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Technical Program

Saturday, August 20

08:30~10:00 **[SaA1]** Invited Session 1

Paris

Chair: Xiaodong Zhang (Xi'an Jiaotong Univ., China)

SaA1-1 08:30~09:00

Recent Advances of Humanoid Robots in BIT

Prof. Qiang Huang

Professor and Director, Intelligent Robotics Institute, Beijing Institute of Technology, Beijing, China

SaA1-2 09:00~09:30

Gangnam Style in Microbiorobotics: Biologically Inspired Microscale Robotic Systems for Biology and Medicine

Prof. MinJun Kim

Department of Mechanical Engineering, Southern Methodist University, Dallas, USA

SaA1-3 09:30~10:00

Soft bioinspired robotics for simple and adaptive method of motion generation

Prof. Kyu-Jin Cho

Professor, Biorobotics Laboratory, School of Mechanical and Aerospace Engineering, Seoul National University, Seoul, Korea

08:30~10:00 **[SaA2]** Best Paper Award Competition

Dijon

Chair: Nakju Lett Doh (Korea Univ., Korea)

SaA2-1 08:30~08:45

Research on Variation Mechanism of Three-dimensional Blade Tip Clearance of Aero-engine

Fei Teng, Xiaodong Zhang and Siying Xie

Xi'an Jiaotong University, China

SaA2-2 08:45~09:00

Preliminary Result on Object Shape Reconstruction using an Underwater Forward-Looking Sonar

Yeongjun Lee, Taejin Kim, Jinwoo Choi and Hyun-Teak Choi

Korea Research Institute of Ships & Oceanengineering (KRISO), Korea

SaA2-3 09:00~09:15

Investigation of a Non-Anthropomorphic Bipedal Robot With Stability, Agility, and Simplicity

Jeffrey Yu, Joshua Hooks, Sepehr Ghassemi, Alexandra Pogue, and Dennis Hong

UCLA, USA

SaA2-4 09:15~09:30

Development of Hovering-Type AUV 'Cyclops' for Ocean Environment Monitoring and Sea Trial

Byeongjin Kim, Hyeonwoo Cho, Juhyun Pyo and Son-Cheol Yu

POSTECH, Korea

SaA2-5 09:30~09:45

Robotic Handler for Interchangeability with Various Size of Laparoscope

Dong-Hoon Kang, Hyun-Woo Baek, Byung-Sik Cheon, Deok-Gyun Jeong, Hyun-Young Lee and Dong-Soo Kwon

KAIST, Korea

August 19-22, 2016 / Sofitel Xian on Renmin Square, Xian, China

SaA2-6 09:45~10:00
Simulation and testing of a non-linear ultrasonic system for testing the debonding of the adhesive layers of magnesium alloys
Yan Bingsheng, Tang Baoping
Henan University of Technology, China

08:30~10:15 **[SaA3] Mobile Robots**

Cannes

Chair: Hungsun Son (UNIST, Korea)

SaA3-1 08:30~08:45
Real-time Traffic Sign Recognition System with Deep Convolutional Neural Network
Seokwoo Jung, Unghui Lee, Jiwon Jung and David Hyunchul Shim
Korea Advanced Institute of Science and Technology, Korea

SaA3-2 08:45~09:00
Multi-DOFs motion platform based on spherical wheels for unmanned systems
Seongmin Lee, SangA Park and Hungsun Son
UNIST, Korea

SaA3-3 09:00~09:15
Adaptive Inverse Perspective Mapping for Lane Map Generation with SLAM
Jinyong Jeong and Ayoung Kim
KAIST, Korea

SaA3-4 09:15~09:30
A Method of Field Calibration For Vehicle-based SINS
Zheng Li, Zheng-wei Yang, Wei Zhang, Ya-jun Shao, Yin Li, Hao-hao He
Xi'an Research Institute of High Technology, China

SaA3-5 09:30~09:45
UKF Data Fusion of Odometry and Magnetic Sensor for a Precise Indoor Localization System of an Autonomous Vehicle
Daesung Jeon, Hoimyoung Choi, and Jaehwan Kim
Advanced Institutes of Convergence Technology (AICT), Korea

SaA3-6 09:45~10:00
Localization for an Unmanned Forklift in a Refrigerated Warehouse
Eui-Jung Jung, Jae Yeon Choi, Sung Ho Hong, and Goobong Chung
Korea Institute of Robot and Convergence, Korea

SaA3-7 10:00~10:15
A Disturbance Observer with an Autoregressive Moving Average Method for a One-wheel Robot System
S. D. Lee and Seul Jung
Chungnam National University, Korea

08:30~10:15 **[SaA4]** Human-Machine Interaction

Toulouse

Chair: Min Li (Xi'an Jiaotong Univ., China)

- SaA4-1** 08:30~08:45
Classification of EEG Signals using multiple gait features based on Small-world Neural Network
Cheng Zhang, Jinhua Zhang and Jun Hong
Xian Jiaotong University, China
- SaA4-2** 08:45~09:00
Guide system based users' intentions for a humanoid robot
Yu-Jung Chae¹, Sang-Seok Yun², Kim ChangHwan² and JongSuk Choi²
¹University of Science and Technology, Korea, ²Korea Institute of Science and Technology, Korea
- SaA4-3** 09:00~09:15
Multi-scale Lempel-Ziv Complexity Analysis of Brain States
Xiaobi Chen, Guanghua Xu and Min Li
Xi'an Jiaotong University, China
- SaA4-4** 09:15~09:30
Custom Optoelectronic Force Sensor Based Ground Reaction Force (GRF) Measurement System for Providing Absolute Force
Junghoon Park, Sangjoon J. Kim, Youngjin Na and Jung Kim
KAIST, Korea
- SaA4-5** 09:30~09:45
Evaluation of a Korean Lip-Sync System for an Android Robot
Hyun-Jun Hyung^{1,2}, Byeong-Kyu Ahn², Dongwoon Choi², Dukyeon Lee², and Dong-Wook Lee^{1,2}
¹Korea University of Science & Technology, Korea, ²Korea Institute of Industrial Technology, Korea
- SaA4-6** 09:45~10:00
Development of a Wearable HCI Controller through sEMG & IMU Sensor Fusion
Joowan Kim^{1,2}, Minkyu Kim² and Keehoon Kim²
¹Seoul National University, Korea, ²Korea Institute of Science and Technology, Korea
- SaA4-7** 10:00~10:15
Automatic Tuning of a Mechanical Design Parameter of a Robotic Leg by Iterative Learning Mechatronics
Joonyoung Jung, Jungsu Choi, Byeonghun Na and Kyoungchul Kong
University of Sogang, Korea

10:30~12:00 **[SaB1]** Invited Session 2

Paris

Chair: Kyoungchul Kong (Sogang Univ., Korea)

- SaB1-1** 10:30~11:00
3D Continuous RGB-D SLAM in indoor environments and its applications from BIM to VR
Prof. Nakju Lett Doh
Professor, School of Electrical Engineering, Korea University, Seoul, Korea
- SaB1-2** 11:00~11:30
Robotic On-Orbit Servicing: Mission and Challenge
Prof. Hong Liu
Professor, Director of State Key Lab of Robotics and Systems, Harbin Institute of Technology, Harbin, China
- SaB1-3** 11:30~12:00
An illustrative approach for type synthesis of overconstrained 1T2R parallel
Prof. Tian Huang
Professor, School of Mechanical Engineering, Tianjin University, Tianjin, China

10:30~12:00 **[SaB2]** Biospired and Biomimetic Robots

Dijon

Chair: Liang Yuan (Xinjiang University, China)

