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[1]Kitakyushu University, JAPAN, [2]Science & Technology Foundation, JAPAN ····· *542*

FB4-4 Design and Experimental Analysis of Embedded Servo Motor Driver for Robot Finger Joints
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Kangwon National University KOREA ····· *548*

FB4-5 Parameter Study on the Grasping Characteristics of the Humanoid Robot Hand with Spherical Four Bar Linkages
Sang-Mun Lee[1], Kyoung-Don Lee[1], Heung-Ki Min[1], Tae-Sung Noh[2], Sung-Tae Kim[2], Jeong-Woo Lee[3]
[1]Institute for Advanced Engineering, KOREA, [2]Robomec, Inc., KOREA,
[3]Kangwon National University, KOREA ····· *552*

FB4-6 The New 2 DOF Frame Torque Sensor for the Metacarpophalangeal Joint in Robotic Hand
Dae-Ho Kim[1], Bong-Seok Kim[2], Jung-Hoon Hwang[2], Eun-Tai Kim[1]
[1]Yonsei university, KOREA, [2]KETI, KOREA, ····· *556*

[FC1] Robot Kinematics & Dynamics 2

Chair: **Kyu Jin Cho**, Seoul Nat'l University, Korea

FC1-1 Joint Demeanors of an Anthropomorphic Robot in Designing the Novel Walking Gait
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FC1-2 Design and Development of Nancy, a Social Robot
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[1]National University of Singapore, SINGAPORE, [2]UESTC, CHINA 568

FC1-3 Inverse Kinematics Solution of PUMA 560 Robot Arm Using ANFIS
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FC1-4 Tool Handling System Using Hydraulic Actuator
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[FC2] Biomedical Robots and Biomimetics

Chair: **Quoc-Viet Nguyen**, Konkuk University, Korea
Wenwei Yu, Chiba University, Japan

FC2-1 Construction of a Suction Cup Containing Integrated Mobile Micro Robot for Surgery Support in the Abdominal Cavity
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FC2-2 Development of a locust-like jumping mechanism
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FC2-3 Robotic Homing through a Noisy Potential Field Using Information Entropy
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Tokyo Institute of Technology, JAPAN 594

FC2-4 Biologically Inspired Robot Swarm Control for Subaqueous Environment
Dong-Uck Kong[1], Thomas Voegele[2], Dong Ha Lee[1] Frank Kirchner[2]
[1]DIST, KOREA, [2]German Research Center for Artificial Intelligence, GERMANY 598

FC2-5 A Hierarchical Model of Expressive Robot Motion for Effective Gesture Editing
Jaewoo Kim, Seong-Yong Koo, Dong-Soo Kwon
KAIST, KOREA 603

[FC3] OS: Robot and Future Information Device

Chair: **Hyun Kim**, ETRI, Korea
Junho Kim, Kookmin University, Korea

FC3-1 **[Invited]** Introduction to System Architecture for a Robotic Computer
Hyun Kim, Young-Ho Suh, Kangwoo Lee, Blagovest Vladimirov
ETRI, KOREA *607*

FC3-2 Robotized Products
Won-Sup Kim
Seoul National University of Science and Technology, KOREA *612*

FC3-3 A Behavior Model of Autonomous Mobile Projection Robot for the Visual Information
Tomoyuki Shiotani, Kosuke Maegawa, Joo-Ho Lee
Ritsumeikan University, JAPAN *615*

FC3-4 A Note on Hybrid Control of Robotic Spatial Augmented Reality
Joo-Haeng Lee[1], Junho Kim[2], Hyun Kim[1]
[1]ETRI, KOREA, [2]Kookmin University, KOREA *621*

FC3-5 Plane-dominant Object Reconstruction for Robotic Spatial Augmented Reality
Changwoo Nam[1], Min-Hyuk Sung[2], Joo-Haeng Lee[3], Junho Kim[1]
[1]Kookmin University, KOREA, [2]KIST, KOREA, [3]ETRI, KOREA *627*

[FC4] OS: OFTDPR (Original Fusion Technology Development Program for Robot) 1

Chair: **Sanghoon Ji**, KITECH, Korea

FC4-1 Building a Hierarchical Robot Task from Multiple Task Procedures
Hyuk Tae Kwon[1], Wan Chul Yoon[1], Rockwon Kim[2], Sunghoon Kim[2]
[1]KAIST, KOREA, [2]ETRI, KOREA *633*

FC4-2 A Study on 13bit Rotary Encoder of Serial Communication Output Using Single Bipolar Magnet and Detecting a Displacement of Singleturn and Multiturn
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[1]LS Mecapion, KOREA, [2]Exact TRON, KOREA *637*

