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<td>Wonpi Yu(ETRI, Korea)</td>
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|        | Nak Yong Ko(Chosun University, Korea), Seokki Jeong(Chosun Univ, Korea), Hyun Taek Choi, Chong-Moo Lee(Korea Research Institute of Ships and Ocean Engineering, Korea), Yong Seon Moon(Sunchon National University, Korea) |
| MC01-2 | Visual Tracking of Objects for Unmanned Surface Vehicle Navigation |
|        | Kyunghwa Chae(Hanyang University, Korea), Yong Seon Moon(Sunchon National University, Korea), Nak Yong Ko(Chosun University, Korea) |
| MC01-3 | Underground pipeline tracking robot development based on magnetic inductive sensor |
|        | Dong Jin Seo(Geo1004 Co., Ltd, Korea) |
| MC01-4 | An adaptive Dynamics Control of Underwater Vehicle Based on Velocity Servo Loop |
|        | Seon-je Yang, Hee-jun Lee, Tae-yong Kuc, Jong-gu Park(SungKyunKwan University, Korea), Nak Yong Ko(Chosun University, Korea), Yong Seon Moon(Sunchon National University, Korea) |

| MC02-1 | Star Redundant System for Visible Light Communication |
|        | Vittaya Tipsuwanporn, Pokpoom Chanthosot, Arjin Numsomran(King Mongkut's Institute of Technology Ladkrabang, Thailand) |
| MC02-2 | A Retrofitting Concept for Integration of Machinery with Legacy Interfaces into Cloud Manufacturing Architectures |
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| MC02-3 | Real-Time Monitoring and Reporting Alarm System for pH Measurement in Wet Scrubbers |
|        | Thipichpon Promsawat, Sart Kummool, Sawai Pongswatd(King Mongkut's Institute of Technology Ladkrabang, Thailand), Amphawan Julsereewong(King Mongkut's Institute of Technology Ladkrabang, Thailand) |
| MC02-4 | Robust Repetitive Control with Feedforward Scheme for Stand-Alone Inverter |
|        | Wiboon Sintanavevong, Sudchai Boonto, Sumalee Naetladdanon(King Mongkut's University of
### MC02-5 Lyapunov Stability Criterion to Control Strategy with PI Controller of Doubly Fed Induction Generators in Variable-Speed of Wind Turbine Energy Conversion Optimization

Chamni Jaipradidtham (Kasem Bundit University, Thailand)

- Technology Thonburi, Thailand

### MC03-1 Group robot control in non-deterministic environments using the potential field method

Igor Olegovich Shapovalov, Victor Vladimirovich Soloviev, Denis Aleksandrovich Beloglavzov, Valery Ivanovich Finaev, Alexey Evgenyevich Titov (Southern Federal University, Russian Federation)

### MC03-2 Autonomous Robot Driving Decision Strategy Following Road Signs And Traffic Rules : Simulation Validation

Zheng Hao Chong (Nanyang Technological University, Singapore), Ling Yee (Nidec Corporation, Singapore), Albert Causo, I Ming Chen (Nanyang Technological University, Singapore)

### MC03-3 An Application of Pareto Solution with Adapted ACO for Searching Optimal Route of a Mobile Robot in Rough Terrain Environment

Anuntapat Anuntachai, Arit Thammano, Olarn Wongwirat (King Mongkut's Institute of Technology Ladkrabang, Thailand)

### MC03-4 An Artificial Immune System for Fault Tolerant Control of an Over-Actuated Rover

Robert Kidd (SUNY Maritime College, United States), Carl Crane (University of Florida, United States)

### MC03-5 Improvement of optical flow obtained by compensation method using multilayer resolution structure

Ryota Hirakawa (Graduate School of Science and Technology, Kumamoto University, Japan), Teruo Yamaguchi, Hiroshi Harada (Kumamoto University, Japan)

### MC03-6 A Feasibility Study of Vehicle Pose Estimation using Road Sign Information

Chanhee Jang, Young-Keun Kim (Handong University, Korea)

### MC04-1 Rehabilitation Support Robot for Self-Standing-Up Training of Hemiplegic Stroke Patients: An Analysis of Therapist Guiding Motion

Mizuki Kitamura, Lin Han, Takahito Yamaji, Shunya Kaneko, Yoshifumi Morita (Nagoya Institute of Technology, Japan), Hirofumi Tanabe (Shonan University of Medical Sciences, Japan)

