1180
TP-C-2	On a Discrete-Time Sliding-Mode Controller for Magnetic Levitation Systems <i>Yoko Uemura, Jun Imai, Akiko Takahashi, Shigeyuki Funabiki(Okayama University, Japan)</i>	N/A
TP-C-3	A Study on the Framework Design of Korean-Model PLC-Integrated Drone	1185

Landing Site in Mountain Regions: A Software Engineering Approach

Jun-Ho Huh(Assistant Professor of Dept. of Software, Catholic University of Pusan, Korea), Jeong-Ho Bak(Pukyong National University at Daeyeon, Republic of Korea, Korea)

TP-C-4	Weighted Moments of Discrete-Time Systems from Experimental Data <u>Jiho Hwang</u> , Young Chol Kim(Chungbuk National University, Korea)	1191
TP-C-5	Fuzzy Observer Design and Its Experimental Validation Using the Fuzzy Lyapunov Function <u>Hyeon Jun Lim</u> , Jin Bae Park(Yonsei University, Korea), Young Hoon Joo(Kunsan National University, Korea)	N/A
TP-C-6	Road Profile Estimation using Inertial Sensors <u>Juhui Gim</u> , Changsun Ahn(Pusan National University, Korea)	N/A
TP-C-7	Robust and Resilient State Estimation <u>Yechan Jeong</u> , Dongmin Seo, Yongsoon Eun(DGIST, Korea)	N/A
TP-C-8	Double-loop Control with Proportional-Integral and Partial Feedback Linearization for a 3D Gantry Crane Soon-Geul Lee, <u>Quoc-Dong Hoang</u> , Dinh-Ba Pham(KyungHee University, Korea)	1206
TP-C-9	Extension of Simplified Internal Model Control for Systems with Double Integrators <u>Hanbit Lee</u> , Gyujin Na, Yongsoon Eun(DGIST, Korea)	1212
TP-C-10	Multi-Parametric Model Predictive Control for Variable Valve Timing <u>Junho Lee</u> , H.-J. Chang(Kookmin University, Korea)	1218
TP-C-11	Exponential decay rate of planar switched positive linear systems <u>Wenxiu Zhao</u> , Yuangong Sun(University of Jinan, China)	1222
TP-C-12	Exponential stability of switched time-varying systems with delay and disturbance <u>Minmin Zhao</u> , Yuangong Sun(University of Jinan, China)	1226
TP-C-13	Volatility spillover among USA and major East Asian stock indices based on multivariate stochastic volatility with regime-switching model <u>Zhang Jing</u> , Zhuang Yaming(Southeast University, China)	N/A
TP-C-14	Frequency Response Analysis on Modified Plant of Extended State Observer Yuqiong Zhang(China Electric Power Research Institute, China), Yali Xue, <u>Donghai Li</u> (Tsinghua University, China), Zhiqiang Gao(Cleveland State University, United States), Haiming Niu(Beijing Guodian Zhishen Control Technology Co., Ltd., China), Huanpao Huang(niuhaoming@kh.cgdc.com.cn, China)	N/A
TP-C-15	Position and Altitude Control of a Quadcopter using State Dependent Riccati Equation Control <u>Mapopa Chipofya</u> (Kunsan National University, Korea)	N/A
TP-C-16	A Solution to Optimal Preview Control for Linear Time-Varying Systems <u>Kunhee Ryu</u> , Juhoon Back(Kwangwoon University, Korea)	N/A
TP-C-17	A Study on Positional Displacement Control for the Pontoon Ribbon Bridges for River-crossing Purpose Youngbok Kim(Pukyong National University, Korea), <u>Van Trong Nguyen</u> (the Graduate School, Pukyong National University, Korea)	N/A
TP-C-18	T-S Fuzzy-based Nonlinear DOB using State Observer <u>Abner Jr Punsalan Asignacion</u> , Seung Kyu Park, Min Uk Lee(Changwon National University, Korea)	N/A
TP-C-19	Modeling of Train Dynamics for Autonomous Operation <u>Jaeyeun Park</u> , Buyeon Yu, Seungyeop Lee(DGIST, Korea), Jungtai Kim(Railroad Research Institute, Korea), Kwangsoo Kim(Hanbat National University, Korea), Yongsoon Eun(DGIST, Korea)	N/A

TP-C-20	<p>Effect of Zero Mean Sensor Noise On the Dynamics of Linear-Plant-Nonlinear-Instrumentation Feedback Control Systems</p> <p><u>Seyeong Cheon</u>, Juseung Lee, Yirang Shin, Jeyoung Song, Yongsoon Eun(DGIST, Korea)</p>	N/A
TP-C-21	<p>Double Line Frequency Ripple Suppression Control for Capacitor-Less Current-Fed Type Converter</p> <p><u>Byeongcheol Han</u>, Changkyu Bai, Minsung Kim(Pohang University of Science and Technology, Korea)</p>	N/A
TP-C-22	<p>Nonlinear Digital Control for DC-DC Flyback Converter with Fast Transient Response</p> <p><u>Seok-Min Wi</u>, Hyosin Kim, Sungho Son, Byeongcheol Han, Minsung Kim(Pohang University of Science and Technology, Korea)</p>	N/A
TP-C-23	<p>Sliding Mode Control for Second-order Systems with Smooth Input</p> <p><u>ByungYun Jin</u>, Soon-Hong Kwon, Du-Se Lee, Kang Bak Park(Korea University, Korea)</p>	N/A
TP-C-24	<p>Chattering-free Integral Sliding Mode Control for Nuclear Reactor Power Tracking Problem in Load-following Scenario</p> <p><u>Sungmoon Joo</u>, Jonghwan Lee, Gee Yong Park(Korea Atomic Energy Research Institute, Korea)</p>	N/A
TP-C-25	<p>Feasibility Test Results of an Instantaneous Walking Speed Estimation of the Lower-limb Exoskeleton Robots</p> <p><u>Changhoon Seo</u>(Agency for Defence Development, Korea)</p>	N/A
TP-C-26	<p>The effective rehabilitation method realizing various environments in robot assisted gait training</p> <p><u>Minsu Chang</u>(Sogang University, Korea), Doyoung Jeon(Sogang university, Korea)</p>	N/A
TP-C-27	<p>A method of specific muscle group training of lower limb using an exoskeletal robot</p> <p><u>Minsu Chang</u>(Sogang University, Korea), Doyoung Jeon(Sogang university, Korea)</p>	N/A
TP-C-28	<p>Realization of Virtual Impedance in the Lower Limb Assistive Robot SUBAR</p> <p><u>Yeongmin Kim</u>, Minsu Chang(Sogang University, Korea), Doyoung Jeon(Sogang university, Korea)</p>	N/A
TP-C-29	<p>Design of Knee Joint Actuation Module Using Four-bar Linkage Mechanism for Running Exoskeleton</p> <p><u>YoungJune Shin</u>, Byung Un Kim(Agency for Defense Development, Korea)</p>	N/A
TP-C-30	<p>A Study on the Effects of Negative Power Assistance on Walking Efficiency Using an Ankle Exoskeleton</p> <p><u>Christian William Bundschu</u>, Kyujin Cho(Seoul National University, Korea)</p>	N/A
TP-C-31	<p>Design of Tendon driven SEA(Series Elastic Actuator) based on Bio-mechanical Gait Analysis for a Soft Exo-Suit</p> <p>Hee Don Lee, <u>Tae Hun Kang</u>, Jeon Il Moon(Daegu Gyeongbuk Institute of Science & Technology, Korea)</p>	N/A
TP-C-32	<p>Effect of Local-Adaptive Haptic Guidance on a Path-Following Task</p> <p><u>Hee-Seung Moon</u>, Jiwon Seo(Yonsei University, Korea)</p>	N/A
TP-C-33	<p>A Study on 3D-Touch Usability on a Large Screen Touch Device</p> <p><u>Jang-yeol Lee</u>, Choon-Sung Nam, Dong-Ryeol Shin(Sungkyunkwan University, Korea)</p>	N/A
TP-C-34	<p>Development of Parallel Link Robot for Somatosensory Stimulation</p> <p><u>Yuki Nakamura</u>, Shigehiro Toyama, Fujio Ikeda, Kenji Kamimura(National Institute of Technology, Nagaoka College, Japan), Toshimasa Miyazaki(Nagaoka University of Technology, Japan)</p>	N/A
TP-C-35	<p>Operability for Oscillating Motion of Pleasure Boats</p> <p><u>Tomohiro Haryu</u>, Shigehiro Toyama, Kenji Kamimura, Fujio Ikeda(National Institute of Technology, Nagaoka College, Japan)</p>	N/A
TP-C-36	<p>Improvement of face recognition performance evaluation technology by using a display device through color adjustment</p>	N/A

