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\<TO2A\> Human-Robot Interaction I
10:30-11:30, Tuesday 25 June @ Rosenthal

Chairs: Kyung, Ki-Uk, KAIST

Frederiksen, Morten Roed, IT-University of Copenhagen

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Coco, Christopher; Spanos, Jonathan; Osooli, Hamid; Azadeh, Reza
University of Massachusetts Lowell, United States of America

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Lee, Seohu; Jang, Seongkwan; Cha, Youngsu
Korea University, Korea, South

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Jeonbuk National University, Korea, South

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KITECH, Korea, South

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DGIST, Korea, South

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Korea Electronics Technology Institute, Korea, South

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KAIST, Korea, South

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Korea Institute of Industrial Technology (KITECH), Korea, South

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Oh, Hyejung; JUNG, Sungbae; YUK, SUNWOO
Korea Orthopedics & Rehabilitation Engineering Center, Korea, South

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TI5A.23	**Nonlinear Identification of Unknown Object Dynamics for Human-Robot Collaborative Tasks** Kim, Hakjun; Kim, Sanghyun; Park, Jinseong *Korea Institute of Machinery and Materials, Korea, South*	N/A
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Park, Shinwoo; Kim, Nam Gyun; Ryu, Jee-Hwan
KAIST, Korea, South

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Korea Institute of Robotics and Technology Convergence, Korea, South

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Kim, Seolha; Baek, Jonghwan; Jang, Minwoo; Jeong, Myeongsu; kim, namki; Lee, Eun-Bi; Lee, Jae Youl
Korea Institute of Robotics and Technology Convergence, Korea, South

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Cho, Taeyeop; Kim, Jinseok; Choi, Iksu; Pyo, Dongbum
Korea Institute of Industrial Technology, Korea, South

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Choi, Hyun-Taek; Park, Jeonghong; Choi, Jinwoo; Kang, Minju; Ha, Namhoon; Choo, Ki-Beom; Kim, Jinwhan
Korea Research Institute of Ships and Oceans Engineering, Korea, South

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Kim, Yirum; Kim, Ue-Hwan
Gwangju Institute of Science and Technology (GIST), Korea, South

TI5A.36 **Development of intelligent situational awareness system (iSAS) for maritime autonomous surface ships: preliminary field tests at sea** N/A
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KRISO, Korea Research Institute of Ships & Ocean Engineering, Korea, South

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Hanyang University, Korea, South

TI5A.39 **Care Workers Caring Experience on Transfer-Assistive Robot in Long-Term Care Facility** N/A
Shin, Yong Soon; Jang, Hye-Young; KIM, MI YOUNG; Park, So Seul; YOUNG A, LEE
Hanyang University, Korea, South

TI5A.40 **Educational Approach to Human-Centered Care for Care Robot Users** N/A
Shin, Yong Soon; KIM, MI YOUNG; Jang, Hye-Young; Park, So Seul; YOUNG A, LEE
HANYANG UNIVERSITY, Korea, South

TI5A.41 **Solving the Multi-Depot Vehicle Routing Problem with Acyclic Solution Using Deep Reinforcement Learning** N/A
Son, Hakmo; Do, Haggi; Kim, Jinwhan
KAIST, Korea, South

TI5A.42 **Development of a Rehabilitation Robot with Surface Electromyography-Based Guidance Force Feedback** N/A
Shin, Wonseok; Park, Seungtae; Kang, Jihun; Ahn, Bummo; Kwon, Suncheol
KITECH, Korea, South

<WO2A> Manipulation Planning and Control

10:30-11:20, Wednesday 26 June @ Rosenthal

Chairs: Lin, Xuan, UCLA

Pyo, Dongbum, Korea Institute of Industrial Technology

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Evaluating Data-driven Performances of Mixed Integer Bilinear Formulations for Book Placement Planning..........482

Lin, Xuan; Fernandez, Gabriel Ikaika; Hong, Dennis
UCLA, United States of America

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M2CURL: Sample-Efficient Multimodal Reinforcement Learning Via Self-Supervised Representation Learning for Robotic Manipulation..........490

Lygerakis, Fotios; Dave, Vedant; Rueckert, Elmar
Montanuniversitaet Leoben, Austria