### MC04-2 Verification of Recovery Effect on Motor Function of Plegic Upper Limb after Stroke by UR-System 2

Hitomi Hattori, Ryosuke Takechi, Norhiro Toya, Yoshifumi Morita (Nagoya Institute of Technology, Japan), Hirofumi Tanabe (Shonan University of Medical Sciences, Japan), Yoshiaki Takagi, Norio Hasegawa (Sanyo Machine Works, Ltd., Japan)

### MC04-3 Shape optimization of a novel ligation tool using a concentric tube mechanism

Muhammad Umar Farooq, Sukho Park, Jong-Oh Park, Seong Young Ko (Chonnam National University, Korea)

### MC04-4 Design of a Wearable Hand Rehabilitation System for Quantitative Evaluation of the Stroke Hand

Jeongsoo Lee, Wookeun Park, Suin Kim, Joonbum Bae (UNIST, Korea)

### MC04-5 Improvement of non-invasive semi-automatic test device for measurement of finger joints range of motion: Reduction in Burden on Therapist

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<td>YoungSu Moon (Samsung Electronics (SEC), Korea)</td>
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Min Cheol Lee, Wang Jie, Hyun Hee Kim, Min Cheol Lee(Pusan National University, Korea)

TA04-3 Study of the drive-timing for a standup motion-supporting mechanism for the elderly
Shuhei Nomura(Shibaura Institute of Technology, Japan), Naoya Nakanishi(Shibaura Institute of Technology, Japan), Nobuto Matsuishi, Takashi Oogawara, Takashi Yoshimi(Shibaura Institute of Technology, Japan), Hideichi Nakamoto(Toshiba Corporation, Japan)

TA04-4 A Study of Candle Sticker Attachment Task by Dual Arm Robot System
Takashi Yoshimi, Shota Yamazaki(Shibaura Institute of Technology, Japan), Kunio Torii, Yusuke Yamaguchi(Tori Candle Co., Ltd., Japan)

TA04-5 SMCSPO Based Reaction Force Estimation for 7 DOF Robot Arm
Hyun Hee Kim, Jie Wang, Karam Dad Kallu, Min Cheol Lee(Pusan National University, Korea)

TA04-6 Arrangement of Haptic Device with Multi-Function for Teleoperation
Kengo Kikuchi, Masamitsu Kurisu(Tokyo Denki University, Japan)

TA05 Sensor and Signal Processing

TA05-1 Control of Switched Asynchronous Machines with Application to Dual Counters
Sang Sik Lee, Jung Min Yang(Kyungpook National University, Korea)

TA05-2 Development of a wearable soft sensor system for measuring finger motions
Kyongkwon Ro, Suin Kim, Wookeun Park, Joombum Bae(Ulsan National Institute of Science and Technology, Korea)

TA05-3 The measurement uncertainty evaluation of yaw sensor calibration
Vittaya Tipsuwanporn(King Mongkut's Institute of Technology Ladkrabang, Thailand), Wanchai Chinchusak, Supaporn Jaturunruangsri(Bangkok, Thailand)

TA05-4 The Application of Yaw Sensor Measuring Carriage System
Vittaya Tipsuwanporn, Wanchai Chinchusak(King Mongkut's Institute of Technology Ladkrabang, Thailand)

TA05-5 Multi-point Fuzzy Prediction for Load Forecasting in Green Buildings
Hsuan-Hao Chang, Wei-Yu Chiu(Yuan Ze University, Taiwan), Ting Yen Hsieh(Industrial Technology Research Institute, Taiwan)

TA06 Navigation and Process Design

TA06-1 Velocity Maximizing Suboptimal Control Law for Agile Turn of Air-to-Air Missiles
Seungyeop Han, Min Ki Kim, Min Jea Tahk(KAIST, Korea), Yun-Young Kim(LIG Nex1, Korea)

TA06-2 Observer Motion Controls for Multiple Targets Considering Doppler-Bearing Measurements
Jonghoek Kim, Taeil Suh, Jonha Ryu(Agency for Defense Development, Korea)

TA06-3 Terrain relative navigation for precise lunar landing using crater matching algorithm
Woosang Park, Youeyun Jung, Hyochoong Bang(KAIST, Korea)

TA06-4 Optimal Design on Policies of Industrial Eco-Economic System in China under the Constraint of Energy Saving and Carbon Emission
Yingbo Qin, Wenping Wang, Wenwen Li(Southeast University, China)