TP-C-37	<p>Comparison Study of Potential Workload Index in a Simulated Multiple-UAV Operation Environment</p> <p><u>Hyung Jin Lim</u>(Kookmin University, Korea), Seong-Hwan Choi(Gyeongsang National University, Korea), Jangjin Oh, Seongyoung Kim(Chungnam National University, Korea), Ji-Won Lee(Kookmin University, Korea), Byoung Soo Kim(Gyeongsang National University, Korea), Seungkeun Kim(Chungnam National University, Korea), Ji Hyun Yang(Kookmin University, Korea)</p>	1291
TP-C-38	<p>Requirement Analysis of Simulator-based Integration for Disaster Response Robots</p> <p><u>Kap-Ho Seo</u>(Korea Institute of Robot and Convergence, Korea)</p>	N/A
TP-C-39	<p>Turn-Taking Intention Recognition using Multimodal Cues in Social Human-Robot Interaction</p> <p><u>Cheonshu Park</u>(ETRI, Korea)</p>	N/A
TP-C-40	<p>A Design of Mapping to Represent Human Motion with Humanoid Robot by Singular Value Decomposition</p> <p><u>Ayami Kosaka</u>, Shigehiro Toyama, Fujio Ikeda(National Institute of Technology, Nagaoka College, Japan)</p>	N/A
TP-C-41	<p>Design and Dynamic Analysis of Series Elastic Actuator using Electro-Hydraulic Actuator</p> <p>Yongsu Park, <u>Jeon IL Moon</u>, Taehun Kang(Daegu Gyeongbuk Institute of Science and Technology, Korea)</p>	N/A
TP-C-42	<p>A Study on Driving Stability and Visual Fatigue Assessment using Fully Digital Instrument Cluster</p> <p><u>Dongwoon Ryu</u>, Youngdal Oh(KOREA AUTOMOTIVE TECHNOLOGY INSTITUTE, Korea), Sunhong Park(Korea Automotive Technology Institute, Korea)</p>	N/A
TP-C-43	<p>A Diagnostic Function of Lithium Ion Battery Management Systems</p> <p><u>Mirim Ha</u>, Hyun Chul Song(Hanwha Land Systems, Korea)</p>	1309
TP-C-44	<p>Fault detection and isolation of semi-active system using integrated method</p> <p><u>Wonbin Na</u>, Juin Lee, Hyeongcheol Lee(Hanyang Univ., Korea)</p>	N/A
TP-C-45	<p>Anti-Skid Braking Realization at Wheel-Rail Contact using a Sliding Mode Control Scheme</p> <p><u>Chul-Goo Kang</u>(Konkuk University, Korea), Nam-Jin Lee(Hyundai Rotem, Korea)</p>	N/A
TP-C-46	<p>Maintaining State of Charge Method for Repetitive Driving</p> <p>Jinwoo Lee(KAIST, Korea), <u>ByeongChul Sung</u>(Korea Advanced Institute of Science and Technology, Korea), Kyung-Soo Kim, Soohyun Kim(KAIST, Korea)</p>	N/A
TP-C-47	<p>Permanent magnet type and Reluctance type Limited Angle DC Motor for Robust Robot System (ICCAS 2017)</p> <p><u>Eui-Chun Lee</u>, Soon-O Kwon, Ho-Young Lee(Korea Institute of Industrial Technology, Korea), Chang-Ho Kang, Yong-Han Kim(Hanhwa Systems co., Ltd, Korea), Jung-Pyo Hong(Hanyang University, Korea)</p>	N/A
TP-C-48	<p>Development of a Driving Simulator to Acquire Human Reaction Time on Audible Collision Warning</p> <p>Changwon Kim, <u>Sejin Kim</u>, Bohyun An(Korea Institute of Machinery and Materials, Korea)</p>	N/A
TP-C-49	<p>Development of A Design Specification and Verification Test Method for Vision-based Oncoming Vehicle Collision Avoidance System</p> <p><u>Jaehyun Mo</u>, Youngjun Lee(Mando Corporation, Korea)</p>	N/A
TP-C-50	<p>MPC based Vehicle Post Impact Stabilization</p> <p><u>YeaYoung Park</u>, Changsun Ahn(Pusan National University, Korea)</p>	N/A
TP-C-51	<p>Fuel-Conscious Velocity Control Strategy for Adaptive Cruise Control</p>	N/A

Junyeong Kim, Changsun Ahn(Pusan National University, Korea)

TP-C-52	Optimal Parameter Setting of Optical Mouse based Mobile Robot Traveling Simulator <u>Sungbok Kim</u> , <u>Seyoung Choi</u> (Hankuk University of Foreign Studies, Korea)	1335
TP-C-53	Robotic Drilling System for Deep-hole Machining of Automotive Molding <u>Hee Jin Park</u> , <u>Hyun Ju Lee</u> , <u>Jeon IL Moon</u> (DGIST, Korea), <u>Tae Hun Kang</u> (Daegu Gyeongbuk Institute of Science & Technology, Korea)	N/A

FA1 Robot Vision

Ballroom2, 10:20~11:50

FA1-1	Exploiting Color Spaces for the task of Foreground Detection <u>Ajmal Shahbaz</u> , Kang-Hyun Jo(University of Ulsan, Korea)	1343
FA1-2	Human fall classification system for ceiling-mounted kinect depth images <u>Sowmya Kasturi</u> (University of Ulsan, Korea)	1346
FA1-3	Real-time Pedestrian Detection Using a Support Vector Machine and Stixel Information <u>Mi Thi-Tra Nguyen</u> , Vinh Dinh Nguyen, Wook Jae Jeon(Sungkyunkwan University, Korea)	1350
FA1-4	Weld line detection algorithm for radiography test of welding beads in a ship piping system <u>Sang Jun Lee</u> (POSTECH, Korea), Jong Pil Yun(Korea Institute of Industrial Technology (KITECH), Korea), Gyogwon Koo, Hyecheon Choi, Sang Woo Kim(POSTECH, Korea)	1356
FA1-5	Optical flow estimation on the boundary of regions with different velocity <u>Kosuke Takeuchi</u> , Teruo Yamaguchi, Hiroshi Harada(Kumamoto University, Japan)	1360
FA1-6	Finger Motion Estimation Based on Frequency Conversion of EMG Signals and Image Recognition Using Convolutional Neural Network <u>Kikuo Asai</u> (The Open University of Japan, Japan)	1366

FA2 Robotic Applications I

Ballroom3, 10:20~11:50

FA2-1	Model of Skin Stiffness Including the Radial Artery Pressure <u>Heewon Min</u> , Myeongjin Kim, Chengjie Li, Doo Yong Lee(KAIST, Korea)	1372
FA2-2	Design of 2-DOF Flapping Robot using Spatial 4-bar Linkage Mechansim <u>JaeHyung Jang</u> (University of Science and Technology, Korea), Gi-Hun Yang(Korea Institution of Industrial Technology, Korea)	1376
FA2-3	A cost-effective and miniaturized actuation system for two three-tube concentric tube robots with parallel actuation <u>Muhammad Umar Farooq</u> (South Korea, Korea), Woo Young Kim, Seong Young Ko(Chonnam National University, Korea)	1382
FA2-4	A Piston Finger Device for Restoring the Motor Function of Chronic Plegic Fingers: Development of the Device and Verification of the Effectiveness <u>Mengsu Wang</u> (Nagoya Institute of Technology, China), Hirofumi Tanabe(Shonan University of Medical Sciences, Japan), Kenji Ooka, Yoshifumi Morita(Nagoya Institute of Technology, Japan), Yukio Kobayashi, Hiroyuki Daiko, Takafumi Iziri, Naoki Kiriyaama(Meinan Machinery Works Co., Ltd, Japan)	1387
FA2-5	Rehabilitation Support Robot for Self-Standing-Up Training of Hemiplegic Stroke Patients : Guiding Control Method Using Two Passive Robots <u>Masateru Saito</u> , Mizuki Kitamura, Yoshifumi Morita(Nagoya Institute of Technology, Jersey),	1391

Hirofumi Tanabe(Shonan University of Medical Sciences, Japan), Yukio Kobayashi, Takafumi Iziri, Hiroyuki Daiko, Naoki Kiriya(Meinan Machinery Works, Japan)

FA2-6 [Jumping Pattern Generation for One-Legged Jumping Robot](#) 1396
Akira Umehara, Hun Lim(University, Japan)

FA2-7 [Performance Analysis Model Development of Flap Control System using Multi-domain Analysis Platform](#) 1401
Hyunjun Cho, Choonsik Joo(Hanwha/Machinery, Korea)

FA3 Symposium on Bio-Mimetic Robot Research (BMRR) I

Ballroom4, 10:20~11:50

FA3-1 [A Numerical and Theoretical Study on the Aerodynamics of a Rhinoceros Beetle \(Trypoxylus Dichotomus\) and Optimization of its Wing Kinematics in Hover](#) N/A
Sehyeong Oh, Boogeon Lee, Hyungmin Park, Haecheon Choi(Seoul National University, Korea)

FA3-2 [Fabrication of Pressure-dependent Rigidity Controllable Biomimetic Insect Wing for an Ornithopter](#) N/A
Hyun Kim, Jong-mo Seo(Seoul national University, Korea)