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An Adaptive Framework for Manipulator Skill Reproduction in Dynamic Environments..........498

Donald, Ryan; Hertel, Brendan; Misenti, Stephen; Gu, Yan; Azadeh, Reza
University of Massachusetts, Lowell, United States of America

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PDCC: Peg-In-Hole Framework Via Dynamic Continuous Contact Data..........504

Lee, Joosoon; Lee, Geonhyup; Lee, Kyoobin
Gwangju Institute of Science and Technology, Korea, South

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Cho, Taeyeop; Kim, Jinseok; Choi, Iksu; Pyo, Dongbum
Korea Institute of Industrial Technology, Korea, South

\<WO2B\> Socially Assistive Robotics

10:30-11:10, Wednesday 26 June @ KC 905

Chairs: Lee, Hui Sung, UNIST (Ulsan National Institute of Science and Technology)
Xie, Zhen, Agency for Science, Technology and Research

WO2B.1
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Deep Reinforcement Learning Based Mobile Robot Navigation in Crowd Environments..........513
YANG, Guang; Guo, Yi
Stevens Institute of Technology, United States of America

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Book-Toki: A Rabbit-Shaped Reading Companion Robot That Enhances Children's Reading Concentration..........520
Lee, Dabin; Park, Haeun; Lee, Hui Sung
UNIST (Ulsan National Institute of Science and Technology), Korea, South

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The Value of Specific, Expansive Imaginary Scenarios: An Exploration of Recent Science Fiction Literature through the Lens of Robotics..........525
Indurkhya, Xela; Indurkhya, Bipin; Venture, Gentiane
Tokyo University of Agriculture and Technology, Japan

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The Power of Atmosphere: LLM-Based Social Task Generation of Robots..........532
Lee, Hanna; LYM, Hyo Jeong; Kim, Da-Young; Kim, Min-Gyu
Korea Institute of Robotics and Technology Convergence, Korea, South

<WO2C> Multisensor Data Fusion

10:30-11:30, Wednesday 26 June @ KC 907

Chairs: Yumbla, Francisco, ESPOL Polytechnic University
Hong, Seonghun, Keimyung University

WO2C.1
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Marsim, Kevin Christiansen; Choi, Junho; Jeong, Myeongwoo; Ryoo, Kihwan;
Kim, Jeewon; Kim, Taeyun; Myung, Hyun
KAIST (Korea Advanced Institute of Science and Technology), Korea, South

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Terrain-Based Place Recognition for Quadruped Robots with Limited Field-Of-View LiDAR..........545
Lee, Roun; Hong, Seonghun; Yoon, Sukmin
Keimyung University, Korea, South

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Quantifying the Accuracy of Collaborative IoT and Robot Sensing in Indoor Settings of Rigid Objects..........550
Sørensen, Sune Lundø; Mikkel, Kjærgaard
University of Southern Denmark, Denmark

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Jung, KwangYik; Song, Jaebong; Seong, Samwoo; Myung, Hyun
KAIST (Korea Advanced Institute of Science and Technology), Korea, South

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Exploring Image Fusion Techniques for Off-Road Semantic Segmentation in Harsh Lighting Conditions. a Multispectral Imagery Analysis..........566
deoli, Pankaj; deshpande, shubham; Vierling, Axel; Berns, Karsten
Technical University of Kaiserslautern, Germany

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Kassai, Nathan; Castrejon, Zahir; Oh, Paul Y.
University of Nevada, Las Vegas, United States of America

<WO2D> Object Recognition

10:30-11:30, Wednesday 26 June @ KC 909

Chairs: Martinson, Eric, Lawrence Technological University
Lim, Gi Hyun, Wonkwang University

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Mahmud, Khan Raqib; Wang, Lingxiao; Liu, Xiyuan; Li, Jiahao; Hassan, Sunzid
Louisiana Tech University, Ruston, LA 71272, United States of America

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Martinson, Eric; Alladkani, Fadi Lawrence
Technological University, United States of America

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Läufer, Damian; Braun, Simone; Süme, Sinan; Himmelsbach, Urban B.
Offenburg University of Applied Sciences, Germany

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Meaningful Change Detection in Indoor Environments Using CLIP Models and NeRF-Based Image Synthesis..........603
Martinson, Eric; Lauren, Paula Lawrence
Technological University, United States of America

