Invited Session WeB1
Advanced Control Methods
Process Optimization and Economical Methods for Invited Session WeA1
Modeling, Control and Invited Session MoC1
Control for Networked

ASCC 2019 Technical Program Monday June 10, 2019

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<td>09:00-10:30</td>
<td>Conference Room 11</td>
<td>Regular Session MaA1</td>
<td>Robust Control (1)</td>
<td>Aerodynamic Systems</td>
<td>Control Applications (1)</td>
<td>Linear Systems</td>
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<td>10:20-12:20</td>
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<td>Control for Networked</td>
<td>Autonomous Systems</td>
<td>Control Applications (2)</td>
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<tr>
<td>12:20-14:00</td>
<td>Conference Room 12</td>
<td>Regular Session MaA2</td>
<td>Robust Control (2)</td>
<td>Autonomous Systems</td>
<td>Control Applications (2)</td>
<td>Linear Systems</td>
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ASCC 2019 Technical Program Tuesday June 11, 2019

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<td>09:00-10:30</td>
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<td>System Theory (1)</td>
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<tr>
<td>10:20-12:20</td>
<td>Conference Room 12</td>
<td>Control for Networked</td>
<td>System Theory (2)</td>
<td>Robust Control (1)</td>
<td>Adaptive Control and Tuning (2)</td>
<td>Adaptive Control and Tuning (2)</td>
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<tr>
<td>12:20-14:00</td>
<td>Conference Room 12</td>
<td>Regular Session MaB2</td>
<td>System Theory (2)</td>
<td>System Theory (2)</td>
<td>Adaptive Control and Tuning (2)</td>
<td>Adaptive Control and Tuning (1)</td>
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<tr>
<td>14:00-16:00</td>
<td>Conference Room 12</td>
<td>Control for Networked</td>
<td>System Theory (2)</td>
<td>System Theory (2)</td>
<td>Adaptive Control and Tuning (2)</td>
<td>Adaptive Control and Tuning (1)</td>
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ASCC 2019 Technical Program Wednesday June 12, 2019

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<tbody>
<tr>
<td>09:00-10:30</td>
<td>Conference Room 11</td>
<td>Regular Session MaC1</td>
<td>Control for Networked</td>
<td>Control Applications (1)</td>
<td>Adaptive Control and Tuning (3)</td>
<td>Adaptive Control and Tuning (3)</td>
</tr>
<tr>
<td>10:20-12:20</td>
<td>Conference Room 12</td>
<td>Advanced Control Method and Applications</td>
<td>Control for Networked</td>
<td>Control Applications (2)</td>
<td>Adaptive Control and Tuning (3)</td>
<td>Adaptive Control and Tuning (3)</td>
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<tr>
<td>12:20-14:00</td>
<td>Conference Room 12</td>
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<td>Control Applications (2)</td>
<td>Adaptive Control and Tuning (3)</td>
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<tbody>
<tr>
<td>09:00-10:30</td>
<td>Conference Room 11</td>
<td>Control Applications (1)</td>
<td>Control Applications (1)</td>
<td>Control Applications (1)</td>
<td>Adaptive Control and Tuning (3)</td>
<td>Adaptive Control and Tuning (3)</td>
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<tr>
<td>10:20-12:20</td>
<td>Conference Room 11</td>
<td>Control Applications (2)</td>
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<td>Conference Room 11</td>
<td>Control Applications (2)</td>
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<td>Adaptive Control and Tuning (3)</td>
<td>Adaptive Control and Tuning (3)</td>
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Program at a Glance

Track 1: Control and Identification of Complex Systems
Track 2: Nonlinear Control (1)
Track 3: Aerospace
Track 4: Noise and Vibration Control
Track 5: Control Applications (1)
Track 6: Control Applications (2)
Track 7: Adaptive Control and Tuning (1)

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**Technical Program for Monday June 10, 2019**

### MoPPI
**Main Hall**  
**From Stabilizing to Economic Model Predictive Control: A Paradigm Shift towards Increased Control Performance, Prof. Frank Allgower**  
Chair: Mizuno, Takeshi  
Saitama University

### MoA1
**Conference Room 11**  
**Modeling, Control and Economical Methods for Distributed Energy Management**  
Chair: Hatanaka, Takeshi  
Osaka University  
Co-Chair: Wasa, Yasuaki  
Waseda University  
Organizer: Hatanaka, Takeshi  
Osaka University  
Organizer: Wasa, Yasuaki  
Waseda University  
Organizer: Namerikawa, Toru  
Keio University

#### Paper MoA1.1  
**A Design Method for Plug-And-Play Modules of Photovoltaic Generators (I)**  
Qu, Anqi  
Tokyo Institute of Technology  
sadamoto, Tomonori  
The University of Electro-Communications  
Imura, Jun-ichi  
Tokyo Institute of Technology

#### Paper MoA1.2  
**Remodeling of RC Circuit Building Thermodynamics Model with Solar Radiation Based on a Regularization-Like Technique (I)**  
Hatanaka, Takeshi  
Osaka University  
Tomohiro, Ikawa  
Tokyo Institute of Technology  
Okamoto, Daichi  
Tokyo Institute of Technology

#### Paper MoA1.3  
**Load Frequency Control in Connected Power System Including Distributed Energy Resources Using Iterative Gradient Method (I)**  
Sekino, Tetsuya  
Keio University  
Namerikawa, Toru  
Keio University

#### Paper MoA1.4  
**A New Distributed Constrained Multi-Agent Optimization Protocol with Convergence Proof Via Exactness of Penalized Objective Function (I)**  
Masubuchi, Izumi  
Kobe University  
Wada, Takayuki  
Osaka University  
Fujisaki, Yasumasa  
Osaka Univ  
Dabbene, Fabrizio  
Politecnico Di Torino

#### Paper MoA1.5  
**Passivity-Short-Based Stability Analysis on Electricity Market Trading with Communication Delay (I)**  
Muto, Keita  
Keio University  
Namerikawa, Toru  
Keio University

#### Paper MoA1.6  
**Optimal Dynamic Incentive and Control Contract among Principal and Agents with Moral Hazard and Long-Term Average Reward (I)**  
Wasa, Yasuaki  
Waseda University  
Uchida, Kenzo  
Waseda University

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**MoA2**  
**International Conference Room**  
**Robotics and Motion Control (I)**  
Chair: Zhao, Hui  
Harbin Institute of Technology  
Co-Chair: Nabas, Hryvnycky  
Tokyo Institute of Technology

#### Paper MoA2.1  
10:20-10:40
Towards Novel Micromanipulations of Submillimeter-Scale Particles in a Laterally-Oscillated Rectangular Container

Hara, Masayuki
Saitama University

Funabashi, Takahiro
Saitama University

Nabae, Hiroyuki
Tokyo Institute of Technology

Miki, Masahito
Saitama University

10:40-11:00, Paper MoA2.2

Trajectory Tracking Control of a Rolling Disk on a Smooth Manifold

van Steen, Jari
Eindhoven University of Technology

Reyhanooglu, Mahmut
University of North Carolina at Asheville

11:00-11:20, Paper MoA2.3

Distributed Path Planning of Swarm Mobile Robots

Lee, Ya-Ting
Dept. of Beauty Science, National Taichung University of Science

Zeng, Song-Fung
Dept. of Electrical Engineering, Chung-Yuan Christian University

Chiu, Chan-Song
Chung-Yuan Christian University

11:20-11:40, Paper MoA2.4

Steady Speed Flywheel Drive System Based on Phase-Locked Loop

Ma, Enyu
Harbin Institute of Technology

Zhao, Hui
HIT

Zhang, Guojiang
Harbin Institute of Technology

Huo, Xin
Harbin Institute of Technology

Yao, Yu
Harbin Institute of Technology

11:40-12:00, Paper MoA2.5

Geometric Modeling and Attitude Stabilization of Quadcopters

Sharma, Manmohan
Indian Institute of Technology Guwahati

Kar, Indrani
IIT Guwahati

12:00-12:20, Paper MoA2.6

Biotechnology

Chair:
Chang, Peter I-Tsyuen
National Taiwan University of Science and Technology