- SaB2-1** 10:30~10:45
THE SIMULATION OF A BUILT-UP-TYPE DEFORMABLE PHANTOM FOR 4DCT
Hea Jin Lee¹, Hyuk Jin Lee¹, Ji Na Kim², Young Nam Kang² and Ja Choon Koo¹
¹Sungkyunkwan University, Korea, ²Catholic University, Korea
- SaB2-2** 10:45~11:00
Static Analysis of Novel Continuum Robot Driven by PAMs
Ying Zhang, Chaoqun Xiang, Hui Yang, Yongqiang Li, Lina Hao
Northeastern University, China
- SaB2-3** 11:00~11:15
Design of flexible joint using in soft robot hand
Jae Hyeon Kim, Zheng Yuan Li, Hyouk Ryeol Choi, Hyungpil Moon and Ja Choon Koo
Sungkyunkwan University, Korea
- SaB2-4** 11:15~11:30
Formulation of Posture Optimization for Multi-legged Robot via Eigen Decomposition of Stiffness Matrix
Xuan Lin, Dennis Hong
UCLA, USA
- SaB2-5** 11:30~11:45
Development of A Patterned Parallel Pneumatic Artificial Muscle Actuator
Hyuk Jin Lee, Kyeong Ha Lee, Hyouk Ryeol Choi, Hyungpil Moon and Ja Choon Koo
Sungkyunkwan University, Korea
- SaB2-6** 11:45~12:00
Twisted Dielectric Elastomer Stack Actuator
Ho Sang Jung, Sang Yul Yang, Kyeong Ho Cho, Min-Geun Song and Hyouk Ryeol Choi
Sungkyunkwan University, Korea

10:30~12:00 **[SaB3]** Surgical Robots, Haptics and Teleoperation

Cannes

Chair: Nobuto Matsuhira (Shibaura Inst. of Tech., Japan)

SaB3-1 10:30~10:45

Foot-Pedal: Haptic Feedback Human Interface Bridging Sensational Gap between Remote Places

Mincheol Kim¹, Dae-Keun Yoon², Shin-Young Kim¹, Jai-Hi Cho¹, Kwang-Kyu Lee¹, Bum-Jae You¹

¹Center of Human-centered Interaction for Coexistence, Korea, ²Hyundai Heavy Industries, Korea

SaB3-2 10:45~11:00

Retractor Mechanics in Open-Surgery

Chang-Hoon Lee, Jong Tae Seo, Sungon Lee, and Byung-Ju Yi

HanYang University, Korea

SaB3-3 11:00~11:15

Ophthalmic Microsurgical Motion and Suture Shape Evaluation using Optical Coherence Tomography

Jin Hyung Cho¹, Hyung Gon Shin¹, Yeoreum Yoon¹, Ki Hean Kim¹, Myoung Joon Kim², Wan Kyun Chung¹

¹POSTECH, Korea, ²University of Ulsan College of Medicine, Korea

SaB3-4 11:15~11:30

Development of a teleoperated robot arm system using RSNP: Precise tasks performed using a predictive display

Takashi Arai, Motohiro Yasuda and Nobuto Matsuhira

Shibaura Institute of Technology, Japan

SaB3-5 11:30~11:45

A Surgical Navigation System to Assist in Chronic Total Occlusion Intervention

Sangseo Jeon, Seok Hwangbo and Jaesung Hong

DGIST, Korea

SaB3-6 11:45~12:00

A New Type of Surgical Forceps Integrated with Three-Axial Force Sensor for Minimally Invasive Robotic Surgery

Uikyum Kim, Yong Bum Kim, Dong-Yeop Seok, Jinho So, and Hyouk Ryeol Choi

Sungkyunkwan University, Korea

10:30~12:00 **[SaB4]** Modeling and Simulations

Toulouse

Chair: Zhiyuan Yao (Nanjing Univ. of Aeronautics and Astronautics, China)

- SaB4-1** 10:30~10:45
Development of Simulation Model for Modular and Reconfigurable Robots
Hyun Min Do, Guk Hwa Kim, Tae-Yong Choi, Doo Hyeong Kim and Youngsu Son
Korea Institute of Machinery and Materials, Korea
- SaB4-2** 10:45~11:00
Simulation Study of Steering Control of the Tracked Robot Based on Slip and Skid Condition
Chuanwei Wang, Hongwei Ma, Kun Ma, and Wanfeng Shang
Xi'an University of Science and Technology, China
- SaB4-3** 11:00~11:15
Design of a Kinematically Redundant Schönflies-Motion Generator with Auxiliary Grasping Task
Long Kang¹, Sungon Lee¹, Wheekuk Kim², and Byung-Ju Yi¹
¹Hanyang University, Korea, ²Korea University, Korea
- SaB4-4** 11:15~11:30
Cause Analysis and Treatment on Abnormal Vibration for the Press Machine during Working
Tong Changhong, Zhang Zuopeng, Dong Shifang
Lanzhou City University, China
- SaB4-5** 11:30~11:45
Study on mechanical performance simulation method of key components in double horse head pumping unit
Long Qing Zou, Gui Juan Chen, Zhang Xu and Fu Hailong
Northeast Petroleum University, China
- SaB4-6** 11:45~12:00
Dynamic simulation of joint module with MR damper for mobile rescue robot
Joohan Park, Dongwon Yun, Dong Il Park and Chanhun Park
Korea Institute of Machinery & Materials (KIMM), Korea

15:30~16:30 **[PS1]** Poster Session 1

Paris Foyer

Chair: Jaeheung Park (Seoul Nat'l Univ., Korea)

- PS1-1** **Effects of time delay on long range formation control for unmanned aerial vehicles**
Myunggun Kim, SangHeon Lee and Hungsun Son
UNIST, Korea
- PS1-2** **A Formation Flight Control of UAVs using ZigBee**
Sewoong Min and Haewoon Nam
Hanyang University, Korea
- PS1-4** **Effect of Variable Cross-section Rod on Laser-induced Surface Acoustic Waves**
Yongqiang Liu, Shixi Yang and Chunbiao Gan
Zhejiang University, China
- PS1-5** **Learning a Dynamic Horse Walking Model for a Simulator using Dynamical Movement Primitives**
Chan-Soon Lim, Jeong-Yean Yang, Dong-Soo Kwon
KAIST, Korea

- PS1-6** **Coordinated Workspace Analysis and Trajectory Planning of Redundant Dual-arm Robot**
Kang Shengzheng, Wu Hongtao, Li Yao, Ding Li
Nanjing University of Aeronautics and Astronautics, China
- PS1-7** **A flexible microrobots with magnetic actuation for medical tool**
Jeonghun Lee, Eunhee Kim, Sangwon Kim, Sanghun Jeon and Hongsoo Choi
DGIST, Korea
- PS1-8** **The NNES Fault Diagnosis Technique of the Naval Gun Systems**
Xuefang Chang, Hongxia Pan, Haifeng Ren, Manliang Cao
North University of China, China
- PS1-9** **Study on Vehicle Lateral Control for Backward Driving**
Minsung Kim¹, Seho Shin¹, and Jaeheung Park^{1,2}
¹Seoul National University, Seoul, Korea, ²Advanced Institutes of Convergence Technology, Korea
- PS1-10** **A method to LRF noise filtering for the transparent obstacle in mobile robot indoor navigation environment with straight glass wall**
Jungsoo Park and Jin-Woo Jung
Dongguk University, Korea
- PS1-11** **A Space Classification-based Hybrid Exploration Strategy for Narrow and Wide-Open Spaces**
Howon Cheong^{1,2} and Sung-Kee Park¹
¹Korea Institute of Science and Technology, Korea, ²Yonsei University, Korea
- PS1-12** **Numerical and Experimental Investigation of a Biomimetic Robotic Jellyfish Actuated by Ionic Polymer-Metal Composite**
Sarah Trabia, Qi Shen, Tyler Stalbaum, Robert Hunt, Taeseon Hwang and Kwang Kim
University of Nevada, USA
- PS1-13** **Parameters Optimization of a Parallel Three Degree-of-Freedom Bionic Eye Based on Genetic Algorithm**
Xiangyang Xie, Yuanhao Cheng and Sunan Wang
Xi'an Jiaotong University, China
- PS1-14** **Modular Design of Snake Robot for Various Motions Implementation**
Sajjad Manzoor and Youngjin Choi
Hanyang University, Korea
- PS1-15** **A 3D Simulation for Social Human-Robot Interaction With Ontology-Based Robot Knowledge**
Euijun Hwang¹, Sangyun Lee², Yoonseob Lim³ and Jongsuk Choi³
¹University of Auckland, New Zealand, ²Seoul National University of Science and Technology, Korea, ³Korea Institute of Science and Technology, Korea
- PS1-16** **Even-Order Nonlinear Correction of Digital Predistortion with Maximum Power Amplification Efficiency**
Song Yang, Chen Qun, Hu Feng, Cai chaoshi
Communication University of China, China
- PS1-17** **Depth-based Hand Gesture Recognition using Convolutional Neural Networks**
Jeongwon Pyo¹, Sanghoon Ji², Sujeong You² and Taeyoung Kuc¹
¹SungKyunKwan University, Korea, ²Korea Institute of Industrial Technology, Korea
- PS1-18** **Sign language translation system using latent feature values of sign language images**
Taehwan Kim and Sungho Kim
Yeungnam University, Korea