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11:10-11:20

Semantic Segmentation for Robotic Apple Harvesting: A Deep Learning Approach Leveraging U-Net, Synthetic Data, and Domain Adaptation..........611
Selvaraj, Ghokulji; Farzan, Siavash
California Polytechnic State University, United States of America

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Lim, Gi Hyun; Lee, Se Hyun
Wonkwang University, Korea, South

<WO2E> Humanoid Robots

10:30-11:20, Wednesday 26 June @ KC 912

Chairs: Kim, Joohyung, University of Illinois at Urbana-Champaign

Wen, Lu, University of Michigan, Ann Arbor

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Cho, Jungsoo; Yim, Sehyuk
Sogang Univ., Korea, South

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Shin, Kazuki; Mineyev, Roman; Hong, Jooyoung; Kim, Joohyung
University of Illinois at Urbana-Champaign, United States of America

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Preliminary Study and Analysis of MUAT: Modularized Ultralight Arm Tracker for Humanoid Teleoperation..........635
Kim, Dongjun; Kim, Juhyun; You, Seungbin; Sung, Eunho; Park, Jaeheung
Seoul National University, Korea, South

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Mixed Reality Interface for Whole-Body Balancing and Manipulation of Humanoid Robot..........642
Song, Hyunjong; Bronfman, Gabriel; Zhang, Yunxiang; Sun, Qi; Kim, Joo H.
New York University United States of America

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Design and Development of the Linear Actuator for Enhanced Agility in Humanoid Robot..........648
Won, Junhee; Kang, Gihun; Jee, SunHyuk; Ahn, Min Sung; Han, Jeakweon
Hanyang University   United States of America

\<WO4B\> Organized Session

Social Human-Robot Interaction of Human-care Service Robots
14:20-15:10, Wednesday 26 June @ KC 905

Chairs: Ahn, Ho Seok , The University of Auckland, Auckland

Jang, Minsu, Electronics & Telecommunications Research Institute

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Kim, Gayeon; Hong, Yugyeong; Lim, JongYoon; Gee, Trevor; MacDonald, Bruce;
Ahn, Ho Seok
The University of Auckland, Auckland, New Zealand

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Enhancing Human-Robot Interaction: Integrating ASL Recognition and LLM-Driven Co-Speech Gestures in Pepper Robot with a Compact Neural Network..........663
Lim, JongYoon; Sa, Inkyu; MacDonald, Bruce; Ahn, Ho Seok
University of Auckland, New Zealand

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jang, jaeyoon; Yoon, Youngwoo
ETRI, Korea, South

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Bhin, Hyeonuk; Lim, Yoonseob; Choi, Jongsuk
Korea Inst. of Sci. and Tech., Korea, South

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Ong, Hyobin; Yoon, Youngwoo; Choi, JaeWoo; Jang, Minsu
Electronics & Telecommunications Research Institute, Korea, South

<WO4C> Underwater Robotics

14:20-14:50, Wednesday 26 June @ KC 907

Chairs: Wang, Long, Stevens Institute of Technology
Huang, Shouren, Tokyo University of Science

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Sitler, Justin L.; Sowrirajan, Srikarran; Englot, Brendan; Wang, Long
Stevens Institute of Technology, United States of America

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Choi, Jinwoo; Kang, Minju; Choi, Hyun-Taek; Park, Jeonghong
KRISO, Korea, South

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Jeon, Mingyu; Lee, Sejin
Kongju National University, Korea, South

\<WO4D> Motion Planning and Obstacle Avoidance
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Chairs: Lee, Kiju, Texas A&M University
Suresh, Aamodh, US Army Research Laboratory

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Haffemayer, Arthur; Jordana, Armand; Fourmy, Mederic; Wojciechowski, Krzysztof; Saurel, Guilhem; Petrik, Vladimir; Lamiraux, Florent; Mansard, Nicolas
LAAS-CNRS, France

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Wei, Yuan; Lee, Kangneoung; Lee, Kiju
Texas A&M University, United States of America

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Li, Fangzheng; Ji, Yonghoon
Japan Advanced Institute of Science and Technology, Japan