Co-Chair:
Nakamura, Mitsuteru
The University of Tokyo

10:20-10:40, Paper MoA3.1

Algorithms for Finding Attractors of Generalized Asynchronous Random Boolean Networks

Trinh, Van Giang
JAIST

Hiraishi, Kunihiko
JAIST

10:40-11:00, Paper MoA3.2

Transfer and Incremental Learning Method for Blood Glucose Prediction of New Subjects with Type 1 Diabetes

Luo, Shanzei
Zhejiang University

Zhao, Chunhui
Zhejiang University

11:00-11:20, Paper MoA3.3

Automatic DNA Geometric Analysis from Atomic Force Microscopy Images

Chang, Peter I-Tsyuen
National Taiwan University of Science and Technology

Yu, Yi-Jui
National Taiwan University of Science and Technology

11:20-11:40, Paper MoA3.4

Control Strategy for Patient-Instrument Stabilization for an Office-Based Ear Surgical Procedure

Tan, Kok Kiong
National Univ. of Singapore

Tan, Jian Han
Nanyang Junior College

Tan, Yi Xian
National Univ. of Singapore

Chee, Rhonda
National Univ. of Singapore

Lim, Lynne
Mount Elizabeth Hospital

11:40-12:00, Paper MoA3.5

Evaluation of Smart Devices in IoT Segment by Using Medical Healthcare Technology “MIMOSYS”

Uraguchi, Tomotaka
Tokyo Institute of Technology

Omiya, Yasuhito
PST Inc

Takano, Takeshi
PST Inc

Amaney, Yuichi
PST Inc

Nakamura, Mitsuteru
The University of Tokyo

Deguchi, Hiroshi
Tokyo Institute of Technology

Tokuno, Shinichi
University of Tokyo

Tokayama, Eiji
Asahi University

12:00-12:20, Paper MoA3.6

A Structural Output Controllability Approach to Drug Efficacy Prediction

Setyawan, Taufik Baru
Institut Teknologi Bandung

Oressa, Erhan
Institut Teknologi Bandung

Tantib, Tua Aquinus
Parahyangan Catholic University

Nazaruddin, Yul Yunaszwin
Institut Teknologi Bandung

Suprijanto, Suprijanto
Institut Teknologi Bandung
## MoA4

**Conference Room 21AB**

### Autonomous Systems

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>10:20-10:40, Paper MoA4.1</td>
<td>Simple Adaptive Control for a Diesel Engine Air Path System</td>
<td>Eguchi, Makoto (Keio University), ZHANG, XINYU (KEIO UNIVERSITY), Sakai, Daichi (Keio University), Ohnori, Hiromitsu (Keio University), Hayashi, Tomofumi (Utsunomiya University), Hirata, Mitsuo (Utsunomiya University), Takahashi, Motoki (The University of Tokyo), Yamasaki, Yutaka (The University of Tokyo), Kaneko, Shigehiko (University of Tokyo)</td>
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</table>

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<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:40-11:00, Paper MoA4.2</td>
<td>Autonomous Pest Bird Deterring for Agricultural Crops Using Teams of Unmanned Aerial Vehicles</td>
<td>Wang, Zihao (The University of Sydney), Wong, KC (The University of Sydney)</td>
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</tbody>
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<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
</tr>
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<tbody>
<tr>
<td>11:00-11:20, Paper MoA4.3</td>
<td>Robust H Infinity Control for Hovering of a Quadrotor with Slung Load</td>
<td>Yuan, Xiaozhuoer (Beihang University), Ren, Xingyu (Beihang University), Zhu, Bing (Beihang University), Zheng, Zewei (Beihang University), Zuo, Zongyu (Beihang University)</td>
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<tr>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>11:20-11:40, Paper MoA4.4</td>
<td>A Speed Control Strategy for Automated Buses to Cross Intersections While Considering the Motion of Oncoming Vehicles</td>
<td>Yang, Bo (The University of Tokyo), Xiong, Jianhui (Huawei Technologies Co., Ltd), Kaizuka, Tsutomu (The University of Tokyo), Nakano, Kimihiko (The University of Tokyo)</td>
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<tr>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
</tr>
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<tbody>
<tr>
<td>11:40-12:00, Paper MoA4.5</td>
<td>A Hybrid Multi-Modal Approach for Flocking</td>
<td>Lodge, Riley Thomas (Defence Science and Technology Group), Zamani, Mohammad (Defence Science and Technology Group), Sims, Brendan (Defence Science and Technology Group), Hunjet, Robert (Defence Science and Technology Group)</td>
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## MoA5

**Conference Room 22**

### Control Applications (I)

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<th>Paper</th>
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<th>Authors</th>
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<tbody>
<tr>
<td>10:20-10:40, Paper MoA5.1</td>
<td>Non-Task-Oriented Dialogue System Specialized in Distinguishing Multiple Meaningful Words</td>
<td>Kuwata, Masaki (National Institute of Technology, Kumamoto College), Shibasato, Koki (National Institute of Technology, Kumamoto College)</td>
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<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:40-11:00, Paper MoA5.2</td>
<td>An On-Line Variable Speed Scanning Method with Machine Learning Based Feedforward Control for Atomic Force Microscopy</td>
<td>Liu, Yi-Lin (National Taiwan University), Hu, Ching-Chi (National Taiwan University), Chen, Huang Chih (National Taiwan University), Fu, Li-Chen (National Taiwan University)</td>
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<tr>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
</tr>
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<tbody>
<tr>
<td>11:00-11:20, Paper MoA5.3</td>
<td>Semi-Active Acceleration Control System for In-Car Crib with Joint Application of Regular and Inverted Pendulum Mechanisms</td>
<td>Kawashima, Takeshi (Kanagawa Institute of Technology)</td>
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<tr>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>11:20-11:40, Paper MoA5.4</td>
<td>Positive Expected Feedback Trading Gain for All Essentially Linearly Representable Prices</td>
<td>Baumann, Michael Heinrich (University of Bayreuth), Gruene, Lars (University of Bayreuth)</td>
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<tr>
<th>Paper</th>
<th>Title</th>
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<tr>
<td>11:40-12:00, Paper MoA5.5</td>
<td>Distributed Adaptive Tracking Control for a Class of High-Order Uncertain Nonlinear Multi-Agent Systems Via Neural Approximation Approach</td>
<td></td>
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### MoA6 - Linear Systems

**Conference Room 32**

**Chair:** Chesi, Graziano The University of Hong Kong  
**Co-Chair:** Asai, Toru Nagoya University

**10:20-10:40, Paper MoA6.1**

*A Novel LMI Condition for Stability of 2D Mixed Continuous-Discrete-Time Systems Via Complex LFR and Lyapunov Functions*