FC4-3 Real-time Supporting of OPRoS Component Platform
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ETRI, KOREA *640*

FC4-4 Implementation of Reactive Behaviors for an Industrial Manipulator based on OPRoS
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KITECH, KOREA *642*

FC4-5 RPIST: Required and Provided Interface Specification-based Test Case Generation and Execution Methodology for Robot Software Component
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Kangwon National University, KOREA ····· *647*

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Chair: **Hye Kyung Cho**, Hansung University, Korea
Dugki Min, Konkuk University, Korea

FD1-1 Behavioral Synchronization of Human and Humanoid Robot
Rustam Rakhimov Igorevich, Eldor Primov Ismoilovich, Dugki Min
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FD1-2 Development of Teaching & Learning Method for Application of User Created Robot in Digital Textbook
Young Ae Kim, Kyoung Hwa Chae
KERIS, KOREA ····· *661*

FD1-3 S!Ci: a New Approach to User Created Robot Contents
Deukwoo Lee, Jinsung Kim, Hye-Kyung Cho
Hansung University, KOREA ····· *665*

FD1-4 A Robot Museum "ROSIEUM"
Joongsun Yoon[1], Hyeongsun Yoon[2]
[1]Pusan National University, KOREA, [2]Wisebo-X, KOREA ····· *669*

FD1-5 Temperature-Aided Fingerprinting for Localization in Wireless Local Area Networks
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FD1-6 Integration of Two Opto-Electronic Devices for Data Acquisition reducing External Influences
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[FD2] OS: Roll-to-roll Printed Electronics Process and System

Chair: **Sangyoon Lee**, Konkuk University, Korea

FD2-1 **[Invited]** Improvement of Surface Roughness and Conductivity by Calendering Process for Printed Electronics
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Konkuk University, KOREA ····· *685*

FD2-2 Investigation of Micro Fine Line Pattern Using Single Layer Gravure Printer
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FD2-3 Design of Multi-Purposed Roll-to-Roll Printing System for Printed Electronics
Chung Hwan Kim[1], Ha-Il You[2], Seung-Hyun Lee[3], Jeongdai Jo[3]
[1]Chungnam National University, KOREA, [2]LG Electronics, KOREA, [3]KIMM, KOREA, ····· *690*

FD2-4 A Study on the Decision of Operating Tension by Analysis of Friction Coefficient Change in Rewinding Process
Jong Su Lee, Jin Woo Seong, Kee Hyun Shin
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FD2-5 A Study on Model Development of the Slot-die Coating Process through the Statistical Analysis
Janghoon Park, Jinwoo Seong, Hyunkyoo Kang, Keehyun Shin
Konkuk University, KOREA ····· *694*

[FD3] OS: Robot-based Learning

Chair: **Ji-Hyun Jung**, Kyungsung University, Korea

FD3-1 A Basic Study for the Development of R-learning Curriculums in the Early Childhood School System
Lee, Yeon Seung[1], Seo, Hyun[2]
[1]Kyungsung University, KOREA, [2]Chosun University, KOREA ····· *699*

FD3-2 Influence of R-learning Based Education on Kindergarten and Kindergarten Teacher
Jeong-Wook Lee[1] , Minjung Lee[2], Kyung-Sook Ahn[3], Soo-Jin Lim[4]
[1]Duksung Womne's University, KOREA, [2]DongEui University, KOREA, [3]HoWon University, KOREA, [4]DongShin University, KOREA ····· *701*

FD3-3 The Directions of the Universal Contents Development for R-Learning at Kindergarten
Bookyung Cho[1], Sunghee Lee[2], Jeongsun Park[3], Youngmi Go[4]
[1]Korea National University of Education, KOREA, [2]Paichai University, KOREA, [3]Myongji College, KOREA, [4]Soonchunhyang University, KOREA ····· *703*

FD3-4 A Study of the Use of R-learning Content in Kindergartens
Ji-Hyun Jung[1], Yoo-Seon Bang[2]
[1]Kyungsung University, KOREA, [2]Konkuk University, KOREA ····· *708*

[FD4] OS: OFTDPR (Original Fusion Technology Development Program for Robot) 2

Chair: **Yongkwun Lee**, KIST, Korea

FD4-1 Development of a Robot Behavior Controller for an r-Learning System using OPRoS
Sang-Hoon Ji, Jae-Seong Han, Sang-Moo Lee, Byung-Wook Choi
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FD4-2 A Design of Slotless BLDC Motor for Robot Using Equivalent Magnetic Circuit Model
Jung-Moo Seo[1,2], Young-Kyun Kim[1], Se-Hyun Rhyu[1], In-Soung Jung[1], Hyun-Kyo Jung[2]
[1]KETI, KOREA, [2]Seoul National University, KOREA *719*