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Suresh, Aamodh; Nieto-Granda, Carlos
US Army Research Laboratory, United States of America

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California Polytechnic State University, United States of America

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Lu, Jiaheng; Ji, Yonghoon
Japan Advanced Institute of Science and Technology, Japan

<WO4E> Legged Robots

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Chairs: Myung, Hyun, KAIST

Bratta, Angelo, Istituto Italiano Di Tecnologia

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Lim, Dongwon
University of Suwon, Korea, South

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KAIST (Korea Advanced Institute of Science and Technology), Korea, South

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Bratta, Angelo; Meduri, Avadesh; Focchi, Michele; Righetti, Ludovic; Semini, Claudio
Istituto Italiano di Tecnologia, Italy

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Guan, Neil; yu, Shangqun; Zhu, Shifan; Kim, Donghyun
University of Massachusetts Amherst, United States of America

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Fischer Abati, Gabriel; Soares, João Carlos Virgolino; Suzano Medeiros, Vivian; Meggiolaro, Marco Antonio; Semini, Claudio
Istituto Italiano di Tecnologia, Brazil

< WI5A> Poster Session II
15:20-16:30, Wednesday 26 June @ Rosenthal

WI5A.1 **Study on Motion Control of Robot System for Non-Destructive Testing of Steel Structures** — N/A
Jeong, Myeongsu; Kim, Seolha; Jang, Minwoo; Lee, Eun-Bi; Lee, Jae Youl
Korea Institute of Robotics and Technology Convergence, Korea, South

WI5A.2 **Analysis and Classification of Car Door Torque Profile for Hybrid Haptic Device Development** — N/A
Kim, Ji-Sung; Ma, Jihyeong; Kyung, Ki-Uk
Korea Advanced Institute of Science & Technology (KAIST), Korea, South

WI5A.3 **Posture Maintenance and Locomotion of a Quadruped Robot on a Marine Motion Platform Using Reinforcement Learning** — N/A
Choi, Seunghyuk; Park, Kwang-Phil; Ku, Bonseok; Jung, Jongdae
Chungnam National University Korea, South

WI5A.4 **Preliminary Design of Maritime Visualization Framework for Cyber Physical Operating Systems (CPOS)** — N/A
Lee, Yeongjun; Han, Jong-Boo; Park, Daegil; Kim, Seongsoon; Yeu, Tae-Kyeong
KRISO (Korea Research Institute of Ships & Ocean Engineering), Korea, South

WI5A.5 **Demonstration through the Virtual Environment: Acquisition of Intrinsic Task Skills** — N/A
Kim, Donghyeon; Park, Seong-Su; Lee, Kwang-Hyun; Ryu, Jee-Hwan
Korea Advanced Institute of Science and Technology (KAIST), Korea, South

WI5A.6 **Implementation of a Person Following Algorithm Based on a LiDAR for a Smart Mobility Scooter** — N/A
Jung, Eui-Jung; KIM, Yongkuk; Jeon, Kwang Woo; KIM, JUHYUN; Lee, Ye Jun; Kim, Min-Gyu, *Korea Institute of Robot and Convergence, Korea, South*

WI5A.7 **Self-Supervised Visual Odometry from Monocular Thermal Images: Exploration and Discussion** — N/A
Shin, Ukcheol; park, seho; Oh, Jean
CMU(Carnegie Mellon University), United States of America

WI5A.8 **Features Characterizing Safe Aerial-Aquatic Robots** — N/A
Giordano, Andrea; Romanello, Luca; Perez Gonzalez, Diego; Kovac, Mirko; Armanini, Sophie Franziska, *TUM, Germany*

WI5A.9 **Motion Constraint-Based Contact Skill Segmentation to Extract the Interaction Skill Primitives** — N/A
Lee, Kwang-Hyun; Kim, Donghyeon; Park, Seong-Su; Ryu, Jee-Hwan
Korea Advanced Institute of Science and Technology, Korea, South