Chesi, Graziano The University of Hong Kong

**10:40-11:00, Paper MoA6.2**

*Minimal Order Observer Based H-Infinity Controller Design Based on Overbounding Approximation Method*

KAYO, Soji Kyushu Institute of Technology  
Nohmi, Akiko Kyushu Institute of Technology  
Sebe, Noboru Kyushu Inst. of Tech  
Sato, Masayuki Japan Aerospace Exploration Agency

**11:00-11:20, Paper MoA6.3**

*Dissipative Approach in Control Design for Linear Discrete-Time Positive Systems*

Krokavec, Dušan Technical University of Kosice  
Filasova, Anna Technical University of Kosice

**11:20-11:40, Paper MoA6.4**

*Exponential Stability Analysis and Controller Design for LTI Positive System with Controller Failure*

Lian, Jie Dalian University of Technology  
Wang, Renke Dalian University of Technology  
Wu, Feiyue Dalian University of Technology

**11:40-12:00, Paper MoA6.5**

*MIMO Model Matching for Reference Models with Time-Varying Parameter*

Sun, Hongquan Nagoya University  
Asai, Toru Nagoya University  
Azumi, Ryo Nagoya University  
Azuma, Shun-ichi Nagoya University

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### MoA7 - Filtering

**Conference Room 33**

**Chair:** Luan, Xiaoli Jiangnan University  
**Co-Chair:** Li, Wenling Beihang University

**10:20-10:40, Paper MoA7.1**

*Dissipative Filter Design for Interval Type-2 Fuzzy Singular Systems with Stochastic Perturbation*

Li, Jangrong College of Mathematics and Computer Science, Yanan University  
Feng, Zhiquang Harbin Engineering University  
BHL JUAN Victoria University

**10:40-11:00, Paper MoA7.2**

*H-Infinity Filtering for Uncertain Delta Operator Systems with Random Time-Delays and Limited Communication*

Ding, Waimen Zhengzhou University  
Zhang, Yuanjin Zhengzhou University

**11:00-11:20, Paper MoA7.3**

*Diffusion Kalman Filter by Using Maximum Correntropy Criterion*

Li, Wenling Beihang University  
wong, ke Beihang University  
Liu, Yang Beihang University (BUAA)

**11:20-11:40, Paper MoA7.4**

*High-Order Moment Bayesian State Estimation of Nonlinear Markov Jump System*

zhou, zheng Jiangnan University  
Luan, Xiaoli Jiangnan University  
Gao, Mateng Jiangnan University  
Liu, Fei Jiangnan University

**11:40-12:00, Paper MoA7.5**

*Neural Velocity Observer Trained with Experimental Data Supporting Stabilization of Magnetically Levitating Sphere*

Pitel, Adam AGH University of Science and Technology  
Zróbek, Jakub AGH University of Science and Technology  
Sikora, Bartłomiej AGH University of Science and Technology
Bias-Compensated Normalized Least Mean Fourth Algorithm for Adaptive Filtering of Impulsive Measurement Noises and Noisy Inputs

Lee, Minho  
Pohang University of Science and Technology

Park, Taesu  
Pohang University of Science and Technology

Park, PooGyeon  
Pohang Univ. of Sci. & Tech

MoB1  
Process Optimization and Control for Networked Systems (1)  
Conference Room 11  
Invited Session

Chair: Li, Shaoyuan  
Shanghai Jiao Tong University

Co-Chair: Wang, Yalin  
Central South University

Organizer: Li, Shaoyuan  
Shanghai Jiao Tong University

14:00-14:20, Paper MoB1.1
Data-Driven Dynamic Modeling of the Acetylene Hydrogenation Process Based on Nonlinear Slow Feature Analysis (I)

Guo, Jingjing  
East China University of Science and Technology

Du, Wenli  
East China University of Science and Technology

Ye, Zhencheng  
East China University of Science and Technology

14:20-14:40, Paper MoB1.2
A PSO-LP Cooperative Algorithm for Mixed Integer Nonlinear Programming (I)

Yang, Ye  
Zhejiang University

Han, jinhou  
Zhejiang University

Chao, Chen  
Zhejiang University

Xu, Jiang  
Zhejiang University

Liao, Zuwei  
Zhejiang University

LiU, Xinggao  
Zhejiang University

Chen, Jimin  
Zhejiang University

Li, Jiangang  
Zhejiang University

14:40-15:00, Paper MoB1.3
A Correction Method for the Proportion of Key Components in Basic HYSYS Library Based on an Improved Squirrel Search Algorithm (I)

Wang, Yanlin  
Central South University

Shang, Dandan  
Central South University

Yuan, Xiaofeng  
Central South University

15:00-15:20, Paper MoB1.4
Fuzzy C-Means Cluster Based on Local Weighted Principal Component Regression for Soft Sensor of an Industrial Hydrocracking Process (I)

Yuan, Xiaofeng  
Central South University

Zhou, Jiao  
Central South University

Wang, Yanlin  
Central South University

Yang, Chunhua  
Central South University

Improved Approaches for Verifying i-Detectability of Discrete-Event Systems (I)

Liu, Zhaocong  
Shanghai Jiao Tong University

Yin, Xiang  
Shanghai Jiao Tong University

Li, Shaoyuan  
Shanghai Jiao Tong University

15:40-16:00, Paper MoB1.6
Parameter Optimization of Hydrocracker Using Multi-Block Kriging Metamodeling within Discontinuous Operating Space (I)

Xue, Yongfei  
Central South University

Wang, Yuan  
Central South University

Shang, Dandan  
Central South University

MoB2  
Robotics and Motion Control (2)  
International Conference Room  
Regular Session

Chair: Ismail, Zool  
Malaysia-Japan International Institute of Technology

Co-Chair: Daisuke, Harutoki  
Waseda University

14:00-14:20, Paper MoB2.1
Broadcast and Event Triggered Distributed Consensus Controller for Multi Agent Motion Coordination Systems

Sariff, NoorHaid  
University Teknologi Malaysia

Ismail, Zool  
Malaysia-Japan International Institute of Technology

14:20-14:40, Paper MoB2.2
A Complementary Estimation Scheme of Angular Accelerations for Robot Manipulators under Slow Sampling Rates