FA3-3 [Soft Robot Dynamic Simulation Using Pseudo Rigid Body Model](#) N/A
Jinhyuk Park, Taeyoon Lee, Wooyoung Kim, Youngsuk Hong, Frank Chongwoo Park(Seoul National University, Korea)

FA3-4 [Deployable Glider Module for Jump-Gliding Robot](#) N/A
Sangmin Baek, Dae-Young Lee, Kyu-Jin Cho(Seoul National University, Korea)

FA3-5 [Investigation of Double-Tripod Locomotion of Insect Robot using Differential Gear](#) N/A
Changhoon Baek, Jong-mo Seo, Kyujin Cho(Seoul National University, Korea)

FA3-6 [Improvement of power-mass budget of biomimetic robots through comparative analysis with insects](#) N/A
Sohyun Jung, Ho-Young Kim(Seoul National University, Korea)

FA3-7 [Design of Hybrid Actuator using Smart Soft Composite and Ionic Polymer-Metal Composite](#) N/A
Jin Woo Oh, Min-Sik Kim(Seoul National University, Korea), Sung-Hoon Ahn(Seoul National University, Korea)

FA4 [OS] Robotics and Its Applications

Mara, 10:20~11:50

FA4-1 [SMCSPO based Force Estimation for a Hydraulic Cylinder](#) 1422
Jie Wang, KaramDad Kallu, Min Cheol Lee, Jun Hyeok Seo(Pusan National University, Korea)

FA4-2 [A study on the P.H.A.S \(Piezoelectric energy Harvesting based Access control System\) using motor vibration](#) 1426
Youngkuk Kwon(SUNHST, Korea), Jangmyung Lee(Pusan National University, Korea)

FA4-3 [Location Estimation Process of Low-Cost Pedestrian Dead-Reckoning System using Walk Condition Estimation Algorithm](#) 1429
Jinho Kim, Junwoo Song, Jangmyung Lee(Pusan National University, Korea)

FA4-4 [Application of Maximized Inter-class Variance for Gender Classification using RGB-Depth Camera](#) 1433
Jang Sik Park(Kyungsung University, Korea), Mustafa Eren Yildirim(Bahceshir University, Turkey), Omer Faruk Ince(Kyungsung University, Turkey), Yucel Batu Salman(Bahcesehir University, Turkey), Byung-Woo Yoon(Kyungsung University, Korea), Ibrahim Furkan Ince(Kyungsung Univ.,

Turkey)

- FA4-5 [Implementation of Safety Monitoring System at the Waterfront Based on Video Analysis Technique](#) 1436
Baris Baydargil, Jang Sik Park, Jong Gwan Song(Kyung Sung University, Korea)

FA5 [Mini] Image Processing and Medical Imaging I

Biyang, 10:20~11:50

- FA5-1 [Environment Recognition for Navigation of Autonomous Wheelchair from a Video Images](#) 1439
Yoshiki Nakayama, Huimin Lu, Joo Kooi Tan, Hyungseop Kim(Kyushu Institute of Technology, Japan)
- FA5-2 [Detection of Abnormal Candidate Regions on Temporal Subtraction Images Based on DCNN](#) 1444
Mitsuaki Nagao, Noriaki Miyake, Yuriko Yoshino, Huimin Lu, Joo Kooi Tan, Hyungseop Kim(Kyushu Institute of Technology, Japan), Seiichi Murakami(University of Occupational and Environmental Health, Japan)
- FA5-3 [Automatic Identification of Circulating Tumor Cells in Fluorescence Microscopy Images Based on AdaBoost](#) 1449
Kouki Tsuji, Huimin Lu, Joo Kooi Tan, Hyungseop Kim(Kyushu Institute of Technology, Japan), Kazue Yoneda, Fumihiro Tanaka(University of Occupational and Environmental Health, Japan)
- FA5-4 [Detection of Lung Nodules on Temporal Subtraction Images Using 3D Sparse Coding](#) 1455
Takahisa Tanaka, Noriaki Miyake, Huimin Lu, Joo Kooi Tan, Hyungseop Kim(Kyushu Institute of Technology, Japan), Takatoshi Aoki(University of Occupational and Environmental Health, Japan), Shoji Kido(Yamaguchi University, Japan)

FA6 [OS] Human Assist Robots

Udo, 10:20~11:50

- FA6-1 [Electrode selection metric for signal demixing in overdetermined sEMG detection](#) N/A
Noel Segura Meraz, Yasuhisa Hasegawa(Nagoya University, Japan)
- FA6-2 [Towards controlling of an upper-limb exoskeleton for motion assist with EEG signals – motion prediction](#) N/A
Sanjaya Bandara, Kazuo Kiguchi(Kyushu University, Japan)
- FA6-3 [Development and Evaluation of Muscle Suit for Arms and Lower Back Support](#) 1462
Eita Nakamura, Hiroshi Kobayashi, Koki Ichinose(Tokyo University of Science, Japan)
- FA6-4 [Proposal of a Fixation Method for Wearable Assistive Systems Using Jamming Transition and the Expansion of an Elastic Bag](#) 1466
Manabu Okui, Kazuya Sekido, Shingo Iikawa, Yasuyuki Yamada, Taro Nakamura(Chuo university, Japan)
- FA6-5 [A Study on the Effect of Vibration Stimulation during Continuous Knee Joint Flexion/Extension Motion for Lower-limb Perception-assist](#) 1469
Kazuo Kiguchi(Kyushu University, Japan), Koki Honda(Kyushu university, Japan)

FA7 [OS] Advances in Process Control and Optimization

Tamna, 10:20~11:50

- FA7-1 [Iterative Convex Relaxation Methods for Adaptive Optimal Input Design in](#) N/A

System Identification

Kwangki Kim(Inha University, Korea)

FA7-2	Closed-loop Multi-rate Identification with zone-MPC using Constrained Subspace Method	1473
	<u>ByungJun Park</u> , Se-Kyu Oh, Jong Min Lee(Seoul National University, Korea)	
FA7-3	On-line Approximated Just-In-Time Model Predictive Control for Batch Trajectory Tracking	1479
	<u>Dong Hwi Jeong</u> , Jong Min Lee(Seoul National University, Korea)	
FA7-4	Synthesis of the optimal heat and water recovery system for reduction of the refinery CO2 emission	1485
	<u>Haeun Yoo</u> , Kosan Roh(Korea Advanced Institute of Science and Technology, Korea), Ali S. Al Hunaidy, Hasan Imran(Saudi Aramco, Saudi Arabia), Jay H. Lee(Korea Advanced Institute of Science and Technology, Korea)	
FA7-5	Model-based Optimization of a Pectin Extraction Process	N/A
	<u>Boeun Kim</u> (KAIST, Korea), Ricardo F Carozo, Jakob K Huusom(Technical University of Denmark, Denmark), Jay H Lee(KAIST, Korea)	
FA7-6	Dynamic Programming based Operational Planning of Refinery Combined with Two Stage Stochastic Programming	N/A
	<u>Joohyun Shin</u> (Korea Advanced Institute of Science and Technology (KAIST), Korea), Jay H Lee(KAIST, Korea)	

FA8 [OS] Concept, Results and Future Topics of the Research Project on Rehabilitation Robot for Walking Function

Halla, 10:20~11:50

FA8-1	Research and development of wearable auxiliary tool for behavior assistance of elderly who requires nursing care.	1501
	<u>Takehiro Tashiro</u> , Kanta Aoki, Kongkwun Lee, Taisuke Sakaki(Kyushu Sangyo University, Japan)	
FA8-2	Development of Rehabilitation Device for Standing Position Weight Bearing Exercise Using Wii Balance Board	1505
	<u>Yuken Kanemaru</u> , Yuko Kamiya, Toshihiko Shimokawa(Kyushu Sangyo University, Japan), Hiroshi Umezaki(Kashiihara Hospital, Japan), Taisuke Sakaki(Kyushu Sangyo University, Japan)	
FA8-3	A Study of a Standing-Up Motion Training Aid by Non-Electric Source Driving	1508
	Satoshi Kuga, <u>Nobuhiro Ushimi</u> (Kyushu Sangyo University, Japan)	
FA8-4	Concept, results and future topics for the Human Robotics Research Center at Kyushu Sangyo University	1513
	<u>Taisuke Sakaki</u> , Kazuhiko Tsuruta, Yong-Kwun Lee, Nobuhiro Ushimi, Koji Murakami, Yoshimi Matsunoo, Yutaka Ichinose, Tshihiko Shimokawa, Yuko Kamiya, Osamu Kikima, Kanta Aoki, Shinya Morishita, Takehiro Tashiro, Hidetsugu Nishizono(Kyushu Sangyo University, Japan)	

FB2 Robotic Applications II

Ballroom3, 13:10~14:40

FB2-1	Preliminary Research into Control System using Quantified Human Emotions	1519
	<u>Naoya Hasegawa</u> , Yoshihiko Takahashi(Kanagawa Institute of Technology, Japan)	
FB2-2	Concept Design of Personal Mobility Vehicle	1525
	<u>Naomichi Maehara</u> , Mohsen Shavandi, Yoshihiko Takahashi(Kanagawa Institute of Technology, Japan)	
FB2-3	Task Prioritization for Automated Robotic Item Picking	1531
	Albert Causo, <u>Zheng Hao Chong</u> , Ramamoorthy Luxman, Yuan Yik Kok, I-Ming Chen(Nanyang	