- PS1-19** **Fast Multiple Objects Detection and Tracking Fusing Color Camera and 3D LIDAR for Intelligent Vehicles**
Soonmin Hwang, Namil Kim, Yukyung Choi, Seokju Lee and In So Kweon
Korea Advanced Institute of Science and Technology, Korea
- PS1-20** **Asymmetric Stereo with Catadioptric Lens: High Quality Image Generation for Intelligent Robot**
Donghyeon Cho¹, Jinsun Park¹, Yu-Wing Tai² and Inso Kweon¹
¹KAIST, Korea, ²SenseTime Group Limited, Hongkong
- PS1-21** **Probabilistic Foreground Detector for Sterile Zone Monitoring at Night Time**
Ajmal Shahbaz, Joko Hariyono, Wahyono, Alexander Filonenko, Kang-Hyun Jo
University of Ulsan, Korea
- PS1-22** **Sentence Learning on Deep Convolutional Networks for Image Caption Generation**
Dong-Jin Kim, Donggeun Yoo, Bonggeun Sim, In So Kweon
KAIST, Korea
- PS1-23** **Modeling and analysis of a bimorph piezoelectric cantilever**
Lei Guo, Yi Qin
Chongqing University, China
- PS1-24** **High-Speed Automaton Fault Detection and Diagnosis Based on Multivariate Multiscale Entropy**
Li Haiguang^{1,2}, Pan Hongxia¹ and Ren Haifeng¹
¹College of Mechatronic Engineering North University, China, ²InnerMongolia Key Laboratory for Utilization of Bayan Obo Multi-Metallic Resources: Elected State Key Laboratory, China
- PS1-25** **Design of Novel Capacitive type Torque Sensor for Robotic Applications**
Yong Bum Kim, Uikyum Kim, Dong-Yeop Seok, JinHo So, and Hyouk Ryeol Choi
Sungkyunkwan University, Korea
- PS1-26** **A Tactile Sensing and Feedback System for Tumor Localization**
Min Li¹, Shan Luo² and Guanghua Xu¹
¹Xi'an Jiaotong University, China, ²King's College London, UK
- PS1-27** **Semantic Segmentation of Urban Scenes with Enhanced Spatial Contexts**
Jeonghyeon Wang and Jinwhan Kim
KAIST, Korea
- PS1-28** **Development for Arm Reverse Thrust Characteristics Test System of Well Radius Measuring Instrument**
Chengcheng Li, Hua Guo and Guanglin Wang
Harbin Institute of Technology, China
- PS1-29** **Brushless DC Motor Based on Short-time Pulse Injection Method for Precise Positioning of Rotor and Smooth Switching Strategy**
Xinrong Zhang¹, Hongping Liu² and Dandan Li¹
¹Chang'an University, China, ²CSIC HAISHENG TECHNOLOGY CO.LTD., China
- PS1-30** **Distributed fiber-optic vibration detection system**
Yu Wang, Baoquan Jin, Yuncai Wang, Dong Wang, Xin Liu and Qi Dong
Taiyuan University of Technology, China
- PS1-31** **Test Analysis of Gas Film Stiffness and System Damping of Spiral Groove Dry Gas Seal**
Xuexing Ding, Junjue Lu, Weizheng Zhang and Xiao Zhai
Lanzhou University of Technology, China
- PS1-32** **Temperature inspection system for open-air coal yard based on UAVs**
Xian-gang Cao, Xiao-meng Ren, Junying Jiang
Xi'an University of Science and Technology, China

- PS1-33** **Sub-optimal waypoints, UAV path planning and mosaicing application**
David Strubel¹, Mark Bastourous¹, Olivier Morel¹, Naufal M. Saad², David Fofi¹
¹ENSAM, Univ., Bourgogne Franche-Comte, ²Universiti Teknologi Petronas, Malaysia
- PS1-34** **Demonstration of P-SURO II AUV's Autonomous Navigation in the Water Tank Environment**
Ji-Hong Li, Hyung-Ju Kang, Sung-Mun Hong, Young-Ho Choi, Jin-Ho Suh
Korea Institute of Robot and Convergence, Korea
- PS1-35** **Vision-based Intelligent Surveillance System: Multi-tasks Implementation**
Wahyono, Alexander Filonenko, Ajmal Shahbaz, and Kang-Hyun Jo
University of Ulsan, Korea
- PS1-36** **Development of Low-end Robot System for Comprehensive Shoulder Rehabilitation**
Jeong-Ho Park, Kyoung-Soub Lee and Hyung-Soon Park
KAIST, Korea
- PS1-37** **Angular Displacement Sensor of Differential Intensity Optical Fiber Bundle**
Jia Binghui, Feng Yong, Jia Wenhua and Zhang Jie
Nanjing Institute of Technology, China
- PS1-38** **Deep learning based Image classification for CIFAR-100, supported by Superclass information**
Janghun Hyeon, Jeeho Ahn, and Nakju Lett Doh
Korea University, Korea

16:30~17:50 **[SaC1] Young Scholars in Robotics**

Paris

Chair: Byung-Ju Yi (Hanyang Univ., Korea)

- SaC1-1** 16:30~16:50
Robotic Grasping for Instrument Manipulations
Yu Sun, Yun Lin, and Yongqiang Huang
University of South Florida, USA
- SaC1-2** 16:50~17:10
Design of a Motor Bracket Multi-Axis Force/Torque Sensor
Chung-Sheng Chen, Thomas Chang-Hao Lin, Tzu-Han Lin, and Pei-Chun Lin
National Taiwan University, Taiwan
- SaC1-3** 17:10~17:30
Pattern-based vision for microrobotic manipulators calibration and servoing
V. Guelpa, P. Sandoz, C. Clévy, N. Le Fort-Piat, G. J. Laurent
FEMTO-ST Institute Université de Franche-Comté, France
- SaC1-4** 17:30~17:50
Secure Robotics
Daniel M. Lofaro
George Mason University, USA

16:30~18:00 **[SaC2]** Mechanism Design

Dijon

Chiar: Hyouk Ryeol Choi (Sungkyunkwan Univ., Korea)

- SaC2-1** 16:30~16:45
A Novel and Efficient Compact Propulsion Mechanism with High Response Speed for Robotic Applications
Xiaoguang Zhang, Yi Zeng, and Dennis Hong
UCLA, USA
- SaC2-2** 16:45~17:00
Development of Servo Valve Nozzle Ultrasonic Auxiliary Press-fit System
Shao Dongxiang, Li Ye, Deng Jie, Li Yuefeng and Wang Guanglin
Harbin Institute of Technology, China
- SaC2-3** 17:00~17:15
Four-bar linkage-based tool changing mechanism and torque compensation based on dynamic characteristics
Sangho Lee¹, Jong-Won Kim², Jongwon Kim², TaeWon Seo¹
¹Yeungnam University, Korea, ²Seoul National University, Korea
- SaC2-4** 17:15~17:30
Design of an Automatic Feeding Device in Rotary Cultivator Blade Shaft Welding Equipment
HuiPing Zheng, Xiaolei Duan
Hebei University of Science and Technology, China
- SaC2-5** 17:30~17:45
Development of a planar 3-DOF nano-positioning stage for compensation of the geometric error in a linear axis
Jae-Chang Lee, Min-Jae Lee and Seung-Han Yang
Kyungpook National University, Korea
- SaC2-6** 17:45~18:00
Design of Anthropomorphic Robot Hand with IMC joints
Young Hun Lee, Won Suk You, Gitae Kang, Hyun Seok Oh and Hyouk Ryeol Choi
Sungkyunkwan University, Korea

16:30~17:45 **[SaC3]** Rehabilitation Robots

Cannes

Chair: Jinhua Zhang (Xi'an Jiaotong Univ., China)

SaC3-1 16:30~16:45

Effectiveness of Action Observed for Sports Function Rehabilitation based on Mirror Neuron

Baozeng Wang, Jinhua Zhang, Chen Wang, Jun Hong

Xi'an Jiaotong University, China

SaC3-2 16:45~17:00

Design of a Novel Assist-As-Needed Controller for Gait Rehabilitation Using a Cable-Driven Robot