Jeon, Sangdeok  
Chungnam National University

Jung, Soo  
Chungnam National University

14:40-15:00, Paper MoB2.3
Design and Development of a New Active Slider Crank Mechanism Based Step Climbing Wheelchair
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<th>Authors</th>
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<tr>
<td>15:00-15:20</td>
<td>MoB2.4</td>
<td>Data-Driven Formation Control for a Class of Unknown Heterogeneous Discrete-Time MIMO Multi-Agent System with Switching Topology</td>
<td>Xiong, Shuangshuang; Hou, Zhongsheng; Yu, Xian (Beijing Jiaotong University)</td>
</tr>
<tr>
<td>15:20-15:40</td>
<td>MoB2.5</td>
<td>Nonlinear Model Predictive Control of a Fully-Actuated UAV on SE(3) Using Acceleration Characteristics of the Structure</td>
<td>Tadokoro, Yuichi; Ibuki, Tatsuya; Sampei, Mitsui (Tokyo Institute of Technology)</td>
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<tr>
<td>14:00-14:20</td>
<td>MoB3.1</td>
<td>Model-Free Vibration Control to Enable Vibration Suppression of Arbitrary Structures</td>
<td>Yonezawa, Heisei; Kajiwara, Itsuro; Yonezawa, Ansei (Hokkaido University)</td>
</tr>
<tr>
<td>14:20-14:40</td>
<td>MoB3.2</td>
<td>Output Feedback Fault Tolerant Control for Lead-Wing Close Formation Flight</td>
<td>Liu, Chin; Jiang, Bin; Zhang, Ke (Nanjing University of Aeronautics and Astronautics)</td>
</tr>
<tr>
<td>14:40-15:00</td>
<td>MoB3.3</td>
<td>Mixed H2/H-Infinity Balanced Truncations for Discrete Time Linear Systems</td>
<td>Takai, Yuichiro; Wada, Takayuki; Fujisaki, Yasumasa (Osaka University)</td>
</tr>
<tr>
<td>15:00-15:20</td>
<td>MoB3.4</td>
<td>Robust TS-Fuzzy Observer-Based Control for Quadruple-Tank System</td>
<td>Bui Tu An, Viet Long; El Hajjaji, Ahmed; Naami, Ghali (University of Picardie Jules Verne)</td>
</tr>
<tr>
<td>14:00-14:20</td>
<td>MoB4.1</td>
<td>Towards a Shanghai Electric Two-Wheelers Cycle (SE2WC)</td>
<td>Reckemmer, Sabrina Kathrin; Zhang, Xiaoyun; Zhang, Weimin; Sawodny, Oliver (University of Stuttgart)</td>
</tr>
<tr>
<td>14:20-14:40</td>
<td>MoB4.2</td>
<td>Vehicular Vertical Tire Forces Estimation Using Unscented Kalman Filter</td>
<td>Kim, Suk Win; Jeong, YongWoo; Lee, Seung Hee; Chung, Chung Choo (Hanyang University)</td>
</tr>
<tr>
<td>14:40-15:00</td>
<td>MoB4.3</td>
<td>Dynamic Neural Network-Based Feedback Linearization Control of Anti-lock Braking Systems Incorporated with Active Suspensions</td>
<td>Pedro, Jimoh Olarewaju; Ranchord, Nkibi (University of the Witwatersrand)</td>
</tr>
<tr>
<td>15:00-15:20</td>
<td>MoB4.4</td>
<td>Hinf Control of Semi-Active MR Damper Suspensions</td>
<td>PEDRASJAMBO, CHIDSON (University of the Witwatersrand)</td>
</tr>
</tbody>
</table>
### MoB5

**Adaptive Algorithm of Active Sound Design for the Engine Noise**

**Lee, Hakjun**  
KAIST

---

**Control Applications (2)**

**Chair:** Shi Jing  
Northwestern Polytechnical University
**Co-Chair:** Matsuda, Yoshitaka  
Saga University

**14:00-14:20, Paper MoB5.1**  
Positioning and Orientation by the Integrated System for Underwater Acoustic Arrays

**Shi, Jing**  
Northwestern Polytechnical University
**Hou, Hong**  
Northwestern Polytechnical University
**Yang, Jianhua**  
Northwestern Polytechnical University

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**14:20-14:40, Paper MoB5.2**  
Gravity Directional Position Control of a Micro-Particle through Frequency Variation of a Single Ultrasonic Transducer

**Lee, Han-Sol**  
Chonnam National University
**Choi, Eungpyo**  
Chonnam National University
**Kang, Byungjeon**  
Chonnam National University
**Park, Jong-oh**  
Chonnam National University
**Kim, Chang-Sei**  
Chonnam National University

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**14:40-15:00, Paper MoB5.3**  
Model Construction of OTEC Plant Using Double-Stage Rankine Cycle with Time Delay by Considering Separator and Working Fluid Tank

**Aosaki, Yuya**  
Saga University
**Matsuda, Yoshitaka**  
Saga University
**Sugi, Takenao**  
Saga University
**Goto, Satoru**  
Saga University
**Yasunaga, Takeshi**  
Saga University
**Ikegami, Yasuyuki**  
Saga University

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**15:00-15:20, Paper MoB5.4**  
Integration of PSO-Based Virtual Sensor and PID to Control Benfield Concentration of a Stripper Unit in a Fertilizer Plant

**Nazaruddin, Yul Yunazwin**  
Institut Teknologi Bandung
**Anditio, Boby**  
Institut Teknologi Bandung
**Andriini, Angela Dian**  
Institut Teknologi Bandung

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**15:20-15:40, Paper MoB5.5**  
Design of Optimal Control System for the Whole Process of Polyester Fiber

**Jiang, Chunli**  
Donghua University
**Hao, Kuangrong**  
Donghua University

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**15:40-16:00, Paper MoB5.6**  
Compensation Control for Tool Attitude in Directional Drilling Systems

**Cai, Zhen**  
China University of Geosciences
**Lai, Xudh**  
China University of Geosciences
**Wu, Min**  
China University of Geosciences
**Chen, Luofeng**  
China University of Geosciences
**Lu, Chengda**  
China University of Geosciences

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**MoB6**

**Optimal Control and Optimization (1)**

**Chair:** Suciu, Barenten  
Fukuoka Institute of Technology
**Co-Chair:** Yu, Jen-te  
Chung Yuan Christian University

**14:00-14:20, Paper MoB6.1**  
Means to Control the Motion of a Double-Cone on Tilting Divergent-Convergent Straight Rails

**Suciu, Barenten**  
Fukuoka Institute of Technology
**Ohnura, Yuu**  
Fukuoka Institute of Technology
**Takada, Kosuke**  
Fukuoka Institute of Technology

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**14:20-14:40, Paper MoB6.2**  
Integrated Designs of Control and Compensation for Output Feedback Linear Quadratic Regulator across an Unreliable Communication Channel

**Yu, Jen-te**  
Chung Yuan Christian University

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**14:40-15:00, Paper MoB6.3**  
Enhancement of Energy-Based Swing-Up Controller Via Entropy Search

**Lee, Chang Sik**  
Korea Advanced Institute of Science and Technology
**Chang, Dong Eui**  
Korea Advanced Institute of Science and Technology