FB2-4	A Mobile Robot Based Watering System for Smart Lawn Maintenance <i>Bigumjith Dias, Sajeew Mechsy, Wijeratnam Pragithmukar, Asitha Kulasekera(University of Moratuwa, Sri Lanka)</i>	1537
FB2-5	A Floating Waste Scooper Robot On Water Surface <i>Niramon Ruangpayoongsak(King Mongkut's University of Technology North Bangkok, Thailand), Jakkrit Sumroengrit, Monthian Leanglum(King Mongkut's University of Technology North Bangkok, Thailand)</i>	1543
FB2-6	RUNNER BIB NUMBER RECOGNITION SYSTEM <i>Anuntapat Anuntachai(King Mongkut's Institute of technology Ladkrabang, Thailand)</i>	1549

FB3 Symposium on Bio-Mimetic Robot Research (BMRR) II

Ballroom4, 13:10~14:40

FB3-1	Tactile and chemical sensor system for small biomimetic robots <i>Ohjun Gwon(Seoul National University, Korea)</i>	N/A
FB3-2	Piezoresistive effects of silicon nanowire for biomimetic inertial sensors <i>Seohyeong Jang, Bobaro Chang, Jinwoo Sung, Taeyup Kim, Dong-Il Dan Cho(Seoul National University, Korea)</i>	N/A
FB3-3	Proposition on Complex Visual Field Prediction Model of Flying Insect Robot <i>Jisung Kim(Seoul National University, Korea), Jong-Mo Seo(Seoul National University Hospital, Korea)</i>	N/A
FB3-4	Analysis of Radio Frequency Interference for a Biomimetic Chassis Mode Antenna <i>Dong-Woo Kim, Sangwook Nam(Seoul National University, Korea)</i>	N/A
FB3-5	The Comparison of RPL, ORPL, and LOADng for Low-power Biomimetic Robot Networks <i>Seungbeom Jeong, Saewoong Bahk(Seoul National University, Korea)</i>	N/A
FB3-6	On the generalized deep learning model of signal detection for molecular communication based biomimetic robots <i>Byungham Im(Seoul National University, Korea), Minchul Kim(SNU, Korea), Jungwoo Lee(Seoul National University, Korea)</i>	N/A
FB3-7	Modeling and Analysis of Operation Time for Photovoltaic Energy Harvesting Assisted Mobile Robot System <i>Sung-Youb Jung, Jaeha Kim(Seoul National University, Korea)</i>	N/A

FB4 [Mini] Machine Vision Applications I

Mara, 13:10~14:40

FB4-1	Image-based Hand Pose Classification using Faster R-CNN <i>Young-Jun Son, Ouk Choi(Incheon National University, Korea)</i>	1569
FB4-2	Multi-lane Detection By Finding Epipole using Convolutional Neural Network <i>Daehun Kim, Jong-Eun Ha(Seoul National University of Science and Technology, Korea)</i>	N/A
FB4-3	Comparative Analysis of RADAR- IR Sensor Fusion Methods for Object Detection <i>Taehwan Kim, Sungho Kim(Yeungnam University, Korea)</i>	1576
FB4-4	Realization of a hybrid human motion capture system. <i>Hahyoung Jung(Chungnam National University, Korea)</i>	1581

FB5 [Mini] Image Processing and Medical Imaging II

Biyang 13:10~14:40

- FB5-1 [Image Analysis of Cleft Lip from Moire Image Based on Symmetry Analysis](#) 1586
[Shinji Yamada](#), Huimin Lu, Joo Kooi Tan, Hyoungseop Kim(Kyushu Institute of Technology, Japan),
Namiko Kimura, Takako Okawachi, Etsuro Nozoe, Norifumi Nakamura(Kagoshima University
Graduate School of Medical and Dental Sciences, Japan)
- FB5-2 [Automatic Liver Segmentation from Multiphase CT images by Using Level Set Method](#) 1590
[Kentaro Saito](#), Huimin Lu, Joo Kooi Tan, Hyoungseop Kim(Kyushu institute of technology, Japan),
Akiyoshi Yamamoto(Tobata Kyoritsu Hospital, Japan), Shoji Kido, Masahiro Tanabe(Yamaguchi
University, Japan)
- FB5-3 [Classification of Osteoporosis from Phalanges CR Images Based on DCNN](#) 1593
[Kazuhiro Hatano](#), Seiichi Murakami, Huimin Lu, Joo Kooi Tan, Hyoungseop Kim, Takatoshi
Aoki(Kyushu Institute of Technology, Japan)
- FB5-4 [Image Registration on Vertebral Region from CT Images Based on Salient Region Feature](#) 1597
[Suguru Sato](#), Huimin Lu, Joo Kooi Tan, Hyoungseop Kim(Kyushu Institute of Technology, Japan),
Seiichi Murakami, Midori Ueno, Takashi Terasawa, Takatoshi Aoki(University of Occupational and
Environmental Health, Japan)
- FB5-5 [Extraction of Spinal Candidate Region from A Dental MR Imaging](#) 1601
[Kenta Suetani](#), Huimin Lu, Joo Kooi Tan, Hyoungseop Kim(Kyushu Institute of Technology, Japan),
Tatsuro Tanaka, Shinji Kitou, Yasuhiro Morimoto(Kyushu Dental College, Japan)

FB6 Sliding Mode Control and Stability Analysis

Udo, 13:10~14:40

- FB6-1 [Sliding Mode Control of A Newly Designed Cable-Driven Manipulator with Time Delay Estimation](#) 1605
[Yaoyao Wang](#), Surong Jiang, Fei Yan, Bai Chen(Nanjing University of Aeronautics and Astronautics,
China)
- FB6-2 [The Disturbance Rejection Design Based on Physical Feedforward for Solid Oxide Fuel Cell](#) 1610
[Zhenlong Wu](#), Wangying Shi, Donghai Li, Ting He, Yali Xue, Minfang Han(Tsinghua University,
China), Song Zheng(Fuzhou University, China)
- FB6-3 [Novel Fractional Order PD^μ Controller for Open-Loop Unstable Inverted Pendulum System](#) 1616
[Prakash Dwivedi](#)(National Institute of Technology, Uttarakhand, India), Sandeep Pandey, Anjali S
Junghare(Visvesvaraya National Institute of Technology, Nagpur, India)
- FB6-4 [Robust Anti-Windup Control Design for PID Controllers](#) 1622
[Payam Kheirkhahan](#)(Garmsar branch, Islamic Azad University, Iran, Islamic Republic of)
- FB6-5 [Adaptive Sliding Mode Control Using Radial Basis Function Network for Container Cranes](#) 1628
[Ngo Phong Nguyen](#)(Can Tho University of Technology, Viet Nam), Quang Hieu Ngo, Chi Ngon
Nguyen(Can Tho University, Viet Nam)
- FB6-6 [Anti-windup Compensator Synthesis for Cascaded Linear Control System](#) 1634
[Muntazir Hussain](#), Najam us Saqib, Muhammad Rehan, Muhammad Siddique(Pakistan Institute of
Engineering and Applied Sciences (PIEAS), Pakistan)