Soheil Gharatappeh, Hamed Jabbari Asl, Jungwon Yoon

Gyeongsang National University, Korea

SaC3-3 17:00~17:15

Modeling and Design on Control System of Lower Limb Rehabilitation Exoskeleton Robot

Masengo Gilbert, Xiaodong Zhang, Gui Yin

Xi'an Jiaotong University, China

SaC3-4 17:15~17:30

A motion rehabilitation self-training and evaluation system using Kinect

Wei Pei, Guanghua Xu, Min Li, Hui Ding, Sicong Zhang, Ailing Luo

Xi'an Jiaotong University, China

SaC3-5 17:30~17:45

Development of Passive Thumb Structure for Polymer-based Tendon-driven Wearable Robotic hand

Brian Byunghyun Kang, Haemin Lee, and Kyu-Jin Cho

Seoul National University, Korea

16:30~18:00 **[SaC4]** Robot Manipulation

Toulouse

Chair: Xinrong Zhang (Chang'an Univ., China)

- SaC4-1** 16:30~16:45
Load Distribution Algorithms for Redundantly Actuated Manipulator Resembling the Human Upper-Extremity
Abid Imran, Sungon Lee, and Byung-Ju Yi
Hanyang University, Korea
- SaC4-2** 16:45~17:00
Modelling and Control of a 2-Link Mobile Manipulator with Virtual Prototyping
Zehui Meng, Xinquan Liang, Hans Andersen, Marcelo H. Ang Jr.
National University of Singapore, Singapore
- SaC4-3** 17:00~17:15
Low-inertia serial manipulator with counterbalance mechanism
DongGyu Lee, Jung Whan Park and TaeWon Seo
Yeungnam University, Korea
- SaC4-4** 17:15~17:30
Energy-Optimal Trajectory Generation for Robot Manipulators via Hamilton-Jacobi Theory
Dijian Chen, Xiaodong Zhang, Zhifa Lai
Xi'an Jiaotong University, China
- SaC4-5** 17:30~17:45
Development of Soft Continuum Manipulator with Pneumatic and Tendon Driven Actuators
Jun-Young Lee¹, Eun-Yeong Go², Woo-Young Choi¹, Woong-Bae Kim¹ and Kyu-Jin Cho¹
¹Seoul National University, Korea, ²Pohang University of Science and Technology, Korea
- SaC4-6** 17:45~18:00
Limb Motion Experiment Analysis Based on Submovement during Center Out Task
Chen Wang, Jinhua Zhang and Jun Hong
Xian Jiaotong University, China

Technical Program

Sunday, August 21

08:30~10:00 **[SuA1]** Sensing & Perception

Paris

Chair: Lichen Gu (Xi'an University of Architecture, China)

- SuA1-1** 08:30~08:45
Design and Calibration of an Omni-RGB+D Camera
Ahmad Zawawi Jamaluddin, Osama Mazhar, Olivier Morel, Ralph Seulin, David Fofi
Universit e de Bourgogne, France
- SuA1-2** 08:45~09:00
Application of Soft Histogram of Oriented Gradient on Traffic Sign Detection
Peyman Hosseinzadeh Kassani, Junhyuk Hyun and Euntae Kim
Yonsei University, Korea
- SuA1-3** 09:00~09:15
Monocular Vision-based Object Recognition for Autonomous Vehicle Driving in a Real Driving Environment
Jeongmin Jeon, Sung-Ho Hwang, Hyungpil Moon
Sungkyunkwan University, Korea
- SuA1-4** 09:15~09:30
An Inspection Robot using Infrared Thermography for Belt Conveyor
Yang Wenjuan¹, Zhang Xuhui^{1,2} and Ma Hongwei¹
¹Xi'an University of Science and Technology, China, ²Xi'an Coal Mining Machinery Co., Ltd., China
- SuA1-5** 09:30~09:45
Object Recognition for SLAM in Floor Environments using a Depth Sensor
Hee-Won Chae, Chansoo Park, Hyejun Yu and Jae-Bok Song
Korea University, Korea
- SuA1-6** 09:45~10:00
Automaton Fault Diagnosis method of multi-parameters integration for feature extraction
Pan Mingzhi¹, Pan Hongxia², Xu Xin²
¹Jinzhong University, China, ²North University of China, China

08:30~10:00 **[SuA2]** Control System Technology 1

Dijon

Chair: Bo Zhang (Ningxia Univ., China)

Co-Chair: Pan Hongxia (North Univ. of China, China)

SuA2-1 08:30~08:45

Adaptive fuzzy control for uncertain nonlinear systems based on H_∞ filter

Chengcheng Li, Guanglin Wang

Harbin Institute of Technology, China

SuA2-2 08:45~09:00

Fuzzy Controllers with/without Disturbance Observer

Xiaodong Zhang¹, Hugang Han², Dongyin Wu¹

¹Xi'an Jiaotong University, China, ²Prefectural University of Hiroshima, Japan

SuA2-3 09:00~09:15

Output Characteristic Analysis of a 3-DOF Spatial Parallel Micromanipulator

Ranran Geng, Zhiyuan Yao and Qianwei Fu

Nanjing University of Aeronautics and Astronautics, China

SuA2-4 09:15~09:30

Pressure Feedback Control of Electro-Hydraulic Servo-valve for Passive Control of Hydarulic Robots

Woongyong Lee and Wan Kyun Chung

POSTECH, Korea

SuA2-5 09:30~09:45

Adaptive Predicting Control for Electrical Load Simulator

Jianyuan Xu¹, Yuefeng Li², Xudong Pan³, Guanglin Wang⁴

Harbin Institute of Technology, China

SuA2-6 09:45~10:00

Control Strategy of In-pipe Robot Passing Through Elbow

Yoon Geon Lee, Ho Moon Kim, Yun Seok Choi, Heesik Jang and Hyouk Ryeol Choi

Sungkyunkwan University, Korea

08:30~10:00 **[SuA3]** Aerial and Marine Robots

Cannes

Chair: Hyun-Taek Choi (KRISO, Korea)

- SuA3-1** 08:30~08:45
Localization of AUVs Using Depth Information of Underwater Structures from a Monocular Camera
Jongdae Jung¹, Suyoung Choi², Hyun-Taek Choi¹, and Hyun Myung²
¹Korea Research Institute of Ships & Ocean Engineering (KRISO), Korea, ²KAIST, Korea
- SuA3-2** 08:45~09:00
Development of a Multi-purpose Unmanned Surface Vehicle and Simulation Comparison of Path Tracking Methods
Taejin Kim, Jinwoo Choi, Yeongjun Lee, and Hyun-Taek Choi
Marine Robotics Lab, Korea Research Institute of Ships & Ocean Engineering, KRISO, Korea
- SuA3-3** 09:00~09:15
Avatar drone: Drone as Telepresence platform with 3D mobility
Il-han Bae
KAIST, Korea
- SuA3-4** 09:15~09:30
Cooperative UAV Networks based on Distributed Space-Time Block Codes
Minhwan Choi, Hoojin Lee, and Haewoon Nam
Hansung University, Korea
- SuA3-5** 09:30~09:45
Design and Analysis of a Mechanical Tentacle System for Mobile Manipulation of Small Unmanned Aerial Vehicles
Joe Woong Yeol, Donald Toohey and Patrick Harrigan
Department of Mechanical Engineering College of Engineering Tennessee State University, USA
- SuA3-6** 09:45~10:00
Vision based Obstacle Detection and Collision Risk Estimation of an Unmanned Surface Vehicle
Joohyun Woo and Nakwan Kim
Seoul National University, Korea

08:30~10:00 **[SuA4]** Medical Systems and Human Motions

Toulouse

Chair: Jinhyun Kim (SeoulTech, Korea)