< WI5A> Poster Session II
15:20-16:30, Wednesday 26 June @ Rosenthal

WI5A.10	**Efficient Task Assignment for Multiple Tethered Autonomous Underwater Vehicles to Prevent Entanglement** Patil, Abhishek; Park, Myoungkuk; Bae, Jungyun *Michigan Technological University, United States of America*	**N/A**
WI5A.11	**On Force Control of the Variable Topology Truss System** Bae, Jangho; choi, myeongjin; Yim, Mark; Seo, TaeWon *University of Pennsylvania, United States of America*	**N/A**
WI5A.12	**A Framework for Learning and Reusing Robotic Skills** Hertel, Brendan; Tran, Nhu; Elkoudi, Meriem; Azadeh, Reza *University of Masssachusetts Lowell, United States of America*	**N/A**
WI5A.13	**Dynamic MSCKF-3D VIO: Robust Filter Based Visual Inertial Odometry in Dynamic Environment** Seong, Samwoo; Jung, KwangYik; Song, Jaebong; Myung, Hyun *KAIST (Korea Advanced Institute of Science and Technology), Korea, South*	**N/A**
WI5A.14	**Development of a Thin Three-Axis Force Sensor Based on Sensitivity Amplification Mechanism** Lee, Seran; Jung, Dawoon; Hwang, jinhak; Kim, Uikyum *Ajou University, Korea, South*	**N/A**
WI5A.15	**Floor Plan Generation via Ceiling Segmentation in Indoor Environment** Maeng, Jemo; Lee, Seongju; Lee, Kyoobin *Gwangju Institute of Science and Technology, Korea, South*	**N/A**
WI5A.16	**Learning-Based Orientation Estimation Using Continuous Representation for SO(3)** Seo, Youngrang; Kim, Hajun; Kang, Dongyun; Kim, Joon-Ha; Park, Hae-Won *Korea Advanced Institute of Science and Technology , Korea, South*	**N/A**
WI5A.17	**Magnetic Legged-Robot Foot Design for Diverse Ferromagnetic Terrains with Differential Mechanisms** Kim, Hyunseok; Um, Yong; Kim, Gijeong; Park, Hae-Won *Korea Advanced Institute of Science and Technology, Korea, South*	**N/A**
WI5A.18	**Research and Scenario Experiments on Computer Vision for Enhancing the Performance of AI-Powered Prosthetic Hand** Kang, Jeon-Seong; Beom-Joon, Park; Yoon, Junwon; Song, Ha-Yoon; Kim, Jungjun; Chung, Hyun-Joon *Korea Institute of Robotics and Technology Convergence, Korea, South*	**N/A**

< WI5A> Poster Session II

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WI5A.19	**Shape Memory Alloy-Driven Finger Haptic Device** Kang, Beomchan; Majidi, Carmel *Carnegie Mellon University, United States of America*	N/A
WI5A.20	**Real-Time Detection of Thruster Fault of an Unmanned Surface Vehicle** Ko, Nak Yong; Song, Gyeongsub; Choi, Hyun-Taek; Sur, Joono *Chosun University, Korea, South*	N/A
WI5A.21	**A Study on Point Cloud Map Matching Positioning of AGVs Using LiDAR and IMU Fusion** Jang, Jae-Hun; Lee, Min Su; Lee, Kyung-Chang *Pukyong National University, Korea, South*	N/A
WI5A.22	**Multi-Robot Autonomous Exploration and Mapping under Localization Uncertainty Via Reinforcement Learning on Graphs** Huang, Yewei; Lin, Xi; Englot, Brendan *Stevens Institute of Technology, United States of America*	N/A
WI5A.23	**Enhancing Visual SLAM through Manipulator for Unexplored Areas Tracking** Hong, Hyeonwook; Park, Jaebyung *Jeonbuk National University, Korea, South*	N/A
WI5A.24	**A Study on the FishBack Dataset with Fish Dorsal Images for Fish Cage Farm Monitoring Using ROV** Kang, Jung-Ho; Keruzel, Tatiana; Lee, Kyung-Chang *Pukyong National University, Korea, South*	N/A
WI5A.25	**Training Quadrotor PID Controller Using Particle Swarm Optimization for Collaborative Navigation** Rodriguez, Eric; Lu, Qi *The University of Texas Rio Grande Valley, United States of America*	N/A
WI5A.26	**Quantifying Physical Burden Using Muscle Activity of Caregivers: Care Robot-Aided Transfer vs Manual Transfer** Park, So Seul; Shin, Yong Soon; YOUNG A, LEE; KIM, MI YOUNG; Jang, Hye-Young *Hanyang University, Korea, South*	N/A