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**15:00-15:20, Paper MoB6.4**  
A Study on Solutions to Finite-Time Optimal Control Problems by Numerical Gaussian Processes
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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Paper Title</th>
<th>Authors</th>
<th>Affiliations</th>
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<tr>
<td>15:20-15:40</td>
<td>Paper MoB6.5</td>
<td>Risk-Aware Profit Maximization Problem in Multiperiod Energy Markets with Uncertain Photovoltaics Power</td>
<td>Tu, Bo</td>
<td>Tokyo Institute of Technology</td>
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<td>Imura, Jun-ichi</td>
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<td>Ishizaki, Takayuki</td>
<td>Tokyo Institute of Technology</td>
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<tr>
<td>15:40-16:00</td>
<td>Paper MoB6.6</td>
<td>Energy Management of Smart Home by Model Predictive Control Based on EV State Prediction</td>
<td>Ogata, Yuuki</td>
<td>Keio University, Japan</td>
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<td>Namerikawa, Toru</td>
<td>Keio University</td>
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<td></td>
<td><strong>MoB7</strong></td>
<td></td>
<td>Conference Room 33</td>
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<td></td>
<td></td>
<td><strong>Adaptive Control and Tuning (1)</strong></td>
<td></td>
<td>Regular Session</td>
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<td><strong>Chair:</strong> Wang, Jun-Min</td>
<td>Beijing Institute of Technology</td>
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<td><strong>Co-Chair:</strong> Medvedev, Mikhail</td>
<td>Southern Federal University</td>
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<tr>
<td>14:00-14:20</td>
<td>Paper MoB7.1</td>
<td>Extremum Seeking Approach to Search the Optimal Feedback Coefficient of Euler-Bernoulli Beam Equation</td>
<td>Pan, Kaicheng</td>
<td>Beijing Institute of Technology</td>
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<td>Wang, Jun-Min</td>
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<td>Lu, Lu</td>
<td>Beijing Polytechnic</td>
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<td>14:20-14:40</td>
<td>Paper MoB7.2</td>
<td>Thermostat Temperature Adaptive Control Based on Relay Feedback Identification</td>
<td>ZHAO, Zhong</td>
<td>Beijing University of Chemical Technology</td>
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<td>ZHU, Lei</td>
<td>Beijing University of Chemical Technology</td>
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<td>ZHANG, Shangchen</td>
<td>Beijing University of Chemical Technology</td>
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<td>14:40-15:00</td>
<td>Paper MoB7.3</td>
<td>Adaptive Error Feedback Output Regulation for Parabolic PDEs with Unknown Disturbance</td>
<td>Liu, Wewei</td>
<td>Beijing Institute of Technology</td>
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<td>Guo, Wei</td>
<td>University of International Business and Economics</td>
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<td>15:00-15:20</td>
<td>Paper MoB7.4</td>
<td>Thermal Modeling and Temperature Control of an All-Vanadium Redox Flow Battery</td>
<td>HaiFeng, Shao</td>
<td>Shanghai Jiao Tong University</td>
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<td>Hongye, Cao</td>
<td>Shanghai Jiao Tong University</td>
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<td>Xue, Bingqiang</td>
<td>Qingdao University</td>
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<td>15:20-15:40</td>
<td>Paper MoB7.5</td>
<td>Strictly Positive Real Condition Establishment in Feedback Error Learning Control</td>
<td>Han, Xinyu</td>
<td>Nara Institute of Science and Technology</td>
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<td>Sugimoto, Kenji</td>
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<td>15:40-16:00</td>
<td>Paper MoB7.6</td>
<td>Multi-Loop Adaptive Control of Mobile Object Path</td>
<td>Medvedev, Mikhail</td>
<td>Southern Federal University</td>
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<td><strong>MoC1</strong></td>
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<td>Conference Room 11</td>
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<td><strong>Process Optimization and Control for Networked Systems (2)</strong></td>
<td></td>
<td>Invited Session</td>
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<td><strong>Chair:</strong> Du, Went</td>
<td>East China University of Science and Technology</td>
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<td><strong>Co-Chair:</strong> Wang, Yalin</td>
<td>Central South University</td>
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<td><strong>Organizer:</strong> Li, Shaoyuan</td>
<td>Shanghai Jiao Tong University</td>
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<td>16:20-16:40</td>
<td>Paper MoC1.1</td>
<td>A Feedforward Decoupling Dynamic Matrix Control of Heavy Oil Separated Process with Smith Predictive Compensation Principle (I)</td>
<td>Zhang, Di</td>
<td>Central South University</td>
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<td>Wang, Yan</td>
<td>Central South University</td>
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<td>16:40-17:00</td>
<td>Paper MoC1.2</td>
<td>NMR Principle Analysis Based Object Detection for Intelligent Measurement of Crude Oil Moisture Content (I)</td>
<td>Yi, Ling</td>
<td>Northeastern University, State Key Laboratory of Synthetical Auk</td>
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<td>Dong, Jinlang</td>
<td>Northeastern University</td>
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<td>LIU, Changxin</td>
<td>Northeastern University</td>
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<td>17:00-17:20</td>
<td>Paper MoC1.3</td>
<td>Just-In-Time Learning for Cement Free Lime Prediction with Empirical Mode Decomposition and Database Monitoring Index (I)</td>
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</table>
17:20-17:40, Paper MoC1.4

Parameter Self-Tuning of SISO Compact-Form Model-Free Adaptive Controller Based on Neural Network with System Error Set As Input (I)

Chen, Chen
Zhejiang University

Li, Xueyuan
Zhejiang University

Yang, Ya
Zhejiang University

Xu, Jiarong
Zhejiang University

Luo, Zuwei
Zhejiang University

Liu, Xingqiao
Zhejiang University

Chen, Junhui
Zhejiang University

Luo, Jiangang
Zhejiang University

17:40-18:00, Paper MoC1.5

Reducing Cost of Process Modeling through Multi-Source Data Transfer Learning

Chen, Li Tack, Lester
Feng Chia University

Chen, Junhui
Chung-Yuan Christian University

18:00-18:20, Paper MoC1.6

LACr Controllers for MIMO Chemical Processes

BESTHA, CHANDRA SHEKHAR
National Institute of Technology Calicut

Mathushcoolam, Nived
NIT Calicut

Kumar, Rakesh
NIT Calicut

AP, Shinoy
NIT Calicut

Pisharody, Shyam K
NIT Calicut

MoC2

Robotics and Motion Control (3)
International Conference Room
Regular Session

Chair: Komizu, Shunsuke
Hokkaido University

Co-Chair: Huo, Xin
Hartbin Institute of Technology

16:20-16:40, Paper MoC2.1

Cogging Torque Disturbance Rejection for a Low-Cost Gimbal Motor and a Controller Design with Practical Considerations

Özdoğan, Gökhan
ASELSAN

Leblebicioglu, M. Kemal
Middle East Technical University

16:40-17:00, Paper MoC2.2

Vibration Elimination for Quadrotor Slung System Based on Input Shaping and Double Closed-Loop Control

Huo, Xin
Hartbin Institute of Technology

Chen, Jinyu
The University of Tokyo

Liu, Qingquan
Hartbin Institute of Technology

He, Xin
Hartbin Normal University

17:00-17:20, Paper MoC2.3

Cooperative Massive Object Transportation by Two Humanoid Robots

Yang, Jaesung
Hokkaido University

Tsujita, Teppai
National Defense Academy of Japan

Komizu, Shunsuke
Hokkaido University

Konno, Atsuhi
Hokkaido University

17:20-17:40, Paper MoC2.4

Markerless Human Motion Tracking Using Microsoft Kinect SDK and Inverse Kinematics

Aliroza, Bilesan
Hokkaido University

Saeed, Behzadipour
Sharif University of Technology

Tsujita, Teppai
National Defense Academy of Japan

Komizu, Shunsuke
Hokkaido University

Konno, Atsuhi
Hokkaido University

17:40-18:00, Paper MoC2.5

Archive Method of Stone Wall in Kumamoto Castle Lifted by Small CMG Crane Using Model Error Compensator

Matsunaga, Nobutomo
Kumamoto University

Fauzan, Naifal Bayu
Kumamoto University

Okajima, Hiroshi
Kumamoto University

Kisutak, Gou
Kumamoto University

MoC3

Robust Control (2)
Conference Room 21CD
Regular Session

Chair: Yonekawa, Makoto
Niigata University

Co-Chair: Mukaidani, Himaki
Hiroshima University
## MoC3

### 16:20-16:40, Paper MoC3.1
**Open-Loop Dynamic Games for Interconnected Positive Nonlinear Systems with H-Infinity Constraint**
Mukaidani, Hiroaki
Hiroshima University
Ramasesy, Saravanan
Kurtnar
Xu, Hua
Univ. of Tsukuba