- SuA4-1** 08:30~08:45
Polyethylenimine-coated Magnetic Nanoparticles with Improved Biocompatibility for Hyperthermia
Hao Li, Zhen Jin, Sunghoon Cho, Seong Young Ko, Jong-Oh Park, and Sukho Park
Chonnam National University, Korea
- SuA4-2** 08:45~09:00
Controlled Drug Releasing of Doxorubicin Loaded Magnetic Nanoliposome using NIR Irradiation
Zhen Jin, Sunghoon Cho, Seong Young Ko, Jong-Oh Park, and Sukho Park
Chonnam National University, Korea
- SuA4-3** 09:00~09:15
A Method of Optimization Based Human Dynamic Simulation for Exoskeleton Robot Design and Assessment
Hyun-Joon Chung, Jae Yeon Choi and Goobong Chung
Korea Institute of Robot and Convergence, Korea
- SuA4-4** 09:15~09:30
Realization of Human Neck Motion with Novel Robotic Mechanism
Minwoong Jeung¹, Giuk Lee² and Yonghwan Oh²
¹Yonsei University, Korea, ²Korea Institute of Science and Technology, Korea
- SuA4-5** 09:30~09:45
Microfluidic System for Fine Particulate Matter Separation and Sampling
Y. Luo, Y. Sheng, Z. Jiao and Y. Deng
Tsinghua University, China
- SuA4-6** 09:45~10:00
A Modified Functionalized Magnetic Field for Nanoparticle Guidance in Magnetic Drug Targeting
Tuan-Anh Le¹, Ali Kafash Hoshidar¹, Ton Duc Do², Jungwon Yoon¹
¹Gyeongsang National University, Korea, ²Nazarbayev University, Kazakhstan

13:15~14:15 **[PS2]** Poster Session 2

Paris Foyer

Chair: Haewoon Nam (Hanyang Univ., Korea)

- PS2-1** **Development of Underwater Terrain's Depth Map Representation Method based on Occupancy Grids with 3D Point Cloud from Polar Sonar Sensor System**
Eon-ho Lee, Sejin Lee
Kongju National University, Korea
- PS2-2** **Indirect measure of joint torques of surgical instrument in robot-assisted laparoscopic surgery**
Dukyoo Kong, Minho Hwang, Dong-hoon Kang and Dong-Soo Kwon
KAIST, Korea
- PS2-3** **Magnetic Field Establishment Simulation of Electromagnetic Active Balancing Mechanism**
Hongwei Fan¹, Xuhui Zhang¹, Mingqing Jing², Ling Xiao¹, Qinghua Mao¹, Heng Liu²
¹Xi'an University of Science and Technology, China, ²Xi'an Jiaotong University, China
- PS2-4** **Simulation Analysis on Friction Compensation of a Double Tendon-sheath Actuation System**
Yeongtae Jung and Joonbum Bae
UNIST, Korea
- PS2-5** **Smart Staff Design to Assist Walking of Elders**
H.T. Ryu, C.H. Lee, H.S. Yoon, and B.-J. Yi
Hanyang University, Korea
- PS2-6** **Human Motion Imitation for Humanoid by Recurrent Neural Network**
Mingon Kim, Sanghyun Kim, and Jaeheung Park
Seoul National University, Korea
- PS2-7** **Design of Quaternion Controller Based on Virtual Spring-Damper Hypothesis for Hydraulic Manipulator**
Jin Tak Kim¹, Jungsan Cho¹, Byungyun Park¹, Sang-uk Chon², Jaehong Seo², Jungyeong Kim², and Sangdeok Park¹
¹Korea Institute of Industrial Technology, Korea, ²University of Science & Technology, Korea
- PS2-8** **Zero-offset calibration using a screw theory**
Youngwoo Choi¹, Joono Cheong¹, Jin Ho Kyung², Hyun Min Do²
¹Korea University, Korea, ²Korea Institute of Machinery & Materials, Korea
- PS2-9** **The Rotation Accuracy Evaluation Methods for the High-speed Spindle of Machining Robots**
Yun Zhang¹, Qiao Wei¹, Zhenbang Hu², Daxing Zhang¹
¹Xidian University, China, ²Xi'an Jiaotong University, China
- PS2-10** **Geometric parameter calibration using a low cost laser distance sensor for a planar cable robot: MATLAB simulation**
XueJun Jin, Jinwoo Jung, Sukho Park, Jong-Oh Park and Seong Young Ko
Chonnam National University, Korea
- PS2-11** **On the Stability for a Cable-driven Parallel Robot While Considering the Cable Sag Effects**
Peng Liu, and Hongwei Ma
Xi'an University of Science and Technology, China
- PS2-12** **A Tele-operation Interface with a Motion Capture System and a Haptic Glove**
Sungman Park, Yeongtae Jung and Joonbum Bae
UNIST, Korea
- PS2-13** **Preliminary Results of 3D Underwater Localization using Electromagnetic Wave Attenuation**
Kyungmin Kwak¹, Daegil Park², Hunhee Cho³, Wan Kyun Chung² and Jinhyun Kim¹
¹Seoul National University of Science and Technology, Korea, ²POSTECH, Korea, ³Korea University, Korea

- PS2-14** **A Centralized Multi-targets Positioning System based on UWB**
Insung Kang and Haewoon Nam
Hanyang University, Korea
- PS2-15** **Dual-Arm Robot Box Taping with Kinesthetic Teaching**
Peter Ki Kim^{1,2}, Ji-Hun Bae¹, Hyeonjun Park^{1,2}, Dong-Huk Lee¹, Jae-Han Park¹, Moon-Hong Baeg¹, and
Jaeheung Park^{2,3}
¹Korea Institute of Industrial Technology, Korea, ²Seoul National University, Korea, ³Advanced Institutes of Convergence Technology, Korea
- PS2-16** **Visual SLAM with Keyframe Selection for Underwater Structure Inspection using an Autonomous Underwater Vehicle**
Seonghun Hong and Jinwhan Kim
KAIST, Korea
- PS2-17** **Design and Control of Antagonistic Robot Joint with Twisted String Actuators**
Jihyuk Park, Jun Hyeok Park, Kyung-Soo Kim and Soohyun Kim
KAIST, Korea
- PS2-18** **The research of double-nut ball screw preload based on GMA**
Mingxing Lin, Qingdong Wang, Xiaojun Ju and Wentao Fan
Shandong University, China
- PS2-19** **Development of a prosthetic forearm aiming at humanlike motion for trans-radial amputation**
Minsang Seo, Sungon Lee and Youngjin Choi
Hanyang University, Korea
- PS2-20** **Lower Limb Rehabilitation Robot Design with Dual Customized Design: Customized Gait and Customized Exoskeleton**
Zhu Aibin, He Shengli, Li Ziyue, Liu Yangyang
Xi'an Jiaotong University, China
- PS2-21** **Kinematics simulation of environmental parameter monitor robot used in coalmine underground**
Xiangang Cao, Zihao Jin, Chuanwei Wang, Ming Dong
Xi'an University of Science and Technology, China
- PS2-22** **A Study on Trajectory Planning of Hydraulic Robotic Excavator Based on Movement Stability**
Zhongping Li¹, Xiaohu Li¹, Songwei Liu¹ and Linpeng Jin²
¹Xi'an Jiaotong University, China, ²Taizhou Power Supply Company, China
- PS2-23** **Design on Intelligent Perception System for Lower Limb Rehabilitation Exoskeleton Robot**
Weiguang Ma, Xiaodong Zhang and Gui Yin
Xi'an Jiaotong University, China
- PS2-24** **Research on automatic fault diagnosis based on time -frequency characteristics and PCA-SVM**
Manliang Cao, Hongxia Pan, Xuefang Chang
North University of China, China
- PS2-25** **Municipal Solid Waste Classification Using Microwave Nondestructive Testing Technique**
Jian Wang, Bingfeng Deng, Hongji Ren
Chongqing University, China
- PS2-26** **Analysis and On-line Measurement Method of Kinetic Energy Stiffness for Mechanical Electro-hydraulic System**
Bin Yang¹, Lichen Gu^{1,2}
¹Chang'an University, China, ²Xi'an University of Architecture & Technology, China
- PS2-27** **Application of Wavelet De-Noising Method in vibration signal analysis of Elevator Car**
Fu Qifeng, Chen Guoqing and Song Zibo
Hebei University of Science & Technology, China