< WI5A> Poster Session II
15:20-16:30, Wednesday 26 June @ Rosenthal

WI5A.27 **Development of a Work Analysis Model for Nursing Care Using Robotic Technology Based on the Job Strain Index** **N/A**
YOUNG A, LEE; Shin, Yong Soon; KIM, MI YOUNG; Jang, Hye-Young; Park, So Seul
Hanyang University, Korea, South

WI5A.28 **Advancing Parking Robot Systems Enhanced Perception and Localization Utilizing Sensor Fusion** **N/A**
IN, SUNGUK; Lim, Joonhoo; LIM, HEEJEONG; Kim, Kyuwon; Jeong, woojae; Cho, Youngha
HL Mando, Korea, South

WI5A.29 **Research on Generating Elevation Maps for Quadruped Robots in Smoky Environments** **N/A**
Park, Min Cheol; Lee, Han-Wool; Choi, Young Joo; Hwang, Jung-Hoon
Korea Eletronics Technology Institute, Korea, South

WI5A.30 **Linear Motion Guide Fault Diagnosis in Complex Motion Conditions Using Multi-Modal 1D-CNN** **N/A**
Oh, Kyoung-whan; Lee, JeeHyong; Choi, Yeon-Woo
Samsung Electronics, Korea, South

WI5A.31 **Development of Map-Based Task Configuration Method and Control Technology for a High Wall Painting Mobile Robot** **N/A**
Jung, Eui-Jung; Kang, Minseok; SHIN, JUSEONG; Park, Sang Hyun; KIM, JUHYUN; Kim, Murim
Korea Institute of Robot and Convergence, Korea, South

WI5A.32 **Accelerated Gradient Descent for High Frequency Model Predictive Control** **N/A**
Zhang, Jianghan; Jordana, Armand; Righetti, Ludovic
New York University, United States of America

WI5A.33 **Reinforcement Learning-Based Modification Structure Behavior Tree (RLMS-BT) for Task Planning in a Patrolling Mission** **N/A**
Beom-Joon, Park; Kang, Jeon-Seong; Yoon, Junwon; Song, Ha-Yoon; Chung, Hyun-Joon
Korea Institute of Robotics and Technology Convergence, Korea, South

WI5A.34 **OPC UA-Based System Architecture for Robot Manipulators** **N/A**
Cho, Chang Nho; Jung, Byung-jin; Kim, Tae-Keun; Hwang, Jung-Hoon; Ryu, Jee-Hwan
Korea Electronics Technology Institute, Korea, South

< WI5A> Poster Session II

15:20-16:30, Wednesday 26 June @ Rosenthal

WI5A.35   **Integrated Control System for Multiple Heterogeneous Drones Based on oneM2M IoT Platform with Human-Centered User Interface**   N/A
Ahn, Il-Yeop; Lee, Jiho; Park, Jong-Hong
Korea Electronics Technology Institute, Korea, South

WI5A.36   **Ground Control System with Communication Quality Information for Unmanned Aerial Vehicles**   N/A
Park, Jong-Hong; Lee, Jiho; Ahn, Il-Yeop
Korea Electronics Technology Institute, Korea, South

WI5A.37   **Class-Wise Confidence Thresholding for OOD Detection in Robot Vision-based Applications**   N/A
Jihyun, Hwang; Jang, Minsu
Electronics & Telecommunications Research Institute, Korea, South

WI5A.38   **Trajectory Analysis for Collision Detection in Foraging Robot Swarms**   N/A
Gonzalez, Arturo; Lu, Qi
The University of Texas Rio Grande Valley, United States of America

WI5A.39   **Multi-Modal Tactile Sensors Based on Design-Optimized Carbon Nanocomposites for Wearable Applications**   N/A
Park, Young-Bin; Jeong, Changyoon
Ulsan National Institute of Science and Technology, Korea, South

WI5A.40   **Investigating Electrodermal Activity for Trust Assessment in Industrial Human-Robot Collaboration..........880**
Campagna, Giulio; Chrysostomou, Dimitrios; Rehm, Matthias
Aalborg University, Denmark