TA06-5 The Developing Tool for Heat Exchanger Education in Instrumentation
TA06-6 Design of functional safety model for tail gas treating process
Teerawat Thepmanee, Prasit Julsereeewong, Jirawat Poomhuang (King Mongkut’s Institute of Technology Ladkrabang, Thailand)

TA07 [OS] Development of the Industrial Dual Arm Robot System
Room 201, 09:00~10:30

TA07-1 Application of Calibration for Bin-Picking in Cell Production System with Multi-Dual-arm Robots
JuHan Park, GuKHyua Kim, HyunMin Do, JinHo Kyung (Korea Institute of Machinery & Materials (KIMM), Korea)

TA07-2 Easy Estimation Method of Dynamic Parameters of Robots using Newton-Euler Formulation Regressor with Translated Coordinate
Dawoon Jung, Joono cheong (Korea University, Korea)

TA07-3 Dynamic Analysis for Human-Robot Collision and Robot Safety Index
Junewon Seo (Kyung Hee University, Korea), Heonseop Shin (Midas IT, Korea), Sungsoo Rhim (Kyung Hee University, Korea)

TA07-4 Posture Invariant Object Recognition Using Geometric and Statistical Features
Ji-Hyeong Pyo (Korea University of Science and Technology (UST), Korea), Sang-Saung Kang, Jae-Yeon Lee, Kye-Kyung Kim (Electronics and Telecommunications Research Institute, Korea)

TA07-5 The development of joint torque sensor for robot manipulator based on force control
BongSeok Kim, DongSub Kim, TaeKeun Kim, ChangWoo Park (Korea Electronic Technology Institute, Korea)

TC01 Nonlinear Control
Room 101, 17:00~18:30

TC01-1 Laguerre based design of fractional-order PD controller
Mohammad Tabatabaie, Romina Salehi (Khomeinishahr Branch, Islamic Azad University, Iran, Islamic Republic of)

TC01-2 Reset Control of Pressure-Drop Oscillations in Boiling Micro-Channel Systems
Masataka Iwai (MHI Nuclear Systems and Solution Engineering Co., Ltd., Japan), Toshimitsu Ushio (Osaka University, Japan)

TC01-3 Proposal of Vibration Control by Varying Stiffness in Repulsive Magnetic Bearing Using the Motion Control of Permanent Magnets
Takeshi Mizuno, Yuji Ishino, Masaya Takasaki, Masayuki Hara, Daisuke Yamaguchi (Saitama University, Japan)

TC01-4 An Improved Algorithm for Computing Transfer Function Matrices of Descriptor Systems
Akitoshi Mutsuro, Masanobu Koga (Kyushu Institute of Technology, Japan)

TC01-5 Robust PID Controller Design Using Convex-Concave Optimization: Application to an Unstable System
Chawalit Thabhimratthana, Surachai Saelim, Suchol Tiewcharoen, Sudchai Boonto (King Mongkut’s University of Technology Thonburi, Thailand)

TC01-6 Dynamics and Vibrational Control of an Underwater Inverted Pendulum
Saqib Hasnain, Keum-Shik Hong (Pusan National University, Korea)
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<td>Combined Feedforward/Disturbance Observer-Based Control of Pump-Controlled Electro-Hydrostatic Actuation System</td>
<td>Hyung-Tae Seo, Dae-Gyeom Kang, Yun-Pyo Hong, Kyung-Soo Kim (KAIST, Korea), Jae-Kwan Ryu, Junsik Lee (LIG nex1, Korea)</td>
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Laksono Kumadiangoro (Intelligent Systems Lab., Korea), Aimal Shahbaz, Kang-Hyun Jo (University of Ulsan, Korea)

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### TC04-4 Fundamental numerical and experimental evaluation of attitude recovery control for a quad tilt rotor UAV against disturbance

Satoko Abiko, Kengo Tashiro (Shibaura Institute of Technology, Japan)

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### TC04-5 Flight Planning for Photovoltaic-Plant Inspection by Unmanned Aerial Vehicle

Geon-Hee Lee, Seong-Hwan Kim, Hye-Jin Oh, Ji-Won Lee, Kee-Ho Yu (Chonbuk National University, Korea)