- PS2-28** **An easy method of image feature extraction for real-time welding defects detection**
Zhifen Zhang^{1,2} and Guangrui Wen^{1,2}
¹Key Laboratory of Education Ministry for Modern Design and Rotor-Bearing System, ²Xi'an Jiao Tong University, China
- PS2-29** **A Two-Step Fault Diagnosis Framework for Rolling Element Bearings with Imbalanced Data**
Yuan Lan¹, Weiwei Zong², Xiaojian Ding³, Xiaoyan Xiong¹, Xiaohang Han¹, Jiahai Huang¹, Bing Ma⁴
¹Taiyuan University of Technology, China, ²Wayne State University, USA, ³Science and Technology on Information Systems Engineering Laboratory, China, ⁴The Second Research Institute of China Electronic Technology Group Corporation, China
- PS2-30** **Rolling Bearing Fault Diagnosis Based on Variational Mode Decomposition and Permutation Entropy**
Guiji Tang, Xiaolong Wang, Yuling He and Shangkun Liu
North China Electric Power University, China
- PS2-31** **Study on Measure and Pairing Algorithm of Servo Valve Nozzles**
Xudong Pan, Wendong Zhu, Guanglin Wang, Weijie Huo
Harbin Institute of Technology, China
- PS2-32** **Three-dimensional Pose Estimation based on LS-SVM Error Compensation**
Ronghua Li^{1,2}, Yongfang Hu², Shuaifang Wen¹ and Qingling Fan²
¹Dalian Jiaotong University, China, ²Shanghai Academy of Spaceflight Technology, China
- PS2-33** **Welding Seam Detection and Feature Point Extraction for Robotic Arc Welding Using Laser-Vision**
Jun-Di Sun¹, Guang-Zhong Cao¹, Su-Dan Huang^{1,2}, Ken Chen¹, and Jun-Jun Yang¹
¹Shenzhen University, China, ²Southwest Jiaotong University, China
- PS2-34** **Autonomous Learning How to Interact in a Human-Robot Joint Assembly Work**
Nam Jun Cho¹, Sang Hyoung Lee², Il Hong Suh¹, Hong-Seok Kim²
¹Hanyang University, Korea, ²KITECH, Korea
- PS2-35** **Wearable 3-DOF Cutaneous Haptic Device with Integrated IMU-Based Finger Tracking**
Myungsin Kim, Inyoung Jang, Yongseok Lee, Yongjun Lee, and Dongjun Lee
Seoul National University, Korea
- PS2-36** **Representation and Reproduction of Skills to Adapt Affine Variations in Programming by Demonstration**
Jaepyeong Hwang¹, Sang Hyoung Lee², and Il Hong Suh¹
¹Hanyang University, Korea, ²KITECH, Korea
- PS2-37** **Observers for a Class of T-S Fuzzy Models with Disturbance**
Hugang Han¹, Xiaodong Zhang², Dongyin Wu²
¹Prefectural University of Hiroshima, Japan, ²Xi'an Jiaotong University, China
- PS2-38** **Visual guidance system for remote-operation**
Dongin Shin¹, Seol Shin¹, Dongyeop Kim¹, Seunghun Kim¹, Jeonghoon Hwang¹ and Yeongouk Kim²
¹Bocheon Technopark, Korea, ²Korea Electronics Technology Institute, Korea

14:15~15:30 **[SuB1]** Fault Detection and Recovery 1

Paris

Chair: Ling Xiang (North China Electric Power Univ., China)

SuB1-1 14:15~14:30

Research on Adaptive analysis of stochastic signals Based on HHT transform

Yan Gao¹, Wenyi Wu² and Jianhui Lin²

¹Chendu Industry college Electronic College, China, ²Southwest Jiaotong University, China

SuB1-2 14:30~14:45

Study on the Reliability Evaluation Method of Equipment based on the Cloud -Logistic model

Feng Pengfei¹, Li Jiangyan², Xiao Ning², Zhu Yongsheng¹

¹Xi'an Jiaotong University, China, ²Shenji Kunming Machine Tool Company Limited

SuB1-3 14:45~15:00

A Method to Integrate KSSOMFA and WKNN Together on Faults Identification of Rotating Machinery

Zhao Xiaoli, Zhao Rongzhen

School of Mechanical and Electronical Engineering of Lanzhou Univ., China

SuB1-4 15:00~15:15

A Study of Inner Crack Testing with the Laser Phased Array Method

Xuekun Liu, Shixi Yang, Chunbiao Gan

Zhejiang University, China

SuB1-5 15:15~15:30

Fault Diagnosis of Tooth Root Crack in Helical Gear

Liman Feng, Dewen Kong

Jilin University, China

14:15~15:35 **[SuB2]** Control System Technology 2

Dijon

Chair: Byoung-Wook Choi (SNUST, Korea)

- SuB2-1** 14:15~14:30
A Path-Planning Algorithm of the Automatic Welding Robot System for Three-Dimensional Arc Welding Using Image Processing
Ken Chen, Guang-Zhong Cao, Jun-Di Sun, and Jun-Jun Yang
Shenzhen University, China
- SuB2-2** 14:30~14:45
Experimental Verification of Robustness Measures for Input Shaping Control
Chul-Goo Kang and Manh-Tuan Ha
Konkuk University, Korea
- SuB2-3** 14:45~15:00
Vibration Study on Surface Acoustic Wave for Particle Manipulation
Y. Sheng¹, Z. Jiao¹, W. Hao², Y. Luo¹ and Y. Deng¹
¹Tsinghua University, China, ²Chinese Academy of Sciences, China
- SuB2-4** 15:00~15:15
An EtherCAT-based Real-time Motion Control System in Mobile Robot Application
Raimarius Delgado¹, Shin-Young Kim², Bum-Jae You², and Byoung-Wook Choi¹
¹Seoul National University of Science and Technology, Korea, ²Center of Human-centered Interaction for Coexistence, Korea
- SuB2-5** 15:15~15:35
A Library for Dynamic Regrasping Methods
Avishai Sintov, Amir Shapiro
Ben-Gurion University of the Negev, Israel

14:15~15:30 **[SuB3]** Sensors and Transducers

Cannes

Chair: Xudong Pan (Harbin Inst. of Tech., China)

SuB3-1 14:15~14:30

Software-Based Resolver-to-Digital Converter Using the PLL Tracking Algorithm

Jun-Di Sun¹, Guang-Zhong Cao¹, Su-Dan Huang^{1,2} and Hong Qiu¹

¹Shenzhen University, China, ²Southwest Jiaotong University, China

SuB3-2 14:30~14:45

Detecting Steel Material Based On Sound Signal

Zhao Yuejing, Qi Kanghua, Zhang Zhejuan

Hebei University of Science and Technology, China

SuB3-3 14:45~15:00

Design of Multi-channel Sound Online Testing System

Qin Zhiying, Qi Kanghua, Zhang Zhejuan

Hebei University of Science and Technology, China

SuB3-4 15:00~15:15

Measurement and Analysis of a Horizontal-Axis Washing Machine for Low-Frequency Abnormal Noise

Sun Xiaojuan¹, Liu Yanjie², Zhang Jianrun³ and Zhang Hong¹

¹Taiyuan University of Science and Technology, China, ²BSH Electrical Appliances (Jiangsu) Co., Ltd., China, ³Southeast University, China

SuB3-5 15:15~15:30

Rotor Position Detection Based on BEMF Zero-crossing Detection Method with Three-EMF Force Superposition

Xinrong Zhang¹, Huimin Gao², Chunyan Zeng¹

¹Chang'an University, China, ²AVIC Taiyuan TAICO Auto Electron Co.,Ltd., China

14:15~15:30 **[SuB4]** Sensor Networks and Cooperative Robots

Toulouse

Chair: Jaeyoung Choi (Soongsil Univ., Korea)

SuB4-1 14:15~14:30

The Simulator for Performance Analysis of Multiple Robots for Hospital Delivery

Seohyun Jeon and Jaeyeon Lee

Human Robot Interaction Research Team, Electronics and Telecommunications Research Institute (ETRI), Korea

SuB4-2 14:30~14:45

A System Architecture to Control Robot through the Acquisition of Sensory Data in IoT Environments

Yoosang Park, Jongsun Choi, and Jaeyoung Choi

Soongsil University, KOREA

SuB4-3 14:45~15:00

Distributed Sensor Networks for Multiple Human Recognition in Indoor Environments

Sang-Seok Yun, Quang Nguyen, and JongSuk Choi

Korea Institute of Science and Technology, Korea

SuB4-4 15:00~15:15

Link quality and position aware route selection in mobile sensor networks.