FB7 [OS/Closed] Vehicle Active Safety and Automated Driving

Tamna, 13:10~14:40		
FB7-1	Probabilistic Prediction based Automated Driving Motion Planning Algorithm for Lane Change <u>Heungseok Chae</u> , Kyongsu Yi(Seoul National University, Korea)	1640
FB7-2	Reconcile Security Requirements for Intelligent Vehicles <u>Madhusudan Singh</u> , Shiho Kim(Yonsei University, Korea)	1646
FB7-3	Backstepping Approach for Lateral Control of Autonomous Vehicle <u>Chang Mook Kang</u> (Hanyang University, Korea), Wonhee Kim(Chung-Ang University, Korea), Seung-Hi Lee, Chung Choo Chung(Hanyang University, Korea)	N/A
FB7-4	On Analyzing Parking Lot Pedestrian Behaviors as Particle Mass on Time-Space <u>KangWon Lee</u> (Korea Polytechnic University, Korea)	N/A
FB8 Control of Soft/Compliant Actuators		
Halla, 13:10~14:40		
FB8-1	Comparison of Resonance Ratio Control and Inner Force Control for Position control of Series Elastic Actuator <u>SuHui Kwak</u> , Sehoon Oh(University, Korea)	N/A
FC2 [Mini] Intelligent Robot Technology: SICE-ICROS Joint Session II		
Ballroom3, 16:10~17:40		
FC2-1	Multi-robot SLAM via Distributed Extended Kalman Filters <u>Toshiki Sasaoka</u> , Yosuke Kishimoto, Kiyotsugu Takaba(Ritsumeikan University, Japan)	N/A
FC2-2	Haptic Guidance Steering System of a Quadruped Robot for Robotic Disaster Relief Operations <u>Yoojin Oh</u> , Suhun Jung, Jae Hwan Bong, Shinsuk Park(Korea University, Korea)	N/A
FC2-3	Estimation Force of Master-Slave for the End Effector of Hydraulic Servo System Using SMCSP0 <u>Karam Dad Kallu</u> , <u>Karam Dad Kallu</u> (Pusan National University, Korea)	1665
FC2-4	Velocity-field control of hydraulic robot with coupled hydraulic circuitry <u>Kwangmin Kim</u> , Minji Kim(Seoul National University, Korea), Dongmok Kim(Doosan Infracore Co. Ltd., Korea), Dongjun Lee(Seoul National University, Korea)	N/A
FC2-5	Distributed Control Design for a Platoon of Wheeled Mobile Robots: Application to Teleoperation with Predictive Display <u>Changsu Ha</u> , Jaemin Yoon, Changu Kim, Yonghan Lee, Dongjun Lee(Seoul National University, Korea)	N/A
FC2-6	A Study of Eye Contact for Tabletop Robot <u>Yusuke Nozaki</u> , Takashi Yoshimi(Shibaura Institute of Technology, Japan), Kiyooki Takeuchi(Takerobo Corporation, Japan)	1673
FC3 Symposium on Bio-Mimetic Robot Research (BMRR) III		
Ballroom4, 15:00~17:00		
FC3-1	Modeling and Attitude Control of Flapping MAV Using Disturbance Observer <u>Sungkeun Kim</u> (Hanwha Systems, Korea), <u>In-Rae Kim</u> , Seungkeun Kim, Jinyoung Suk(Chungnam National University, Korea), Sungbong Cho(Agency for Defence Development, Korea)	N/A
FC3-2	Experiments on Autonomous Hovering Flight in Flapping-Wing Micro Air Vehicle <u>Seungwan Ryu</u> (Seoul National University, Korea)	N/A

FC3-3	Surface Recognition Using Dash Robot <i>Kyunghoon Cho, Geonho Cha, Junghyun Oh, Beomhee Lee, Songhwai Oh</i> (Seoul National University, Korea)	N/A
FC3-4	Optical Flow Based Three Potential Applications with Biomimetic Vision System <i>Minwon Seo, Jongmo Seo</i> (Seoul National University, Korea), <i>Kyoin Koo</i> (University of Ulsan, Korea)	N/A
FC3-5	Path Planning for Beacon Robot-Assisted Localization in Wireless Sensor Networks <i>Wontae Yu, Byeong-Ho Lee, Seong-Cheol Kim</i> (Seoul National University, Korea)	N/A
FC3-6	Understanding Visual Information with Compound Eye Camera <i>Hwiyeon Yoo, Geonho Cha, Songhwai Oh</i> (Seoul National University, Korea)	N/A
FC3-7	Development of a Mechanism for Flapping Wing Micro Aerial Vehicle <i>Junhee Lee, Chongam Kim</i> (Seoul National University, Korea)	N/A

FC4 [Mini] Machine Vision Applications II

Mara, 16:10~17:40

FC4-1	Zooming multiple objects using wide-angle camera and PTZ camera in visual surveillance <i>Nam-Hun Kim, Jong-Eun Ha</i> (Seoul National University of Science and Technology, Korea)	N/A
FC4-2	Anti-saturation and Contrast Enhancement Technique using Interlaced Histogram Equalization (IHE) for Improving Target Detection Performance of EO/IR Images <i>Byeong Hak Kim, Min Young Kim</i> (Kyungpook National University, Korea)	1692
FC4-3	Object Tracking Using Particle Filter with Back Projection-Based Sampling on Saliency <i>Nachaya Chindakham, Alongkorn Pirayawaraporn</i> (Kwangwoon University, Korea)	1696
FC4-4	3D Space Recognition for indoor Drone Navigation using Multiple Cameras <i>Kwangsuk Oh</i> (Korea Research Center for Measuring Instruments, Korea), <i>Jong-Eun Ha</i> (Seoul National Univ. of Technology, Korea), <i>Wangheon Lee</i> (Hansei University, Korea)	N/A

FP-B Interactive Poster Session II

2F Lobby, 15:00~16:00

FP-B-1	Effect of Model Accuracy in Model Predictive Control for Vehicle Steering System <i>Hyunsik Nam, Changsun Ahn</i> (Pusan National University, Korea)	N/A
FP-B-2	Risk Statistics based Vehicle Collision Avoidance Control Strategy for Target Vehicles in Car-to-Car Accidents <i>Suhyun Jeong, Changsun Ahn</i> (Pusan National University, Korea)	N/A
FP-B-3	MPC-Based Power Management of a Parallel Hybrid Electric Vehicle <i>Seho Park, Changsun Ahn</i> (Pusan National University, Korea)	N/A
FP-B-4	Gain Selection Method for Robustness Enhancement in Sliding Mode Control Combined with Decoupled Disturbance Compensator with Unknown Inertia in Industrial Servo Systems <i>Ji-Seok Han, Tae-Il Kim, Ji-Ho Park, Tae-Ho Oh</i> (Seoul National University, Korea), <i>Ji-Hyung Lee, Sang-Oh Kim, Sang-Sub Lee, Sang-Hoon Lee</i> (RS Automation, Korea), <i>Dong-Il Cho</i> (Seoul National University, Korea)	1713
FP-B-5	Applications of Command Shaping Methods for Reducing Residual Vibration in Industrial Servo Systems <i>Tae-Ho Oh, Tae-Il Kim, Ji-Seok Han, Ji-Ho Park</i> (Seoul National University, Korea), <i>Ji-Hyung Lee,</i>	1718

Sang-Oh Kim, Sang-Sub Lee, Sang-Hoon Lee(RS Automation, Korea), Dong-Il Cho(Seoul National University, Korea)

FP-B-6	<p>Testing-based Software Verification Methodology and Supporting Tool for Railway Software</p> <p><u>Jong-Gyu Hwang</u>, Hyun-Jeong Jo, Ui-Jin Jeong(Korea Railroad Research Institute, Korea), In-Taek Lim(MOCT, Korea)</p>	N/A
FP-B-7	<p>A Backstepping Approach for Looper and Tension Control in Hot Strip Mills</p> <p>Sangbo Seo(Gachon University, Korea), <u>Hyeonjun Yun</u>(Seoul National University, Korea)</p>	N/A
FP-B-8	<p>Mask-Substrate Gap Control System Using Electromagnets</p> <p><u>Taehyoeng Gu</u>(Seoul National University, Korea), Buhyun Shin(Hanbat National University, Korea), Chang-Hyuk Lee(Korea Electrotechnology Research Institute, Korea), Young-bong Bang(Advanced Institutes of Convergence Technology, Seoul National University, Korea)</p>	N/A
FP-B-9	<p>Frequency analysis of Fault Currents in LFAC Power Transmission System</p> <p><u>Jeongsik Oh</u>, Seonghwan Kim(Mokpo National University, Korea), Seung-Tae Cha(Korea Electric Power Research Institute, Korea), Taesik Park(Mokpo National University, Korea)</p>	1728
FP-B-10	<p>Changes in fuel injection pressures and fuel spray quantity of marine diesel engines</p> <p><u>Naohiro Yamatani</u>(National Institute of Technology, Toyama College, Japan), Atsumu Tezaki(university of toyama, Japan), Sotomi Ishihara, Toshihiko Nakatani, Noriko Nishii, Hiroshi Mikami(National Institute of Technology, Toyama College, Japan)</p>	1733
FP-B-11	<p>Auto lead angle algorithm for high efficiency control of BLDC Motor</p> <p><u>Byeong-chan Jeon</u>(Hanyang University, Korea), Won-ki Park, Sung-chul Lee(Korea Electronics Technology Institute(KETI), Korea), Hyun-chul Shin(Hanyang University, Korea)</p>	1739
FP-B-12	<p>Sliding Mode Controller design for a PMSG wind Turbine system with varying Torque uncertainties</p> <p><u>Sung Won Lee</u>, Kwan-Ho Chun(Chungnam National University, Korea)</p>	N/A
FP-B-13	<p>Three-phase high power wireless transmission system</p> <p><u>Jeongsik Oh</u>, Younggon Kim, Chaejoo Moon, Nohong Kwak(Mokpo National University, Korea), Seungtae Cha(Korea Electric Power Research Institute, Korea), Taesik Park(Mokpo National University, Korea)</p>	N/A
FP-B-14	<p>An Optimized Approach on Assessing and Implementing Security Controls for I&C Systems in Operating Nuclear Power Plants</p> <p><u>Sooill Lee</u>, Yongsik Kim, Cheol Woong Son(KHNP CRI, Korea)</p>	N/A
FP-B-15	<p>A Method of Cyber Security Vulnerability Test for the DPPS and PMAS Test-bed</p> <p><u>Yongsik Kim</u>, Choulwoong Son(the Central Research Institute of KHNP, Korea), Sooill Lee(KHNP CRI, Korea)</p>	1749
FP-B-16	<p>A study on Efficient Security Control Assessment Method using System Attributes for Critical Digital Assets in NPPs</p> <p><u>choulwoong son</u>(Korea Hydro and Nuclear Power, Korea), Sooill Lee(KHNP CRI, Korea), Yongsik Kim(the Central Research Institute of KHNP, Korea)</p>	N/A
FP-B-17	<p>Wireless Networked Control System Testbed Using Multiple Pneumatic Levitation Tubes</p> <p><u>Yuchang Won</u>, Minkyong Jeon, Seunghyeon Kim, Yongsoon Eun(DGIST, Korea)</p>	N/A
FP-B-18	<p>Measurement of Attack Preference by Using Analytical Hierarchy Process (AHP) for an Operating Nuclear Power Plant</p> <p><u>Yongsik Kim</u>(the Central Research Institute of KHNP, Korea), Choulwoong Son(the Central Research Institute of KHNP, Korea), Sooill Lee(KHNP CRI, Korea)</p>	N/A
FP-B-19	<p>Wireless Control and Monitoring using Programmable Logic Controller (PLC)</p> <p><u>Ali Moallim Mahmoud</u>, Jae-Min Lee, Dong-Seong Kim(Kumoh National Institute of Technology, Korea)</p>	1763