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<td>Tian-Bo Deng (Toho University, Japan)</td>
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<tr>
<th>TC05-2</th>
<th>Automatic Segmentation of Cell Candidate Regions in Microscopy Images Based on an Optimization Algorithm</th>
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<tr>
<td>Kouki Tsuji, Hyoungseop Kim, Joo Kooi Tan (Kyushu Institute of Technology, Japan), Kazue Yoneda (University of Occupational and Environmental Health, Japan)</td>
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<th>TC05-3</th>
<th>Extraction of GGO candidate regions from the LIDC database using deep learning</th>
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<tr>
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<td>Tao Wang (Shanghai Jiao Tong University, China)</td>
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<th>TC05-5</th>
<th>A Combination of Independent Component Analysis, Relative Wavelet Energy, and Support Vector Machine for Mental State Classification</th>
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<tr>
<td>Hoang-Anh T. Nguyen, Huy-Hoang Tran, Thang T. Vu (Institute of Information Technology-Vietnam Academy of Science and Technology, Viet Nam), Quyen T.T. Bui (Institute of Information Technology, Vietnam Academy of Science and Technology, Viet Nam)</td>
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### TP Interactive Poster Session I

**2F Lobby, 13:00~14:30**

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<th>The Mixed H∞ and μ-synthesis for a Reverse Osmosis Desalination Process</th>
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<td>Bui Duc Hong Phuc, Hyeung-Sik Choi, Sam-Sang You, Ji-Youn Oh (Korea Maritime and Ocean University, Korea)</td>
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<th>Robust stability of spacecraft traffic control system using Lyapunov functions</th>
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<td>Vasyl Martenyuk (University of Bielsko-Biala, Poland), Gultshan Uskenbayeva, Mamyrbek Beisenbi, Dana Satyбалдина (L.N. Gumilyov Eurasian National University, Astana, Kazakhstan), Aigul Shaikhanova (Shakarim State University of Semey, Kazakhstan)</td>
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<td>Yun-Joo Nam (Korea Institute of Industrial Technology (KITECH), Korea)</td>
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<td>Gravity Compensation Control and Force Control of Surgical Master Device</td>
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<td>SeukWoo Ryu, Gi-Hun Yang (KITECH, Korea)</td>
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<td>Adaptive Control Using Time Delay Control for Synchronization of Chaotic Systems</td>
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<td>Soonwan Cho (Pohang University of Science and Technology, Korea), Jaemin Baek, Soohee Han (POSTECH, Korea)</td>
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<td>TP-7</td>
<td>Control and Structure of a 6-DOF Precision Positioning Stage</td>
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<td>Jun-Hee Moon (Yuhan University, Korea), Hyunpyo Shin (Dongyang Mirae University, Korea)</td>
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<td>TP-8</td>
<td>Path Planning for a Group of Vehicles in 2D Obstructed Environment</td>
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<td>Vyacheslav Pshikhopov, Mikhail Medvedev, Victor Shevchenko (Southern Federal University, Russian Federation)</td>
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<td>Road Profile Estimation for Ground Vehicle based Localization</td>
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<td>LQR-based Adaptive Steering Control Algorithm of Multi-Axle Crane for Improving Driver’s Steering Efficiency and Dynamic Stability</td>
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<td>TP-16</td>
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<td>Haitham Osman (King Khalid University, Saudi Arabia)</td>
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Sanghyung Kim, Changhyun Cho (Chosun University, Korea)  N/A

TP-23  Substitution Strategy of the Rolling Contact Joints Kinematics for the Robotic Applications
Sang-Hyun Kim, Kyujin Cho (Seoul National University, Korea)  N/A

TP-24  Control Strategy of an Upper Limb Power-assist Robot for Meal Rehabilitation
Seungyeol Lee (Daegu Gyeongbuk Institute of Science and Technology, Korea)  N/A

TP-25  Graph SLAM for AGV using Geometrical Arrangement based on Lamp and SURF Features in a Factory Environment
Jae-Bok Song, Minkuk Jung (Korea University, Korea)  844

TP-26  Systematic Design, Analysis, and Control of Mobile Robot Traveling Simulator Using Optical Mice
Sungbok Kim, Seokgi Kim (Hankuk Univ. of Foreign Studies, Korea)  849

TP-27  An Algebraic Condition for the Interior-disjoint of Two Elliptic Robots
Jae Do Jeon, Beom Hee Lee (Seoul National University, Korea)  N/A

TP-28  Real-time Navigation for Multiple Mobile Robots in Dynamic Environments based on Fuzzy Logic
Ran Zhao, Dong Hwan Lee, Hong Kyu Lee (Korea University of Technology and Education, Korea)  859

TP-29  Mapping and Path Planning using Communication Graph of Unlocalized and Randomly Deployed Robotic Swarm
Jin Hyo Kim, Ji-wook Kwon, Jiwon Seo (Yonsei University, Korea)  865