FD4-3 Anti-Vibration PID Control for a Robot Manipulator Experiments
Dong-Won Lim, Eun-Hye Kim, Yong-Kwun Lee
KIST, KOREA *724*

FD4-4 Periodic Task Scheduling Algorithm under Precedence Constraint based on Topological Sort
Si Wan Kim, Hong Seong Park
Kangwon National UniversityKOREA *727*

FD4-5 Development of Direct Teaching Robot System
Chanhun Park, Jin Ho Kyung, Hyun Min Do, Taeyong Choi
KIMM, KOREA *730*

FD4-6 EtherCAT based Multi-Model Robot Controller
Il-Kyun Jung, Sun Lim
KETI, KOREA *733*

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TP-01 Modified Floyd Algorithm for Intelligent Walking Frame
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Pusan National University, KOREA 739

TP-02 Enhanced Obstacle Recognition Method based on Complementary use ofMmultiple Sensors
Dae-Han Hong, Yoon-Gu Kim, Jeong-Hwan Kwak, Jinung An
DGIST, KOREA 743

TP-03 Optical Sensor-based Object Detection for Autonomous Robots
Jonghwan Kim, Chung-Hee Lee, Young-Chul, Soon Kwon, Chi-Ho Park
DIST, KOREA 746

TP-04 A User Reactivity Research for Improving Performance of Service Robot
Seunghwan Park, Wonpil Yu, Jaeil Cho
ETRI, KOREA 753

TP-05 Fast SLAM using Polar Scan Matching and Particle Weight based Occupancy Grid Map for Mobile Robot
Hyun Chul Roh, Chang Hun Sung, Min Tae Kang Myung Jin Chung
KAIST, KOREA 756

TP-06 Moving Object Detection and Tracking from Moving Camera
Won Jin Kim, In-So Kweon
KAIST, KOREA 758

TP-07 Hole Filled 3D Map Using Mobile Robots in the Urban Environment
Sang Un Park, Inwook Shim, Myung Jin Chung
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TP-08 A Multimodal Ubiquitous Interface System Using Smart Phone for Human-Robot Interaction
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TP-09 Research on a System for Collecting, Storing and Utilizing Potential Energy from Mobile Vehicle for Public Devices
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[1]ETRI, KOREA, [2]Sungkyunkwan University, KOREA, [3]AIST, JAPAN, [4]University of Maryland, USA 770

TP-11 Design and Implementation of an Optimal In-pipe Navigation Mechanism for a Steel Pipe Cleaning Robot
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TP-12 Experimental Results of the Teaching Force Shaping Algorithm in Case of the Impact
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TP-13 The Difference between the Double Stages of Impedance and the Single Stage of the Impedance for a Direct Teaching Method in a Constraint Condition
Chanhun Park, Jin Ho Kyung, Tae-yong Choi
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TP-14 Study on Teaching Path Reconstruction Algorithm based Direct Teaching and Playback Method
ChengJie Li[1], ChanHun Park[1], JinHo Kyung[1], GwangJo Chung[1], ChangSoo Han[2]
[1]KIMM, KOREA, [2]Hanyang University, KOREA ····· *778*

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TP-16 Hybrid Control Architecture of the Robotic Surveillance System Using Smartphones
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TP-18 Mobile Robot Navigation Based on Interactive SLAM with an Intelligent Space
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TP-19 Topological Map Building for Mobile Robots Based on GIS in Urban Environments
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TP-20 Nonlinear Disturbance Observer Design for Euler-Lagrange Systems: An Initial Study
Min Jun Kim, Wan Kyun Chung
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TP-21 Dynamic Analysis of Beam Type Substrate Handling Robot in Solar Cell Manufacturing
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TP-22 Motion Simulation Model for Beam Type Solar Cell Substrate Transport Robot
Cheol Hoon Park[1,2], Dong Il Park[1], Hyun Min Do[1]
[1]KIMM, KOREA, [2]KAIST, KOREA *796*

TP-23 Combined Method of Weighted Least Norm and Gradient Projection for Avoiding Joint Limit
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TP-24 Design and Simulation of a Robot that Can Walk and Jump
Hyunsoo Seung, Sangyoon Lee
Konkuk University, KOREA *800*