FP-B-20	Design and implementation of an automated, long-range selfie camera system using LORA <i>Thanh Trung Ngo, Seong Dong Kim(Kumoh National Institute of Technology, Korea)</i>	1768
FP-B-21	Design and Implementation of an Acoustic Leak Monitoring System Test-bed using FPGA Platform <i>Min-Seok Kim, Gwang-Dae Lee, Ho-Sun Ryu(KHNP Central Research Institute, Korea)</i>	1773
FP-B-22	Mobile Edge Cloud Architecture <i>Sayed Chhattan Shah(Hankuk University of Foreign Studies, Korea)</i>	1776
FP-B-23	Adjustment of Replacement Conditions for Genetic Algorithm Used in Optimizing Ion-Trap Electrodes at a Junction <i>Minjae Lee, Yunjae Park, Seokjun Hong, Changhyun Jung(Seoul National University, Korea), Taehyun Kim, Yeongdae Kwon(SK Telecom, Korea), Dongil Dan Cho(Seoul National University, Korea)</i>	1778
FP-B-24	Evaluation of Galvanic Vestibular Stimulation Acceleration Sensation by Myoelectricity of Cervical Shallow-layer Muscles <i>Kazu Irisawa, Shigehiro Toyama, Kenji Kamimura, Fujio Ikeda(National Institute of Technology, Nagaoka College, Japan)</i>	1784
FP-B-25	A study on presentation of lateral acceleration using visually induced illusions of self-motion <i>Tetsuya Takamatsu, Hiroki Maruta, Kenji Kamimura, Shigehiro Toyama(National Institute of Technology, Nagaoka College, Japan)</i>	1786
FP-B-26	Cuboid based Geometric Calibration: A Preliminary Study <i>Soyoung Chung(Seoul Woman's University, Korea), Suji Kim, Hyeyeon Park(Seoul Woman's University, Korea), Joo-Haeng Lee(ETRI, Korea), Min Gyo Chung(Seoul Woman's University, Korea)</i>	1788
FP-B-27	Hole Classification for Image-based Rendering <i>Inpyo Hong(Korea Electronics Technology Institute, Korea), Youngbae Hwang(KETI, Korea), Byeongho Choi(Korea Electronics Technology Institute, Korea)</i>	1790
FP-B-28	Statistical Evaluation of the Multi-Frequency GPS Ionospheric Scintillation Observation Data <i>Naveed Ahmed, Jiwon Seo(Yonsei University, Korea)</i>	1792
FP-B-29	Performance Assessment of GNSS in Train Control System <i>Weiyi Shuai(Equipment Academy, China), XR Dong(International Cooperation Center, China), Mingqi Yang, Wei Fu, Wenhua Cheng(Equipment Academy, China)</i>	1798
FP-B-30	Tgo Rational Function Biased PN Guidance Law for Precise Impact Angle with First-Order Dynamic Lag <i>Chanyeong Kim, Wonsang Ra(Handong Global University, Korea), Ickho Whang(Agency for Defense Development, Korea)</i>	1804
FP-B-31	A study on the maximum distance of glide type ammunition according to the flight condition <i>Seungje Shin, Minkyu Park(ADD, Korea), Whanwoo Kim(Chung-nam Univ, Korea)</i>	N/A
FP-B-32	Neural Network Based Autonomous Navigation for a USV Considering Sea Current <i>Hyeon-Min Kim(Kyungnam University, Korea), Jae-Sik Lim, Wang-Jin Lee, Seung-Woon Park(Kyeong In Tech Co., Korea), Kwangkook Lee, Dong Hun Kim(Kyungnam University, Korea)</i>	N/A
FP-B-33	A Multi-Objective Decision Making based Mobile Robot Path Planning Strategy <i>Changwon Kim, Sejin Kim, Bohyun An(Korea Institute of Machinery and Materials, Korea)</i>	N/A
FP-B-34	Development of Control Simulator Software for Plant Engineers Training <i>Gwang-Dae Lee, Ho-Sun Ryu, Min-Seok Kim(KHNP Central Research Institute, Korea)</i>	N/A
FP-B-35	Evaluation of Bumpless Transfer Capability for Control Transient Mitigation	N/A

Ho-Sun Ryu, Min-Seok Kim, Gwang-Dae Lee(KHNP Central Research Institute, Korea)

FP-B-36	A Development of Abnormal Condition Monitoring System for Underwater Structure <u>Young-Jin Kim</u> , Seung-Hwan Choi(Korea Institute of Industrial Technology, Korea)	N/A
FP-B-37	Development of Video Simulator for Detection and Alarm of Subsea Plant Abnormal State <u>Jin-Lyul Park</u> , Seung-Gi Lee(Juin Information System, Korea), Young-Jin Kim, Seung-Hwan Choi(Korea Institute of Industrial Technology, Korea)	N/A
FP-B-38	Loose part impact monitoring for coolant system: An ANN based approach <u>Ki Hong Im</u> , Jin-Ho Park(KAERI, Korea)	N/A
FP-B-39	Abnormal condition diagnosis of centrifugal pumps with ANN classifier <u>Ki Hong Im</u> , Soon-Woo Han(KAERI, Korea)	N/A
FP-B-40	Design of remote fabrication mock-up <u>Kiho Kim</u> (Korea Atomic Energy Research Institute, Korea)	N/A
FP-B-41	Effect of relative incidental angle and wave parameters on the light reflection at sea surface <u>Sun-Young Yoo</u> , Jisung Kim, Changhoon Baek(Seoul National University, Korea), Won-Seok Lee(Seoul National University, Korea), Seongmin Lee(Seoul National University, Korea), Changhan Park, Kanghoon Kwon(HANWHA Systems CO., LTD., Korea), Jong-Mo Seo(Seoul National University, Korea)	N/A
FP-B-42	Industrial Robot Calibration Method using Denavit – Hatenberg Parameters <u>Jinwon Lee</u> (Korea institute for Robot industry advancement, Korea)	1834
FP-B-43	Bipedal Robot Walking Pattern Generation Based on Capture Point and Minimizing Falling Damage and Posture Recovery <u>*Sang-hoon Han</u> , Kyung-Soo Kim, Soo-hyun Kim(KAIST) (KAIST, Korea)	1838
FP-B-44	Vibration control of a flexible beam by state feedback using tip accelerometer <u>Ryoka Ouchi</u> , Jun Imai, Akiko Takahashi, Shigeyuki Funabiki(Okayama University, Japan)	N/A
FP-B-45	Force-regulated Impact Control of a Reinforced Concrete Box Culvert Chipping Robot <u>Jaeuk Cho</u> , Seungyeol Lee(Daegu Gyeongbuk Institute of Science & Technology, Korea)	N/A
FP-B-46	A Stable Working Path Control of Vertical Type Robot System with 7 Joint for Forging Manufacturing Automation <u>Min-Seong Kim</u> , Jong-Hun Kim(Kyungnam University, Korea), Sung-Hun Noh(YoungChang Robotech Co., Ltd., Korea), Jeong-Suk Kang, Jong-Bum Won(SMEC Co., Ltd., Korea), Sung Hyun Han(Kyungnam University, Korea)	N/A
FP-B-47	A Study on Intelligent Control of Mobile-Manipulator Robot based on Voice Command for Smart FA <u>Yang-Keun Jeong</u> (Sinla Information Technology Co., Ltd., Korea), Min-Seong Kim(Kyungnam University, Korea), Hui-Jin Kim(Graduate School of Industry & Business administration Graduate School Kyungnam University, Korea), Woo-Song Lee(SUNJIN Technology co., Ltd., Korea), Yeon-Guk Noh(SFNT Co., Ltd., Korea), In-Man Park(Intern Co., Ltd., Korea), Jang Sik Park(Kyungsung University, Korea), Sung Hyun Han(Kyungnam University, Korea)	N/A
FP-B-48	A Study on Robust Control of Biped Robot for Cooperative Working O-Duek Lim(Naval Shipyard, Korea), <u>Min-Seong Kim</u> (Kyungnam University, Korea), Byeong-Gap Moon(KWANGJIN PRECISION Co., Ltd., Korea), Kyu-Hyun Jung(SEYOUNG INDUSTRY Co., Ltd., Korea), Myeong-Hwan Park(ROBOT VALLEY Co., Ltd., Korea), Yong-Un Park(Agency for Defense Development, Korea), Yeong-Jin Lee(AUTOPOWER Co., Ltd., Korea), Ju-Jang Lee(KAIST, Korea), Sung Hyun Han(Kyungnam University, Korea)	N/A
FP-B-49	A Study on Learning Control of Humanoid Robot for Unmanned FA <u>Un-Tae Ha</u> , Min-Seong Kim(Kyungnam University, Korea), Seung-Hack Baek(Doosan Heavy	N/A