TP-30  Multi-floor Localization Method for Mobile Robots Using Elevator
Yu-Cheol Lee(ETRI, Korea)  869

TP-31  Efficient 3D Mapping with RGB-D Camera Based on Distance Dependent Update
HyungGi Jo, Sungin Jo, Hae Min Cho, Euntai Kim (Yonsei University, Korea)  873

TP-32  Systematic Approach for Gain Selection of PID Control in Industrial Robot
Minsung Kang, Youngwoo Choi (Korea University, Korea), Joono Cheong (Korea University (Sejong), Korea), Hyunmin Do (KIMM, Korea)  N/A

TP-33  A Unified Virtual Fixture Model for Haptic Telepresence Systems based on Streaming Point Cloud Data and Implicit Surfaces
Seokyeol Kim, Jinah Park (Korea Advanced Institute of Science and Technology, Korea)  881

TP-34  Design of Violin-Playing Robot Arm
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TP-35  Skin Color Difference Measurement between Real Faces and Face Images from Display according to Lighting Ratio
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TP-36  Assessment Of Robot Training for Social Cognitive Learning
Alvin Wong, Zhong Zhaowei (Nanyang Technological University, Singapore)  893

TP-37  Robot Arm Control Using an EMG Signal to Aid Hemiplegia Patient
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TP-38  Comparison of Point Feature Matching and Graph Matching for Underwater Scene Matching
Younji Kim, Ayoung Kim (KAIST, Korea)  N/A

TP-39  Automatic tuning of PID controller by using gain matching method  N/A
TP-40  Neuro-sliding Mode Control for Robot manipulators
    Seul Jun(Chungnam National University, Korea)

TP-41  Development of Active Stiffness Mechanism for Self-stabilizing Manipulator
    Handdeut Chang, Sangjoon Jonathan Kim, Jung Kim(KAIST, Korea)

TP-42  Dynamic Analysis of a Flexible Parallel Mechanism Actuated by PAMs
    Bong-Soo Kang, Chang-Joon Oh, Hae-Nam Choi(Hannam University, Korea)

TP-43  The vision based mind state recognition
    Daeha Lee(ETRI, Korea)

TP-44  Face Recognition Enhancement by Employing Facial Component Classification
        and Reducing the Candidate Gallery Set
    Jinsu Kim, Usman Cheema, Seungbin Moon(Sejong University, Korea)

TP-45  A Preliminary Result of Web-based User Study on the Emotion Expression of
        Social Robots
    Junseok Oh, Hye-Kyung Cho(Hansung Univ, Korea)

TP-46  A Multi-level Task Scenarios for Usability Evaluation of Social HRI System
    Sanghoon Ji, Sujeong You(Korea Institute of Industrial Technology, Korea), Hye-Kyung
        Choi(Hansung Univ, Korea)

TP-47  Human Interaction Recognition using Contextual Information
    Se-Ho Park, Nam-Gyu Cho, Seong-Whan Lee(Korea University, Korea)

TP-48  School Safety Management System for Abnormal Situations
    Sang-Seok Yun(Korea Institute of Science and Technology, Korea), Kang-Gu Park(Seoul National
        University of Science and Technology, Korea), Hoang Minh Do, Quang Nguyen, JongSuk
        Choi(Korea Institute of Science and Technology, Korea)

TP-49  Deep Convolution Neural Network using Triplet of Faces for Face Recognition in
        the Wild
    Bong-Nam Kang, Dajin Kim(POSTECH, Korea)

TP-50  Camera-based localization error estimation method for Kinect sensor calibration
        using mobile robot
    Taemin Choi(Seoul National University of Science and Technology, Korea), Yoonseob Lim, Sung-
        Kee Park, JongSuk Choi(Korea Institute of Science and Technology, Korea)

TP-51  Indoor Understanding Using Augmented Reality Display for Teleoperated Indoor
        Search and Rescue
    Yoojin Oh, Donghoon Kang, Shinsuk Park(Korea University, Korea)

TP-52  Speed Modulation for FES System in Gait Rehabilitation
    Suhun Jung, Shinsuk Park(Korea University, Korea)

TP-53  Conceptual Design Using Heartrate for IFF Device Operation
    Hyokeun Lee, Shinsuk Park(Korea University, Korea)

TP-54  Evaluation of control console for use in robotic task while simple driving
    Jangwoo Park, Ilhwan Kim, Jangwoo Park(Korea university, Korea)