### 16:40-17:00, Paper MoC3.2
**Extended Kalman Observer Based Robust Control of 1DOF TRMS**
Rao, Vidya
Manipal Institute of Technology, MAHE, Manipal
Bhat, Akhila
Manipal Institute of Technology
Morales, Rafael Mauricio
University of Leicester

### 17:00-17:20, Paper MoC3.3
**Robust Output Feedback Depth Control Design for a Class of AUVs in Diving Plane**
Memon, Attaullah Y.
PNEC, NUST
Qazi, Hassaan Ali
PNEC, NUST

### 17:20-17:40, Paper MoC3.4
**Trajectory Tracking for Nonholonomic Mobile Robot (NMR) Via Non-Singular Terminal Sliding Mode Control**
Giga, Bilal M. Yousef
PNEC-NUST
Maham, Ghauri
Saitama University
Asif Noor, Aqib
Saitama University
Dayo, Aamir Ali
Saitama University
Khan, Abdul Sabor
Saitama University
Fatima, Rabia
Saitama University

### 17:40-18:00, Paper MoC3.5
**Force Compensation Based on Observer for Assembly of Magnitized Components**
Monjyama, Ryu
Saitama University
Mizuno, Takashi
Saitama University
Ishino, Yuki
Saitama University
Takasaki, Masaya
Saitama University
Yamaguchi, Daiyuke
Saitama University

## MoC4

### 16:20-16:40, Paper MoC4.1
**Efficiency Optimization for Permanent-Magnet Synchronous Machine Using Model-Referenced Square-Wave-Based Extremum Seeking Control**
Luo, Guangning
Kanazawa University
Yamamoto, Shigeru
Kanazawa University

### 16:40-17:00, Paper MoC4.2
**Environmental Parameter Prediction for Connected Cars Using Machine Learning**
Schaut, Stefan
University of Stuttgart
Straub, Fabian
University of Stuttgart
Hepperle, Frank
Daimler AG
Sawodny, Oliver
University of Stuttgart

### 17:00-17:20, Paper MoC4.3
**Second Order Sliding Mode Based Speed Tracking Control for Torque Management of Gasoline Engines**
Anjum, Rahul
Capital University of Science and Technology
Yar, Ahmed
Capital University of Science and Technology
Khan, Imran
National University of Technology, Islamabad
Ahmed, Qadeer
The Ohio State University
Bhatti, Aamar Iqbal Bhatti
Capital University of Sciences & Technology, Islamabad

### 17:20-17:40, Paper MoC4.4
**Iterative Algorithm to Coupled Matrix Equations and Its Control Application**
Song, Caolin
University of Jinan
Sun, Lijun
Jinan University

### 17:40-18:00, Paper MoC4.5
**Design of Vibration-Isolating Bed for Ambulances Using Inertie**
Koyanagi, Ryosuke
Keio University
Takahashi, Masaki
Keio University

## MoC5

### 16:20-16:40, Paper MoC5.1
**Communication Connectivity in Multi-Agent Systems with Multiple Uncooperative Agents**

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**Note:** The schedule includes sessions on various topics such as control systems, robotics, and environmental monitoring, each with presentations by researchers from different institutions.
Ju, Zhiyang  
The University of Melbourne
Shames, Iman  
University of Melbourne
Nedic, Dragan  
University of Melbourne

16:40-17:00, Paper MoC5.2
Nonlinear PI Control of a 20 MW Reference Wind Turbine
Gambier, Adrian  
Fraunhofer IWES, Fraunhofer Institute for Wind Energy Systems

17:00-17:20, Paper MoC5.3
Optimal Economic Operation of Microgrid Considering Lifetime Characteristics for Hybrid Energy Storage System
Ding, Min  
China University of Geosciences(Wuhan)
Wu, Xiaomin  
China University of Geosciences(Wuhan)
Li, Danyun  
China University of Geosciences (wuhan)
Cao, Weihua  
China University of Geosciences, Wuhan, China
Wang, Dianhong  
China University of Geosciences
Chen, Luefeng  
China University of Geosciences

17:20-17:40, Paper MoC5.4
Analysis on Attack Schedules in Wireless Networked Control Systems Based on Channel Hopping (I)
Gan, Ruimeng  
National Key Laboratory of Science and Technology on Communication
Shao, Jintang  
University of Electronic Science and Technology of China
Zhang, Heng  
Huazhong Institute of Technology
Xiao, Yue  
National Key Laboratory of Science and Technology on Communication

17:40-18:00, Paper MoC5.5
Autonomous Control of an Electric Wheel-Foot Robotic System Based on Stewart Structure (I)
Liu, Dongchen  
Beijing Institute of Technology
Wang, Junzheng  
Beijing Institute of Technology
Shi, Dawei  
Harvard University
Li, Jing  
Beijing Institute of Technology
Shen, Wei  
Beijing Institute of Technology

MoC6  
Conference Room 32  
Regular Session
Chair: Namerikawa, Toru  
Keio University
Co-Chair: Hao, Kuangrong  
Donghua University

16:20-16:40, Paper MoC6.1
The Multi-Objective Optimization of Esterification Process Based on Improved NSGA-III Algorithm
Hao, Kuangrong  
Donghua University

16:40-17:00, Paper MoC6.2
Velocity Profile Optimization of an Electric Vehicle (EV) with Battery Dynamic Model
naeem, yasir  
Capital University of Sciences & Technology, Islamabad
Bhatti, Aamer Iqbal Bhatti  
Capital University of Sciences & Technology, Islamabad
Butt, Yasir Awais  
Capital University of Science and Technology Islamabad
Ahmed, Qadeer  
The Ohio State University

17:00-17:20, Paper MoC6.3
An Optimal L1 Navigation Design Framework for Constrained Heading Control and Coordination
Zheng, Hui Xin  
Beijing Institute of Technology
Hong, Haichao  
Beijing Institute of Technology
Tang, Shengjing  
Beijing Institute of Technology

17:20-17:40, Paper MoC6.4
Iterative Learning Control for Soil Loading Operation of Excavator
Jongluxmanee, Jirapat  
Tokyo Institute of Technology
Kohgi, Ot  
Tokyo Institute of Technology
Yamakita, Masaki  
Tokyo Inst. of Tech

17:40-18:00, Paper MoC6.5
Optimization of Power Flow and Scheduling for EV Charging Based on Distributed Control
Mizuno, Keisuke  
Keio University
Namerikawa, Toru  
Keio University

18:00-18:20, Paper MoC6.6
An Optimization Method for Building Retrofit Planning Based on a Grouping Method and notch Test Data
Fan, Yuling  
Huazhong Agricultural University
Xia, Xiaohua  
Univ. of Pretoria

MoC7  
Conference Room 33  
Regular Session
Chair: Mizumoto, Ikuro  
Kumamoto University
Co-Chair: Chen, Yong  
Aeronautics Engineering College, Air Force Engineering University