Adnan Fida¹, Fahad Sharief¹ and Trung Dung Ngo²

¹COMSATS Institute of Information Technology, Pakistan, ²Universiti Brunei Darussalam, Brunei Darussalam

SuB4-5 15:15~15:30

Detection of Audio-based Emergency Situations using Perception Sensor Network

Quang Nguyen, Sang-Seok Yun and JongSuk Choi

Korea Institute of Science and Technology, Korea

15:45~16:45 **[PS3]** Poster Session 3

Paris Foyer

Chair: Peijin Liu (Xi'an Univ. of Architecture and Tech., China)

- PS3-1** **Research on Key Technology of Multifunctional Elderly-assistant & Walking-assistant Robot**
Zhifa Lai, Xiaodong Zhang, Gui Yin
Xi'an Jiaotong University, China
- PS3-2** **Finite Element Analysis of Humanoid Robot Arm**
Dong-tai He, Yu Guo
Kunming University of Science and Technology, China
- PS3-3** **Mechanical Design of a Whole-arm Exoskeleton Rehabilitation Robot Based on PNF**
Gaoyuan Ma, Mingxing Lin and Qingdong Wang
Shandong University, China
- PS3-4** **Study on Unbalance Magnetic Pull of the Motorized Spindle under Different Rotor Eccentricities**
Jin Wang^{1,2}, Mingqing Jing^{1,2}, Hongwei Fan^{1,3}, Heng Liu^{1,2}, Bijia Shi^{1,2}
¹Key Laboratory of Education Ministry for Modern Design & Rotor-bearing System, China, ²Xi'an Jiaotong University, China, ³Xi'an University of Science and Technology, China
- PS3-5** **Balance Compensation Study of Electromagnetic Active Balancer for Motorized Spindle**
Bijia Shi^{1,2}, Mingqing Jing^{1,2}, Hongwei Fan^{1,3}, Heng Liu^{1,2}, Qian Wang^{1,2}
¹Key Laboratory of Education Ministry for Modern Design & Rotor-bearing System, China, ²Xi'an Jiaotong University, China, ³Xi'an University of Science and Technology, China
- PS3-6** **Simulation Research on Brake and Release Performances for the TMB60 Brake Equipment**
Xiaoyuan Chen, Baozhang Qu, Hongbo Zhang, Jianning Zhu and Bihong Lu
Dalian Jiaotong University, China
- PS3-7** **Autonomous control system for the quadrotor unmanned aerial vehicle**
Xiaojuan Wei
Northwest University for Nationalities, China
- PS3-8** **AE monitoring and analysis of Tool Wear of Numerical Control Lathe**
Liu Jixuan¹, Wang Baojian¹, Yang Lijuan¹, Wen Binrong²
¹Xi'an Jiaotong University, China, ²Shanghai Jiaotong University, China
- PS3-9** **Modeling and Simulating in MapleSim for a Bench Experimental System of Machine Gun**
Haifeng Ren¹, Hongxia Pan¹, Mingzhi Pan², Chunmao Ma³, Zongxian Li³
¹North University of China, China, ²Jinzhong University, China, ³Northwest Institute of Mechanical & Electrical Engineering, China
- PS3-10** **Singularity Localization and Characterization Based on Continuous Wavelet Transform for Vibration Signals with Impacts**
Haifeng Ren¹, Hongxia Pan¹, Mingzhi Pan², Chunmao Ma³, Zongxian Li³
¹North University of China, China, ²Jinzhong University, China, ³Northwest Institute of Mechanical & Electrical Engineering, China
- PS3-11** **Research on The Underwater Vehicle Radiated Noise Model and The Linear Spectrum Extraction Method**
ZHOU Zhi¹, ZHU Yong-sheng²
¹Yichang Testing Technology Research Institute, China, ²Xi'an Jiaotong University, China

- PS3-12** **Study on nonlinear dynamics of a rotor-bearing system with coupled faults of crack and rub-impact**
Ling Xiang, Xueyuan Gao, Yi Jia
North China Electric Power University, China
- PS3-13** **Recognition of Torque Load for Elastic Support Rotor System Based on Axis Orbit**
Pang Xinyu, Yang Zhaojian, Yuan Jianxiang, Ren Fang and Li Juanli
Taiyuan University of Technology, China
- PS3-14** **Fault Feature Extraction for Roller Bearings based on DTCWPT and SVD**
Dongqin Fan^{1,2}, Guangrui Wen^{1,2,3}, Xiaoni Dong^{1,2}, Zhifen Zhang^{1,2}
¹Key Laboratory of Education Ministry for Modern Design and Rotor-Bearing Systems, ²Xi'an Jiaotong University, China,
³Xinjiang University, China
- PS3-15** **Genetic Programming-based Classification of Ferrograph Wear Particles**
Bin Xu^{1,2}, Guangrui Wen^{1,2,3}, Zhifen Zhang^{1,2}, Feng Chen^{1,2}
¹Key Laboratory of Education Ministry for Modern Design and Rotor-Bearing Systems, ²Xi'an Jiaotong University, China,
³Xinjiang University, China
- PS3-16** **Research on Rotor Condition Monitoring based on D-S Evidence Theory**
Yuanchao Chen^{1,2}, Guangrui Wen^{1,2,3}, Xiaoni Dong^{1,2}, Zhifen Zhang^{1,2}
¹Key Laboratory of Education Ministry for Modern Design and Rotor-Bearing Systems, ²Xi'an Jiaotong University, China,
³Xinjiang University, China
- PS3-17** **Frontal Face Reconstruction with Symmetric Constraints**
Seung-Hyuk Jeon¹, Ho-Sub Yoon² and Jae-Hong Kim²
¹Korea University of Science and Technology, Korea, ²Huma Robot Interaction Team, Electronics and Telecommunications Research
Institute, Korea
- PS3-18** **PSR-Deterministic Search Range Penalization Method on Kernelized Correlation Filter Tracker**
Kyuewang Lee, Se-Hoon Park, and Kuk-Jin Yoon
GIST, Korea
- PS3-19** **Direct Teaching Algorithm based on Task Assistance for Machine Tending**
Young-Loul Kim, Kuk-Hyun Ahn, and Jae-Bok Song, Member, IEEE
Korea University, Korea
- PS3-20** **Optimal Arrangement of Base Frame of a Hydro-Actuated Dual-Arm Robot**
Dong-Hyuk Lee, Peter Ki Kim, Hyeonjun Park, Jae-Han Park, Moon-Hong Baeg, Ji-Hun Bae
KITECH, Korea
- PS3-21** **A Reaction Force Estimation method of End Effector of Two-link Manipulator Using SMCSP0**
Wang Jie, Karam Dad and Min Cheol Lee
Pusan National University, Korea
- PS3-22** **Experimental Study on Pressure Resistance Performance of the Plastic Housing for the Underwater Robot System**
Jung-Woo Lee, Young-Ho Choi, Jin-Ho Suh and Kap-Ho Seo
Korea Institute of Robot and Convergence, Korea
- PS3-23** **Hierarchical Topological Modeling of Marine Environment**
Jinwoo Choi, Yeongjun Lee, Taejin Kim, Hyun-Taek Choi
Korea Research Institute of Ships and Ocean Engineering, Korea
- PS3-24** **Fault Diagnosis for Rolling Bearing Based on Improved Enhanced Kurtogram Method**
Guiji Tang¹, Fucheng Zhou¹ and Xinghua Liao²
¹North China Electric Power University, China, ²Transmission Engineering Branch of Hunan Goose Can Construction Group Co.,
Ltd, China