TP-55  A study on the Path Planning and Control of Robot Manipulator with Six Joint for
        Forging Process Application
    Min-Seong Kim, Sang-Young Jo(Kyungnam University, Korea), Jong-Bum Won(SMEC, Korea),
        Sung Hyun Han(Kyungnam University, Korea)

TP-56  A study on Precise Control of Robot Gripper Based on Pressure Sensor for
        Forging Automation Process
    Sang-Young Jo, Min-Seong Kim(Kyungnam University, Korea), Jeong-Suk Kang(SMEC, Korea),
        Jong-Dae Won(Young Chang Roboteck, Korea), Sung Hyun Han(Kyungnam University, Korea)
TP-57 A Study on Intelligent Control of Mobile Robot with Two Arms for Smart FA
Yang-Keun Jeong(Sinla Information Technology Co., Ltd., Korea), Sang-Young Jo, Min-Seong Kim(Kyungnam University, Korea), In-Man Park(Intem Co., Ltd., Korea), Sung Hyun Han(Kyungnam University, Korea)

TP-58 A Study on Robust Control of Vertical Articulated Robot Arm Based on Visual Feedback in Working Space
Haeng-Bong Shin(SG servo, Korea), Woo-Song Lee(Sungsanam Deco Co., Ltd., Korea), Min-Seong Kim, Sang-Young Jo, Sung Hyun Han(Kyungnam University, Korea)

TP-59 Characterization of a fluid-distributable cell culture module for bioreactor automation
Dong Yeol Han, Kisoo Kim, Won Gu Lee(Kyung Hee University, Korea)

TP-60 Design of a fluid-controlled cell culture module for automated bioreactor
Kisoo Kim, Dong Yeol Han, Won Gu Lee(Kyung Hee University, Korea)

TP-61 Unconventional round wound generation methods
In Hyuk Jang, Tae Young Kim, Dong Yeol Han, Won Gu Lee(Kyung Hee University, Korea)

TP-62 Characterization of a wireless gait shoe device with motion and foot pressure sensors for walking pattern recognition
Jae Yeon Jung, Dong Yeol Han, Ihn Sik Weon, Won Gu Lee, Soon-Geul Lee(Kyung Hee University, Korea)

TP-63 Development and evaluation of ankle muscle trainer with malleolar and subtalar movement actuators and underfoot reaction force sensors during active ankle dorsi-plantarflexion
Sangwoo Cho, Hwiyoung Lee, Hogene Kim(National Rehabilitation Center, Korea)

TP-64 Bovine Serum Albumin stability in the context of biosensors
Aleksandra Ktos-Witkowska(University of Bielsko-Biala, Poland), Bakhtyzhan Akhmetov, Nazym Zhumangalieva(Kazakh National Research Technical University after K.I. Satpayev, Kazakhstan), Volodymyr Karpinskyi(Conventry University, United Kingdom), Tomasz Gancarczyk(University of Bielsko-Biala, Poland)

TP-65 Evaluation of the basic reproduction number of MERS-CoV during the 2015 Outbreak in South Korea
H.-J. Chang(Kookmin University, Korea)

TP-66 A Schematic Design of Wireless Surgical Information Sharing System for Supporting Intelligent Surgery
Jisang Park, Su-Young Chi(Electronics & Telecommunication Research Institute, Korea)

TP-67 Multispectral control of water bodies for biological diversity with the index of phytoplankton
Vasyl Martsenyuk(University of Bielsko-Biala, Poland), V G Petruk, S M Kvaternyuk(Vinnitsa National Technical University, Ukraine), V D Pohrebennyk(Lviv Polytechnic National University, Ukraine), Y I Bezusiai, R V Petruk(Vinnitsa National Technical University, Ukraine), Aleksandra Ktos-Witkowska(University of Bielsko-Biala, Poland)

TP-68 A Baseball Game Analysis by an Extraction of Characteristic Play Sequence
Toshio Hira, Mizuki Ban, Shinichi Enoki, Shinji Uchida(National Institute of Technology, Nara College, Japan)

TP-69 A Generic Architecture for Arbitrary View Generation from Various Sources
Inpyo Hong, Youngbae Hwang, Byeongho Choi(Korea Electronics Technology Institute, Korea)

TP-70 GNSS Jamming Propagation Prediction Simulator based on ITU-R P.1546 Model
Inone Joo(ETRI, Korea)