16:20-16:40, Paper MoC7.1
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<tr>
<th>Title</th>
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<th>Affiliations</th>
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<tr>
<td>Iterative PID Gain Tuning Using Gradient Estimate of Variance Cost Criterion through Regulatory Control Data</td>
<td>Masuda, Shiro</td>
<td>Tokyo Metropolitan University</td>
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<tr>
<td>Adaptive Output Feedback Control and Adaptive Design of Statical PFC for Discrete-Time MIMO Systems</td>
<td>Fujii, Seiya; Uchida, Satoshi; Mizumoto, Ikuro</td>
<td>Kumamoto University; Kumamoto University; Kumamoto University</td>
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<td>Improved Dynamic Surface Control for a Class of Nonlinear Systems</td>
<td>Liu, Zongcheng; Li, Qiuni; Chen, Yong; Ly, Maelong; Zuo, Renwei</td>
<td>Air Force Engineering University; Aeronautics Engineering College, Air Force Engineering University; Delft University of Technology</td>
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<td>Adaptive Tracking Control of Uncertain Nonlinear Systems with Saturated Input Quantization</td>
<td>Lai, Guanyu; Wen, Changyun; Zhang, Yun</td>
<td>Guangdong University of Technology; Nanyang Tech. Univ; Guangdong University of Technology</td>
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<tr>
<td>Analysis and Structural Control of the Offshore Wind Turbine Using a Dynamic Mass Damper Optimized by Genetic Algorithm</td>
<td>MAC, THANH TUNG; Miura, Nanako; Sone, Akira</td>
<td>Kyoto Institute of Technology; Kyoto Institute of Technology; Kyoto Institute of Technology</td>
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<td>Adaptive Object Tracking of Quadrotor in Presence of Wind Disturbance</td>
<td>Lai, Jun-Jau; Chang, Che-Chang; Lian, Feng-Li</td>
<td>National Taiwan University; National Taiwan University; National Taiwan University</td>
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</tbody>
</table>
### Technical Program for Tuesday June 11, 2019

**TuPPl**  | Main Hall  
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**Brain-Machine Interfaces: A Role of Control Engineers, Prof. Keum-Shik Hong**  | Plenary Session  
Chair: Namerikawa, Toru  | Keio University  

**TuA1**  | Conference Room 11  
**Case Studies on Motion and Vibration Control**  | Invited Session  
Chair: Yokoyama, Makoto  | Niigata University  
Co-Chair: Narukawa, Terumasa  | Saitama University  
Organizer: Mizuno, Takeshi  | Saitama University  

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<th>Time</th>
<th>Paper Title</th>
<th>Speakers</th>
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<td>Maezawa, Naoto, Narukawa, Terumasa, Yanamoto, Hiroshi, Saitama University</td>
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<td>Ishino, Yui, Mizuno, Takeshi, Takasaki, Masayo, Yamaguchi, Daisuke, Saitama University</td>
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<td>12:00-12:20</td>
<td>Realization of Vibration Absorption at Multiple Frequencies on Vacuum Chamber with Cryopump (I)</td>
<td>Mizuno, Takeshi, Ida, Takahiro, Ishino, Yui, Takasaki, Masayo, Yamaguchi, Daisuke, Hara, Masayuki, Saitama University</td>
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**TuA2**  | International Conference Room  
**Complex Systems and Networks**  | Regular Session  
Chair: Fu, Minyue  | Univ. of Newcastle  
Co-Chair: Li, Zhixin  | The Australian National University  

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<td>Miyasato, Yoshihiko, Inst. of Statistical Mathematics</td>
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<td>Ding, Shufen, School of Control Science and Engineering, Shandong University</td>
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<td>Park, Taesu Pohang University of Science and Technology Lee, Minho Pohang University of Science and Technology Kim, Min Su Pohang University of Science and Technology Park, Poo Gyeon Pohang University of Sci. &amp; Tech</td>
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<td>Behrooz, Farinaz Malaysia -Japan International Institute of Technology (MJIIT), Universiti Teknologi Malaysia Yousof, Rubiyah Centre for Artificial Intelligence and Robotics (CAIRO), Malaysia Khairuddin, Uswah Malaysia -Japan International Institute of Technology (MJIIT), Universiti Teknologi Malaysia</td>
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<td>Effective Wind Speed Estimation and Prediction Based Feedforward Feedback Pitch Control for Wind Turbines</td>
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<td>Global Fixed-Time Trajectory Tracking Control of Surface Vehicles</td>
<td>Gao, Zheng Dalian Maritime University Guo, Ge Dalian Maritime University Wen, Shili School of Information and Engineering, Dalian University</td>
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<td>On the Application of Adaptive Online Learning Based Control on Single Axis Tilting Thrust Vectored Quadcopter</td>
<td>Mahra, Amardeep IIT Madras Zhuge, Vrushabh Indian Institute of Technology Madras</td>
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Soft Sensor Development Using PLSR Based Multi-Kernel ELM
ZHU, Qunxiong Beijing University of Chemical Technology
Xiaohan, Zhang Beijing University of Chemical Technology
Gao, Huili Beijing University of Chemical Technology
peng, zhishang Beijing University of Chemical Technology
Han, Yongming Beijing University of Chemical Technology
He, Yan-Lin Beijing University of Chemical Technology
XU, Yuan Beijing Univ. of Chemical Technology

11:00-11:20, Paper TuA6.3
Fuzzy PID Control Based on Working Condition Identification for Mould Level in Continuous Casting Process
Feng, Ying China University of Geosciences
Wu, Min China University of Geosciences
Chen, Xin China University of Geosciences
Chen, Luofeng China University of Geosciences
Du, Sheng China University of Geosciences

11:20-11:40, Paper TuA6.4
Numerical Simulation of Thermal Field in Czochralski Monocrystalline Silicon Shoulder
zhang, jing Xi'an University of Technology
li, qipeng Xi'an University of Technology
liu, ding Xi'an University of Technology

11:40-12:00, Paper TuA6.5
Online Fault Prognostics Based on Degradation-Oriented Slow Feature Analysis and Temporal Smoothness Analysis
Hu, Yunyun Zhejiang University
Zhao, Chunhui Zhejiang University

10:20-10:40, Paper TuA7.1
A Novel Streaming Variational Bayesian Supervised Factor Analysis for Industrial Adaptive Soft Sensor Modeling
Yang, Zeyu Zhejiang University
Yao, Le Zhejiang University
Ge, Zhiqiang Zhejiang University

10:40-11:00, Paper TuA7.2
Driver's Gaze-Point Analysis of Virtual Platoon Driving for Welfare Vehicle Using Direct Eye Measurement Device with HMD
Matsunaga, Nobutomo Kumamoto University
Takeuchi, Yuda Kumamoto University
Okajima, Hiroshi Kumamoto University

11:00-11:20, Paper TuA7.3
Walking Measurement System Including Turning Motion Assessment Using Depth Sensors
Ono, Tomoko Keio University
Takahashi, Masaki Keio University

11:20-11:40, Paper TuA7.4
Nonlinear Inferential Sensor Development Based on GMM-ELM
Shao, Weiming Zhejiang University
Ge, Zhiqiang Zhejiang University
Song, Zhihuan Zhejiang University
Zhao, Li Zhejiang University

11:40-12:00, Paper TuA7.5
Robust Soft Sensing for Multi-Mode Processes Based on Bayesian Regularized Student's T Mixture Regression
Wang, Jingbo Department of Control Engineering, Zhejiang University
Shao, Weiming Zhejiang University
Song, Zhihuan Zhejiang University

12:00-12:20, Paper TuA7.6
Topology Sequences-Based Fuzzy Track Initialization Method for Radars and ADS-B
Li, Xiaofan Lanzhou Institute of Technology; Jožef Stefan International Post
Ma, Hongting College of Electronic and Information Engineering, Lanzhou Inst
Fan, En Shaoxing University