- PS3-25** **Design of the Omni Directional Treadmill Based on an Omni-Pulley Mechanism**
Hosu Lee¹, Sanghun Pyo¹, Sangjoon Park² and Jungwon Yoon¹
¹Gyeongsang National University, Korea, ²Electronics Telecommunications Research Institute, Korea
- PS3-26** **Applications of the Bionic Pattern Recognition In the Mechanical Faults Diagnose**
Wang Qinghua, Guo Yu and Yu Hongtao
Xi'an Technological University, China
- PS3-27** **The Development of System for Measurement of Needle Insertion Force into Eye**
Ikjong Park¹, Myoung Joon Kim², Wan Kyun Chung¹
¹POSTECH, Korea, ²University of Ulsan College of Medicine, Korea
- PS3-28** **A Pseudo Ensemble Convolutional Neural Networks**
Jaeyoon Jang^{1,2}, Youngjo Cho^{1,2}, Hosub Yoon²
¹UST, Korea, ²ETRI, Korea
- PS3-29** **Human Body Part Classification from Optical Flow**
Junsik Kim, Kyungdon Joo, Tae-Hyun Oh, In So Kweon
KAIST, Korea
- PS3-30** **An Example of Performing Art with Robot**
Taeyong Choi¹, Hyunmin Do¹, Gukhwa Kim¹, Jinho Kyung¹, Jun Yong Moon²
¹Korea Institute of Machinery & Materials, Korea, ²FX Factory, Korea
- PS3-31** **The preliminary design of a contrast agents pushing device for cholangiography**
Zhu Haoyang, Dong Dinghui, Luo Yu, Lv Yi
Xi'an Jiaotong University, China
- PS3-32** **Magnetic Anchoring Unit (MAU) for a Visual Magnetic Anchored Surgical Robot (MASR): Explore a Scientific Method to Develop MASR**
Dinghui Dong¹, Haibo Feng² and Yi Lv¹
¹Xi'an Jiaotong University, China, ²Harbin Institute of Technology, China
- PS3-33** **Preliminary exploration for Endotracheal Suctioning Robot**
Yu Luo, Dinghui Dong, and Yi Lv
Xi'an Jiaotong University, China
- PS3-34** **High Actuation Force of Piezoelectric Hybrid Actuator with Multiple Piezoelectric Pump Design**
Yong Zhe Li¹, Vinh Tung Le¹, Nam Seo Goo¹, and Chang Seop Lee²
¹Konkuk University, Korea, ²Agency for Defense Development, Korea
- PS3-35** **Spherical Signature Description of 3D Point Cloud and Environmental Feature Learning based on Deep Belief Nets for Urban Structure Classification**
Sejin Lee
Kongju National University, Korea
- PS3-36** **Design of rudder mechanism for the ducted-type underwater robot steering**
Yunghyun Kim, Jinhyun Kim
SEOULTECH, Korea
- PS3-37** **Robust and Fast Description Method for Warping Rectangle Features**
Eun-Sung Yang, Gon-Woo Kim
Chungbuk Nat'l University, Korea
- PS3-38** **Teleoperation with Avoiding Collision in 3D Space of the Quadrotor based on Expanded Guide Sphere**
Do-Hyeong Kim, Gon-Woo Kim
School of Electronics Engineering, Korea

PS3-39 Analysis for Error Modeling of Rectangle Reconstruction Algorithm using Coupled Line Camera

Dong-Gyu Kim, Gon-Woo Kim

Chungbuk Nat'l University, Korea

PS3-40 Comparing Line Segment Detection Algorithms for Coupled Line Cameras

Seong-Jin Lim, Gon-Woo Kim

School of Electronics Engineering, Korea

16:45~18:00 **[SuC1]** Fault Detection and Recovery 2

Paris

Chair: Baoping Tang (Chongqing Univ., China)

SuC1-1 16:45~17:00

Research on the detection mechanism of defect in ferromagnetic materials using eddy current thermography

Hui-peng Yan, Zheng-wei Yang, Wei Zhang, Ya-jun Shao, Yin Li

Xi'an Research Institute of High Technology, China

SuC1-2 17:00~17:15

Fault diagnose for rolling bearing based on higher order spectrum

Yan Gao¹, Wenyi Wu², Yifan Li² and Jianhui Lin²

¹Chendu Industry college Electronic College, China, ²Southwest Jiaotong University, China

SuC1-3 17:15~17:30

A Four-Point Quantitative Detection Method for Shafts Misalignment

ZHANG Xining, ZHAO Huan

Xi'an Jiaotong University, China

SuC1-4 17:30~17:45

A Fault Feature Classification Method for Rotor Startup Process Based on FRFT-PCA

Xiaowei Du^{1,2}, Guangrui Wen^{1,2} and Zhifen Zhang^{1,2}

¹Key Laboratory of Education Ministry for Modern Design & Rotor-Bearing System, ²Xi'an Jiaotong University, China

SuC1-5 17:45~18:00

Method of automaton fault diagnosis based on narrow-band decomposition and fuzzy nearness degree

Pan Mingzhi¹, Tian Yuan², Pan Hongxia², Xu Xin²

¹Jinzhong University, China, ²North University of China, China

16:45~17:45 **[SuC2]** Design of Robots and Function Modules

Dijon

Chair: Mingxing Lin (Shandong Univ., China)

SuC2-1 16:45~17:00

Study on Air-Ground Amphibious Agricultural Information Collection Robot

Wei Wang, Chao yi Li, Ling hui Chu, Chun yu Qu
Northeast Forestry University, China

SuC2-2 17:00~17:15

SOC Estimation of Lithium Battery by UKF Algorithm Based on Dynamic Parameter Model

Xinrong Zhang, Jiaxiang Wu and Guangqing Kang
Chang'an University, China

SuC2-3 17:15~17:30

Development and Applications of Linear Ultrasonic Motors

Zhiyuan Yao, Qianwei Fu, Ranran Geng, Yue Jian and Zhen Liu
Nanjing University of Aeronautics and Astronautics, China

SuC2-4 17:30~17:45

Nonlinear Correction of Digital Predistortion with Maximum Power Amplification Efficiency in PAPR

Song Yang, Chen Qun, Hu Feng, Cai chaoshi
Communication University of China Beijing, China

16:45~18:00 **[SuC3]** Signals & Measurements

Cannes

Chair: Tao Liu (Lanzhou Univ. of Tech., China)

SuC3-1 16:45~17:00

Research on detection system for measuring ring gear tooth root strain of planetary gearbox with Fiber Bragg Grating (FBG)

Xindan Zhao^{1,2}, Xiaodong Zhang^{1,2}, Hang Niu^{1,2}, Chenggang Hou^{1,2}
¹Xi'an Jiaotong University, China, ²Key Laboratory of Education Ministry for Modern Design and Rotor-Bearing System, China

SuC3-2 17:00~17:15

Fault Diagnosis of Gearbox using EMD and Cepstrum Method based on LABVIEW

LIU Zi-ran, HUANG Jin-lai, LI Qi, CHENG Xiao-hui, CHEN Ren-quan
Henan University of Technology, China

SuC3-3 17:15~17:30

Partial Differential Equation Based Image Edge Enhancement and Its Application in Measuring Shaft

Chuande Zhou¹, Aijun Yin¹, Zelun Li¹ and Yan Huang²
¹Chongqing University of Science and Technology, China, ²Xi'an Shiyou University, China

SuC3-4 17:30~17:45

Research on the Non-contact Temperature Measurement of Bearing Cage by Thermosensitive CdTe Quantum Dots

Gao Chuang¹, Wang Ziqiang², Tao Jun², Yan Ke¹, Zhu Yongsheng¹
¹Xi'an Jiaotong University, China, ²Shenji Kunming Machine Tool Company Limited

SuC3-5 17:45~18:00

Gearbox fault diagnosis based on LMD and Cyclostationary Demodulation

Yao Zhuting, Hu Yuchen
North University of China, China

16:45~18:00 **[SuC4]** Feature Extraction and Pattern Recognition

Toulouse

Chair: Wenyi Liu (Jiangsu Normal Univ., China)

SuC4-1 16:45~17:00

Automaton Fault Diagnosis Based on EEMD and Multi-component Information Entropy

Pan Hongxia, Jin Jian, Zhang Yuxue and An Bang

North University of China, China

SuC4-2 17:00~17:15

Fault Diagnosis Approach of Gearbox Based on Support Vector Machine with Improved Bi-layers Quantum Genetic Optimization

Wei Fen, Lv Min, Wang Gang, Xu Jianyuan, Ren Bingyin and Wang Guanglin

Harbin Institute of Technology, China

SuC4-3 17:15~17:30

A novel wind turbine de-noising method based on the Genetic Algorithm optimal Mexican hat wavelet

W.Y. Liu, Q.W. Gao, Y. Zhang

Jiangsu Normal University, China

SuC4-4 17:30~17:45

A Feature Extraction Method for Fault Diagnosis of Scroll Compressors

Tao Liu, Zhuanxia Ma

Lanzhou University of Technology, China

SuC4-5 17:45~18:00

Bearing faults recognition based on the local mode decomposition morphological spectrum and optimized support vector machine

Shaojiang Dong^{1,2,3}, Jun Wang¹, Baoping Tang⁴, Xiangyang Xu³, Juan Liu¹

¹Chongqing Jiaotong University, China, ²Chang'an University, China, ³Xihua University, China, ⁴Chongqing University, China