TP-71 Impact-Angle-Constraint Look Angle Guidance for Miniature Missile
Jun-fang Fan, Gang Wang, Ying Chen(Beijing Information Science & Technology University, China), Si-yu Dong(Officers College of CAPF, China)
TP-72 Precise Localization of a Vehicle within a Driving Lane by Combining the Vehicle Trajectory with Vision Information
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TP-74 Attitude determination and disturbance estimation based on adaptive Kalman filter for nano-satellite
Sung Hyuk Choi, Chan Gook Park(Seoul National University, Korea) 1020

TP-75 TLE Data-based Precise Estimation of Satellite’s Orbital Parameters
Ju-Hyeon Hong, Jeong-Hun Kim(Inha University, Korea), Seonggyun Kim(LIG Nex1, Korea), Chang-Kyung Ryoo(Inha University, Korea) 1025

TP-77 Development of the Physical 3-Dimensional Dot Module System Composed of Self-Folding Origami Modules
Sa-Reum Kim, Da Young Lee(Seoul National University, Korea), Je Sung Koh(Harvard University, United States), Kyujin Cho(Seoul National University, Korea) N/A

TP-78 A Vision-based 6-DOF Displacement Measurement System using Multiple Planar Markers for Precise Assembly of PC members
Suyoung Choi, Wancheol Myeong, Hyun Myung(Korea Advanced Institute of Science and Technology, Korea) N/A

TP-79 Vertical Thrusting Unmanned Surface Vehicle for Stable and Close Inspection of Bridge Structure
Kyukwang Kim, Jieum Hyun, Duckyu Choi, Hyun Myung(KAIST, Korea) 1040

TP-80 A study on dynamics of cable driven parallel robot for various external forces
Hyundong Do(Gachon University, Korea), Jun-Ho Seo(Yonsei University, Korea), Kyoung-Su Park(Gachon University, Korea) N/A

TP-81 Cable Configuration Analysis to Increase the Rotational Range of Suspended 6-DOF Cable Driven Parallel Robots
Jeong-An Seon(Robot Research Initiative in Chonnam National University, Korea), Sukho Park, Seong Young Ko(Chonnam National University, Korea), Jong-Oh Park(Robot Research Initiative, Chonnam National University, Korea) 1047

TP-82 Analysis of Cable Tension of High Speed Parallel Cable Robot: High Speed Position Tracking of Winch
Jinwoo Jung, Jinlong Piao, Sukho Park, Jong-Oh Park, Seong Young Ko(Chonnam National University, Korea) 1053

TP-83 Sliding-Mode Control of Cable-Driven Parallel Robots with Elastic Cables
Jong Hyeon Park, Jeong-Hyeon Bak(Hanyang University, Korea) 1057

TP-84 H_infinity filtering for T-S fuzzy systems with random multiple delays and packet dropouts subject to sensor saturations
Xiu-Ying Li, Yue Xu, Shu-Li Sun(Heilongjiang University, China) 1061

TP-85 Design of Two Degree of Freedom Controller Using Data Conversion Method
Shota Higuchi, Ryota Arimura(Tokyo University of Science, Japan), Chinthaka Premachandra(Shibaura Institute of Technology, Japan), Kiyotaka Kato(Tokyo University of Science, Japan) 1067
**WA01-1** Self-Tuning Control with Neural Network for Robot Manipulator  
Nattapon Jaisumroum (KMITL, Thailand)

**WA01-2** Simulation Control of an Active Suspension System Using Fuzzy control & Hoo Control Methods  
Khalil Ali Khalil Ibrahim (Assiut University, Egypt), Nouby Ghazaly (South Valley University, Egypt), Ahmed Saad Al (Assiut University, Egypt)

**WA01-3** The Stabilization Condition of Continuous Affine Fuzzy Systems Under Imperfect Premise Matching  
Hyeon Jun Lim, Jin Bae Park (Yonsei University, Korea), Young Hoon Joo (Kunsan National University, Korea)

**WA01-4** Medical Decision Making Diagnosis System Integrating k-means and Naive Bayes algorithms  
Young Im Cho, Aigerim Altayeva, Zharas Suleimenov (Gachon University, Korea)

**WA01-5** Autonomous Offshore Container Crane System Using a Fuzzy-PD Logic Controller  
Ngo Phong Nguyen (Can Tho University of Technology, Viet Nam), Quang Hieu Ngo (Can Tho University, Viet Nam)

**WA01-6** Fuzzy Logic Model for Degumming and Bleaching Troubleshooting in Palm Oil Refining  
Nur Syuhada' Mohamad Ali, Khairiyah Mohd Yusof (Universiti Teknologi Malaysia, Malaysia)