Industries & Construction Co., Ltd., Korea), Dong-Yeon Jeong(Daehotek Co., Ltd., Korea), Byung-Suk Yoon(Dongmyeongjeong-gi Co., Ltd., Korea), Jung-Eup Gye(Ministry of Trade, Industry & Energy Office , Korea), Jong-Gyo Jung(KAVAS Co., Ltd., Korea), Sung Hyun Han(Kyungnam University, Korea)

FP-B-50	Selecting Telemanipulators for Hazardous Task in a Radioactive Area Seungnam Yu , Hyojik Lee(Korea Atomic Energy Research Institute, Korea)	1851
FP-B-51	Human-Robot Collaboration Strategy for a Reinforced Concrete Box Culvert (RCBC) maintenance robot Seungyeol Lee (Daegu Gyeongbuk Institute of Science and Technology, Korea)	N/A
FP-B-52	Remote Control Method for Chipping Robots on Reinforced Concrete Box Culverts Joonsoo Jun , Jaekuk Cho, Seungyeol Lee(Daegu Gyeongbuk Institute of Science and Technology, Korea)	N/A
FP-B-53	An Adaptive Position Control Algorithm of a DC Motor based on the First Order Approximation using Recursive Least Squares with Forgetting Kwangseok Oh (Hankyong National University, Korea), Jaho Seo(University of Ontario Institute of Technology, Canada)	1858
FP-B-54	Implementation of ARM-CORE based Power Management Algorithm for Dual-sensing Subsea Environmental Monitoring System JinUk Kim (Eleccom.co.,Ltd, Korea)	N/A
FP-B-55	Fast Initial Attitude Estimation in Dynamic Condition for INS/GNSS Navigation Yeonjo Kim , Young Jae Lee, Sangkyung Sung(Konkuk University, Korea)	N/A

FP-C Interactive Poster Session II

2F Lobby, 16:00~17:00

FP-C-1	ACE-Modularized Knee Mechanism: Design Concept and Kinematics Man Bok Hong (Agency for Defense Development, Korea)	N/A
FP-C-2	Peg-in-hole assembly method using variable compliance device with the displacement measurement system Dong Il Park , Hwisu Kim, Chanhoo Park, Taeyong Choi, Byungin Kim, Jongwoo Park(Korea Institute of Machinery & Materials, Korea)	N/A
FP-C-3	A COG Trajectory Planning Method of a Quadruped Robot for Stable and Efficient Walking Hyunkyo Park , Bokeon Kwak, Joonbum Bae(UNIST, Korea)	N/A
FP-C-4	Incorporating Building Information to Globalize and Robustify Grid-Based Indoor SLAM Markus Hiller (Friedrich-Alexander University of Erlangen-Nuremberg, Germany)	1872
FP-C-5	Correlation between COP and pitch rate of self-balancing personal mobility : validation via force plate and gyro sensor Jong-Hyeok Park , Joomi Park, Kwan-Woong Gwak(Sejong University, Korea)	N/A
FP-C-6	Design of a Human-sized Energy Efficient Quadruped Robot Hoyeon Yeom(Ulsan National Institute of Science and Technology, Korea), Joonbum Bae (UNIST, Korea)	N/A
FP-C-7	Dead-Reckoning based Position Estimation of Pipe Climbing Robot with Mother Mobile Robot Jae-Hee Kim , Jae-Cheol Lee, You_Rack Choi(Korea Atomic Energy Research Institute, Korea)	N/A
FP-C-8	Towards Training an Agent in Augmented Reality World with Reinforcement Learning	1884

Veera Venkata Ram Murali Krishna Rao Muvva, Naresh Adhikari, Amrita Ghimire(Mississippi State University, United States)

FP-C-9	Incremental Vocabulary Tree for Binary Features <u>Jungho Kim</u> , Youngbae Hwang(Korea Electronics Technology Institute, Korea)	N/A
FP-C-10	Evaluation of Variable Focus DCX Lens Module for Consumer Electronics Dong-Soo Choi, <u>Jaeu Jeong</u> , Sang-Youn Kim(Korea University of Technology and Education, Korea)	N/A
FP-C-11	Orientation Estimation of a Mobile Robot Using Vanishing Point in Indoor Environment <u>Chulhong Kim</u> , TaeJae Lee, Dong-Il Dan Cho(Seoul National University, Korea)	N/A
FP-C-12	Convolutional Neural Network-Based Pose-Graph SLAM System Using a Monocular Vision Sensor JungWon Park, <u>TaeJae Lee</u> , Chulhong Kim, Dong-Il Dan Cho(Seoul National University, Korea)	N/A
FP-C-13	Efficient Recognition for Vision-based Homing Strategy Jungho Kim, <u>Sung-Joon Jang</u> (Korea Electronics Technology Institute, Korea)	N/A
FP-C-14	Comparative study of underwater reconstruction using imaging sonar and laser scanner <u>Yeongjun Lee</u> (Korea Research Institute of Ships & Ocean engineering, Korea), Tae-Kyeong Yeu, Hyun-Taek Choi(Korea Research Institute of Ships & Oceans engineering, Korea)	N/A
FP-C-15	Localization Using Reference Line and Vanishing Point <u>Hyesu Jang</u> , Youngji Kim, Ayoung Kim(KAIST, Korea)	N/A
FP-C-16	Weather Invariant Place Recognition Using 360-Degree Image Processing <u>Lucas Younghun Cho</u> , Hyesu Jang, Youngsik Shin, Joowan Kim, Ayoung Kim(KAIST, Korea)	N/A
FP-C-17	Video Upscaling Method Based on ADJSRCNN and Color Histogram Similarity Jong Hyeong Kim(Seoul Tech., Korea), <u>KyungJae Jang</u> , Jang Jae Won(Seoul National University of Science and Technology, Korea)	N/A
FP-C-18	A Nondeterministic Flowchart-based Script Editor <u>Mi-sook Kim</u> , Wook-jae Jo, Hong Seong Park(Kangwon National University, Korea)	1914
FP-C-19	The Safety Design Concept for Surgical Robot Employing Degree of Autonomy <u>Joel Ryu</u> , Hyunggun Joo, Jongwoon Woo(KIRIA(Korea Institute for Robot Industry Advancement), Korea)	1918
FP-C-20	Evaluation of 2D-3D registration of broken femur using simplified phantom C-arm <u>Asaduz Zaman</u> , Seong Young Ko(Chonnam National University, Korea)	N/A
FP-C-21	Development of a Wearable Device based on Reaction Wheels to deliver Kinesthetic Cues for Balance Training <u>Muhammad Raheel Afzal</u> , Carlos Ernesto Palo Peña(Gyeongsang National University, Korea), Jungwon Yoon(Gwangju Institute of Science and Technology, Korea)	1926
FP-C-22	Robotic Guidance System for Distal Screwing of Intramedullary Nail : Evaluation on Success Rate of Drilling using Model Bone <u>Liming An</u> , Woo Young Kim, Seong Young Ko(Chonnam National University, Korea)	N/A
FP-C-23	Design of a Haptic Walker system based on cable driven actuator for Lower Limb Rehabilitation <u>Hosu Lee</u> , Muhammad Raheel Afzal(Gyeongsang National University, Korea), Jungwon Yoon(Gwangju Institute of Science and Technology, Korea)	1933
FP-C-24	Terrain Identification by Fuzzy Logic and Its Application to The Smart Prosthetic Ankle <u>Yoseph Lee</u> (Sogang University, Korea), Doyoung Jeon(Sogang university, Korea)	N/A