TP-25 Probabilistic Voxel Mapping using Stereo Matching Confidence
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TP-26 3D Mapping in Urban Environment using Geometric Featured Voxel
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TP-27 Vision-based Detection and Classification of Pavement Mark using Neural Network for Autonomous Driving System
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TP-28 Motion Prior Based on General Motion Statistics
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KAIST, KOREA *811*

TP-29 Haze Removal using Visible and Infrared Image Fusion
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KAIST, KOREA *813*

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[1]Sungkyunkwan University, KOREA, [2]KITECH, KOREA, [3]Sunchon National University, KOREA. *815*

TP-31 Cell Phone Controlled Rocker-bogie Suspension Type Rover with a Scooping Arm
Suhas Divakar
Rashtreeya Vidyalaya College of Engineering Bangalore, INDIA *822*

TP-32 Analysis of Pneumatic Balloon Actuator
Dongwon Yun[1], Kyung-Soo Kim[2], Soohyun Kim[2], Heechang Park[1]
[1]KIMM, KOREA, [2]KAIST, KOREA *828*

TP-33 Teaching Data Extraction for the Direct Teaching in Industrial Robot
Taeyong Choi, Hyunmin Do, Dongil Park, Kwangcho Chung
KIMM, KOREA *830*

TP-34 Simulated 3D Underwater Localization based on RF Sensor Model using EKF
Daegil Park[1], Jinhyun Kim[2], Wan Kyun Chung[1]
[1]POSTECH, KOREA, [2]SEOULTECH, KOREA *832*

TP-35 Detection of a Human Approaching to Maintain a Safety In Human-Robot Cooperation
Hyun Min Do, Jin Ho Kyung, Gwang Jo Chung
KIMM, KOREA *834*

TP-36 Analysis and Design of LVDT
Dongwon Yun, Sangyong Ham, Jungho Park, Sonam Yun
KIMM, KOREA *836*

TP-37 A Study on Train Network and Control in Korea Tilting Train
Su-Gil Lee
KRRI, KOREA *838*

TP-38 The Study of Tilting Actuator Control for Korea Tilting Train
Su-Gil Lee, Seong-Ho Han
KRRI, KOREA *840*

TP-39 A Study on the UUV Docking System by using Torpedo Tubes
Jinhyun Kim, GiHyeon Lee
Seoul National University of Science and Technology, KOREA *842*

TP-40 User-oriented Tele-presence Service Robot
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ETRI, KOREA *845*

TP-41 Modified Mean-Shift for Head Tracking
Daeha Lee, Jaehong Kim, JooChan Sohn
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TP-42 Design Study of Three Segment Leg with Stable Region at Low and High Speed Running
Oh-Seok Kwon, Dong-Ha Lee
DGIST, KOREA *850*

TP-43 Design and Analysis of a Robotic Vehicle for Entertainment Using Balancing Mechanism
Hyun Wook Kim, Seul Jung
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TP-44 Implementation and Control of Balancing Line Tracer Robot Using Vision
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TP-45 Novel Design and Control of a Home Service Mobile Robot for Korean Floor-Living Life Style: KOBOKER
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Video Session

[TD3] Video Session: Biologically Inspired Robots (OS) and Other Robots

Chair: **Hoon Cheol Park**, Konkuk University, Korea

TD3-1 Biologically Inspired Robots using Smart Composite Microstructures
Je-sung Koh, Seung-won Kim, Min-kyun Noh, Kyu-jin Cho
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TD3-2 **[Invited]** Improvement of Stability for Vertical Take-off of an Insect-mimicking Flapping-wing System
Hoang Vu Phan, Quoc Viet Nguyen, Hoon Cheol Park, Nam Seo Goo, Doyoung Byun
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TD3-3 Mobile Manipulation: Bring Back the Cereal Box Video Proceedings of the 2011 ogX Spring School
Kai Zhou, Michael Zillich, Markus Vincze
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TD3-4 Human-Demonstration based Approach for Grasping Unknown Objects
Hyoungnyoun Kim[1,2], Inkyu Han[1,2], Shin-Jung Kim[1], Bum-Jae You[1,2], Ji-Hyung Park[1,2]
[1]KIST, KOREA, [2]University of Science and Technology, KOREA *874*

TD3-5 Behavior Programming by Kinesthetic Demonstration for A Chef Robot
Jae-Pyung Hwang, Sang Hyoung Lee, Il Hong Suh
Hanyang University KOREA *875*

TD3-6 Active Morphing Robot Inspired by the Pre-strained Fiber Structure of the Venus Flytrap
Seung-Won Kim, Je-Sung-Koh, Kyu-Jin Cho
Seoul National University, KOREA *876*