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**WA02 [OS] Recent Advances in Brain-Machine Interface**

**WA02-1** Face-Machine Interface (FMI) for Communication of Patients with Amyotrophic Lateral Sclerosis (ALS)  
Chang-Hwan Im (Hanyang University, Korea)

**WA02-2** Three-class Classification of fNIRS Signals for RGB Color Stimulus in Visual Cortex  
Xiaolong Liu, Keum-Shik Hong (Pusan National University, Korea)

**WA02-3** Bundled-Optode Method for Detection of Brain Activity in Functional Near-Infrared Spectroscopy  
Hoang-Dung Nguyen, Keum-Shik Hong (Pusan National University, Korea)

**WA02-4** A Simulation Study on Decoding Algorithms for Brain-Machine Interfaces with the Non-Stationary Neuronal Ensemble Activity  
Min-Ki Kim, Sung-phil Kim (UNIST, Korea)

**WA02-5** Investigation of initial dip in mental arithmetic task: an fNIRS study  
Amad Zafar, Keum-Shik Hong, Muhammad Jawad Khan (Pusan National University, Korea)

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**WA03 Humanoid and Field Robots**

**WA03-1** Gait Pattern Generation under Disturbance Force  
Rio Ozawa, Yuki Kamogawa, Yasuto Tamura, Hun-ok Lim (Kanagawa University, Japan)

**WA03-2** Mechanism and Jumping Pattern of One-Legged Jumping Robot with Pneumatic Actuators  
Yuya Yamamoto, Haruyoshi Nishi (Kanagawa University, Japan), Yusuke Torii (Fuji Xerox Corporation, Japan), Atsuo Takanishi (Waseda University, Japan), Hun-ok Lim (Kanagawa University, Japan)
### WA03 [OS] Gesture Reconfiguration from Joint Failure using Genetic Algorithm

Wisanu Jutharee, Thavida Maneewarn (King Mongkut's University of Technology Thonburi, Thailand)

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### WA03-4 A nonlinear H-infinity control approach for autonomous navigation of underactuated vessels

Gerasimos Rigatos (Industrial Systems Institute, Greece), Pierluigi Siano (University of Salerno, Italy), Nikolaos Zervos (Industrial Systems Institute, Greece)

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### WA03-5 Development of a Human Detecting System Based on Three-Dimensional Point Cloud - Proposal of a Detecting Method in the Vicinity of a Sensor (about 0.3m~5m) -

Yushi Iwama, Yoshinobu Ando (Shibaura Institute of Technology, Japan)

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### WA03-6 Safety Integrity Evaluation of Human Detection Systems

Bong Keun Kim (National Institute of Advanced Industrial Science and Technology, Japan)

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### WA04 [OS] Robot Safety

Room 104, 09:00~10:30

#### WA04-1 Preliminary experimental results for neck injury in mobile robot-human constrained-collision

SooYong Yun, Jong-Hyeok Park, Ho-Yeon Kim, Kwan-Woong Gwak (Sejong University, Korea)

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#### WA04-2 Assessment of chest injury in unconstraint frontal collision between human-mobile robot using CTI and VC index: Preliminary results by MADYMO simulation

Jong-hyeok Park, SooYong Yun, Ho-Yeon Kim, Seungbin Moon, Kwan-Woong Gwak (Sejong University, Korea)

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#### WA04-3 Pressure ulcer breakout time estimation model in association with wearable robot use : first analysis

Chang-Hwan Lee, Kwan-Woong Gwak (Sejong university, Korea)

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#### WA04-4 Human Injury Estimation Approach for Human-Robot Collision Safety

Sungsoo Rhim (KyungHee University, Korea), Heonseop Shin (MidasIT, Korea), Junewon Seo, Jin-Hwan Choi (KyungHee University, Korea)

Page N/A

#### WA04-5 Experimental Study to Determine Quasi-Static Constitutive Parameters of the Pig-skin for Robot Collision Safety Estimation

Sanghoon Kim, Junewon Seo, Junsuk Choi, Sungsoo Rhim (KyungHee University, Korea)

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### WA05 [OS] Steel Control and Measurement

Room 105, 09:00~10:30

#### WA05-1 Localization of slab identification numbers using deep learning

Sang Jun Lee, Jaepil Ban, Hyeyeon Choi, Sang Woo Kim (POSTECH, Korea)

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#### WA05-2 Systems Engineering Approach to Designing Smart Condition Monitoring Systems for Smart Manufacturing

Kee-Young Shin (POSCO Technical Research LABs, Korea)

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