FP-C-25	Development of measurement system for robotic walking training device to improve exercise effect in convalescence rehabilitation <i>Katsushi Ogawa</i> (Osaka Electro-communication University, Japan), Hiroki Aoyama, Hirofumi Hori(Aino University, Japan), Kazuo Yonenobu(Osaka Yukioka College of Health Science, Japan), Seonghee Jeong(Osaka Electro-communication University, Japan)	N/A
FP-C-26	Estimation and validation of dynamic ankle characteristics for ankle spasticity assessment <i>Wonseok Shin, Jung Kim</i> (KAIST/Mechanical engineering, Korea)	N/A
FP-C-27	Overground Gait Pattern of Stroke Survivor by Smartphone-based Auditory Cue using IMU and FSR: A Preliminary Study <i>Byung-Woo Ko, Won-Kyung Song</i> (National Rehabilitation Center, Korea)	N/A
FP-C-28	Compliance control of a rescue robot in interact with ground <i>Byunghun Choi, Wonsuk Lee, Gyuhyun Park, Youngwoo Lee, Seongil Hong, Shincheon Kang</i> (Agency for Defense Development, Korea)	N/A
FP-C-29	Stochastic Identification of Terrain Parameter for Lunar Exploration Rover Using a Bayesian Approach <i>Kun-Jung Kim, Byeong-Seop Sim, Kee-Ho Yu</i> (Chonbuk National University, Korea)	N/A
FP-C-30	Test and Evaluation for the Autonomous Multi-Zone Navigation Coverage Test in IEC 62885-7 <i>Jaesub Shin</i> (Korea Institute for Robot Industry Advancement, Korea)	1949
FP-C-31	RT Educational Tool to Support Learning Physics in High School Curriculum - Development and Evaluation of the RT Educational Tool - <i>Katsushi Ogawa, Hiroaki Tanaka, Seonghee Jeong</i> (Osaka Electro-communication University, Japan)	N/A
FP-C-32	Virtual Bubble Filtering based on heading angle and velocity for Unmanned Surface Vehicle <i>Soon-Geul Lee, Ihn-Sik Weon</i> (Kyung Hee University, Korea), Jae-Kwan Ryu(LIG Nex1, Korea)	1954
FP-C-33	IR-UWB Radar Based Near-Field Intentional Eyelid Movement Sensing Under Fixed Head and Body Motions <i>Sunghwa Lee, Jiwon Seo</i> (Yonsei University, Korea)	1959
FP-C-34	Mobile robot localization and path planning based on Feature recognition and Dijkstra's Algorithm <i>Ihn-Sik Weon, Vinicio Rosas Cervantes, Soon-Geul Lee</i> (KyungHee University, Korea)	N/A
FP-C-35	Development of the Sensor Network Algorithm for Maximizing the Electricity Generation of the Smart Photovoltaic (PV) Blind <i>Hyuna Kang, Taehoon Hong, Minhyun Lee, Kwangbok Jeong, Jeongyoon Oh</i> (Yonsei University, Korea)	N/A
FP-C-36	Walking monitoring using an IMU and encoders for a walker user <i>Toan Huu Duong, Soo Young Suh</i> (University of Ulsan, Korea), Duong Duy Pham(College of Technology - The University of Danang, Viet Nam)	N/A
FP-C-37	Electro-active Polymer Actuator Based On Cellulose Acetate-Graphene and Ionic Liquid Nanocomposites <i>Minghui Nan, Fan Wang, Sunghoon Cho, Chang-Sei Kim, Jong-Oh Park, Eunpyo Choi</i> (chonnam national university, Korea)	N/A
FP-C-38	Attitude Dependent Gyro Bias Calibration Technique for RLG based Rotational Inertial Navigation System <i>Hae-sung Yu, Inseop Lee</i> (Agency for Defense Development, Korea), Sangjeong Lee(Chungnam National University, Korea)	N/A
FP-C-39	Development and Analysis of a Soft Skin Interface for Surface Electromyography (sEMG) Signals	N/A

	<i>Hwayeong Jeong(KAIST, Korea), Pilwon Heo(Intelligent Instrumentation and Automation (i2A Systems), Korea), Junghoon Park, Jung Kim(KAIST, Korea)</i>	
FP-C-40	Development of a soft sensor system for human joint motion analysis <i>Heeseon Hwang(KIRO, Korea)</i>	N/A
FP-C-41	Performance analysis of the jamming signal geolocation system using on-board AoA estimator mounted on UAV <i>Sanghyouk Choi(Electronic and Telecommunications Research Institute, Korea)</i>	1976
FP-C-42	A new method for obtaining multiple array signal measurements using single RF channel <i>Sanghyouk Choi(Electronic and Telecommunications Research Institute, Korea)</i>	1980
FP-C-43	Development of an Algorithm for Multimodal Head Support System (MHSS) on behalf of Preventing Drowsy Driving <i>Sukgyu Koh, Bo-Ram Cho, Jongil Lee(KITECH, Korea), Hyeok-Dong Kweon(Dong-A Metal Tech Co., Ltd., Korea), Suwoong Lee(KITECH, Korea)</i>	N/A
FP-C-44	Kalman Filter Based Multiple Human Tracking Method in Multi-Camera Environment <i>Gyeong Lee(KIST School, Korea University of Science and Technology, Korea), JongSuk Choi, Yoonseob Lim(Korea Institute of Science and Technology, Korea), Bokyeong Lee(Kwangwoon University, Korea)</i>	N/A
FP-C-45	The Effective Biometric Fingerprint Sensor Quality Analysis System using NIST NFIQ Algorithm <i>Young-Hyun Baek(UnionCommunity Co., Ltd, Korea)</i>	N/A
FP-C-46	Comparison of Repulsive Force Formula between Two Permanent Cylindrical Magnets According to Distance <i>Seongho Bak(Daegu Gyeongbuk Institute of Science and Technology, Korea), Jeon IL Moon(DGIST, Korea), Tae Hun Kang(Daegu Gyeongbuk Institute of Science & Technology, Korea)</i>	N/A
FP-C-47	Underground Localization using Magnetic Field and Concurrent Normalized Cross-Correlation <i>Hyun Myung, Jong Heon Kim, Byeolteo Park(KAIST, Korea)</i>	N/A
FP-C-48	Co-Pilot: Vehicle/Driver Cooperative and Autonomous Driving System <i>Samyeul Noh, Kyoungwan An, Wooyong Han(Electronics and Telecommunications Research Institute, Korea)</i>	N/A
FP-C-49	The Method of Quantitative Reliability Evaluation for Railway System Software <i>Hyunjeong Jo, Jong-Gyu Hwang(Korea Railroad Research Institute, Korea)</i>	N/A
FP-C-50	Robotic Bin Picking Using Multiple Features for Manufacturing Process Automation <i>Sangseung Kang(ETRI, Korea)</i>	N/A
FP-C-51	The Development of Step Count Detection Algorithm using Self-paced Treadmill <i>Hyun Ju Lee, Sung Ho Park, Tae Hun Kang, Jeon Il Moon(DGIST, Korea)</i>	N/A
FP-C-52	A Study on the development of customized gripper using axiomatic design for assembly object <i>Hyeonuk Kim, Soonwoong Hwang, Younsung Choi, Inhyuk Baek, Jeonghoon Choi, Junhyung Heo, Chang Soo Han(Hanyang Univ., Korea)</i>	N/A
FP-C-53	Autonomous Drone Design Based on FIR Filtering <i>Hyun Ho Kang, Sung Hyun You, Sang Su Lee, Choon Ki Ahn(Korea University, Korea)</i>	N/A
FP-C-54	Energy Management System for Legacy Devices Based on Adaptive Neuro Fuzzy Inference System <i>Sung Hyun You, Hyun Ho Kang, Choon Ki Ahn(Korea University, Korea), Ramesh Agarwal(Washington University in St. Louis, United States)</i>	N/A

FP-C-55	<p>Enhancement of Surface Plasmonic Resonance Effect through Adjustment of pH Level (A SERS-Imposed Paper Chip)</p> <p><i>Wansun Kim, <u>Samjin Choi</u>(Kyung Hee University, Korea)</i></p>	N/A
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SA4 [Mini/for Korean] AI Applications

Mara 09:00~12:00

SA4-1	<p>Analysis of the Yearbook from the Korea Meteorological Administration using a Text-Mining Algorithm</p> <p><i><u>Yung-Seop Lee</u>(Dongguk University, Korea), Changwon Lim, Hyunseok Sun(Chung-Ang University, Korea)</i></p>	2012
SA4-2	<p>An Agent-based System for Abnormal Flow Detection in Semiconductor Production Line</p> <p><i><u>DongChang Lee</u>, SungBae Cho(Yonsei University, Korea)</i></p>	2015
SA4-3	<p>A Deep Learning Based Video Classification System Using Multimodality Correlation Approach</p> <p><i><u>Jihoon Yang</u>, Jungheon Lee, Youngsan Koh(Sogang University, Korea)</i></p>	2021
FP-C-56	<p>Development of multi-agent systems with distributed solutions for energy problems</p> <p><i><u>Aigerim Altayeva</u>, Batyrkhan Omarov, Young Im Cho(Gachon University, Korea)</i></p>	2026
FP-C-57	<p>Machine Learning based Pattern Recognition and Classification Framework Development</p> <p><i><u>Batyrkhan Omarov</u>, Young Im Cho(Gachon University, Korea)</i></p>	2031
FP-C-58	<p>Real Time System Identification of a Small Cropped Delta UAVs using Flight Test Methods</p> <p><i><u>Subrahmanyam Saderla</u>(Gyeongsang National University, Korea)</i></p>	N/A