TuB1 Conference Room 11
Advanced Control Methods and Applications
Chair: Tai, Ching-Chih National Chung-Hsing Univ
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<td>Lin, Xin-Cheng, National Chung Hsing University, Tsai, Ching-Chih, National Chung Hsing University, Tai, Feng-Chun, National Chung Hsing University</td>
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<td>Paper TuB1.4 A Client-Server Architecture for Object Volume Measurement on a Conveyor Belt</td>
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<td>Ye, Pengpeng, Nanjing University of Science and Technology, He, Jiafan, Nanjing University of Science and Technology, Li, Ying, Nanjing University of Science and Technology, Qi, Guoqing, Nanjing University of Science and Technology, Sheng, Andong, Nanjing University of Science and Technology</td>
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<td>Paper TuB2.3 Event-Based Leader-Follower Consensus for Linear Multi-Agent Systems with Adaptive Weighting under Directed Communication Topologies</td>
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<td>Paper TuB2.4 An LQG Motivated Leader-Follower Consensus with Uncertainty</td>
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### TuB5
**Nonlinear Control (2)**  
**Conference Room 22**  
**Regular Session**

**Chair:**  
Wang, Xiangyu  
Southeast University

**Co-Chair:**  
Iwai, Masataka  
MHI NS Engineering

- **14:00-14:20, Paper TuB5.1**  
Stabilization Control for Nonholonomic Vehicles with Second Order Dynamics  
He, Xiaodong  
Peking University

- **14:20-14:40, Paper TuB5.2**  
Finite-Time Simultaneous Stabilization for Two Nonlinear Descriptor Systems with Actuator Saturation  
Li, Meiqing  
University of Jinan

- **14:40-15:00, Paper TuB5.3**  
Reset Control of Combustion Oscillation Model  
Iwai, Masataka  
MHI NS Engineering

- **15:00-15:20, Paper TuB5.4**  
Consensus Algorithms for a Class of Disturbed Nonlinear Multi-Agent Systems Via Integral Sliding-Mode Control  
Wang, Guodong  
Southeast University, China

### TuB6
**Predictive Control (1)**  
**Conference Room 32**  
**Regular Session**

**Chair:**  
Xu, Jun  
Harbin Institute of Technology, Shenzhen

**Co-Chair:**  
Abe, Naoto  
Meiji University

- **14:00-14:20, Paper TuB4.1**  
Control Separation Based Model Predictive Control for Rejection of Unmatched Input Disturbances  
Wen, Liyan  
Nanjing University of Aeronautics and Astronautics

- **14:20-14:40, Paper TuB6.2**  
Neighbour-Based Synchronous Distributed Receding Horizon Control for Multi-Agent Systems  
Yang, Huangbing  
Xi'an Jiaotong University

- **14:40-15:00, Paper TuB6.3**  
Experimental Comparison of the Integral Approximation for the State Predictive Control - the Stabilization Control of the Inverted Pendulum with Flexibe Arm -  
Abe, Naoto  
Meiji University

### OptoShield: A Low-Cost Tool for Control and Mechatronics Education

**Takács, Gergely**  
Slovak University of Technology in Bratislava, Faculty Of Mechanical Engineering

**Konkol, Tibor**  
Slovak University of Technology in Bratislava

**Gulan, Martin**  
Slovak University of Technology
15:20-15:40, Paper TuB6.5
An Improved Multi-Stage Nonlinear Model Predictive Control with Application to Semi-Batch Polymerization
Sun, Jinggao East China University of Science and Technology
Yuan, Wuyue East China University of Science and Technology
Xue, Rui East China University of Science and Technology
Wang, Mengling East China University of Science and Technology

15:40-16:00, Paper TuB6.6
Multilevel Lattice Piecewise Linear Representation and Its Application in Explicit Predictive Control
Wang, Yixuan HIT(Shenzhen)
Li, Zhen Harbin Institute of Technology (Shenzhen)
Xu, Jun Harbin Institute of Technology
Li, Jiangang Harbin Institute of Technology (ShenZhen)

TuB7
Identification and Estimation (I)
Conference Room 33
Regular Session
Chair: Sun, Lianming The University of Kitakyushu
Co-Chair: Godoy, Boris I. Boston University

14:00-14:20, Paper TuB7.1
Trigonometric Basis Functions Based Time-Varying Identification Algorithm with Output Weight Factor
Liu, Xinyu Faculty of Environmental Engineering, the University of Kitakyushu
Sun, Lianming The University of Kitakyushu
Liu, Jianing The University of Kitakyushu

14:20-14:40, Paper TuB7.2
A 2-Step Algorithm for the Estimation of Time-Varying Single Particle Tracking Models Using Maximum Likelihood
Godoy, Boris I. Boston University
Lin, Ye Boston University
Aquero, Juan C. Universidad Santa Maria
Andersson, Sean Boston University

14:40-15:00, Paper TuB7.3
Modelling for Multi-Phase Batch Processes Using Steady State Identification and Deep Recurrent Neural Network
Guo, Wei Jiangsu University
Pan, Tianhong Anhui University
Li, Zhengming Jiangsu University
Guo, Shihong Jiangsu University
Wang, Mengling East China University of Science and Technology

15:00-15:20, Paper TuB7.4
On Finding Battery Age through Ground Truth Based Data Driven Approach
Bhatti, Aamer Iqbal Bhatti Capital University of Sciences & Technology, Islamabad
Farhan, Muhammad Farhan Capital University of Sciences & Technology, Islamabad
Zafar, Usman Capital University of Science and Technology, Islamabad
Ahmed, Gaillee The Ohio State University

15:20-15:40, Paper TuB7.5
Identification of Yaw Error Inherent Misalignment for Wind Turbine Based on SCADA Data: A Data Mining Approach
Bao, Yunong Zhejiang University
Yang, Qiong Zhejiang University
Chen, Qi Zhejiang University
Cheng, Chenguang Zhejiang Windey Co., Ltd
Sun, Youxian Zhejiang Univ

15:40-16:00, Paper TuB7.6
A Novel Recursive Linear Estimator Based on the Frisch Scheme
Massaroli, Stefano The University of Tokyo
Miyaïasu, Rei The University of Tokyo
Califano, Federico University of Twente
Faragasso, Angela The University of Tokyo
Yamashita, Atsushi The University of Tokyo
Asama, Hajime The Univ. of Tokyo

TuC1
Novel Controllers for Mechanical Systems
Conference Room 11
Invited Session
Chair: Nonaka, Kenichiro Tokyo City University
Co-Chair: Ciglerovsky, Sergii Academy of Sciences of the Czech Republic
Organizer: Nonaka, Kenichiro Tokyo City University
Organizer: Iwase, Masami Tokyo Denki University
Organizer: Sakaguchi, Kazuma Tokyo City University

16:20-16:40, Paper TuC1.1
### Optimal Excavation Considering Operation Progress Using Model Predictive Control for Hydraulic Excavators

Eguchi, Yusuke  
Nonaka, Kenichiro  
Sekiguchi, Kazuma  
Suzuki, Katsumasa  

Tokyo City University

16:40-17:00, Paper TuC1.2

### Robust Adaptive Triple-Step Control for Lane-Keeping of Autonomous Ground Vehicles

Wang, Yueyi  
Li, Jingyu  
Bian, Ning  
Li, Kai  
Chen, Hong  

Jilin University, Changchun Institute of Optics, Fine Mechanics and Physics, China, Dongfeng Technical Center, Dongfeng Motor Corporation, Jilin University

17:00-17:20, Paper TuC1.3

### Autonomous Patrol and Invader Detection by Coverage Controlled Quadcopters

Takeuchi, Nagoru  
naruze, masataka  
Sekiguchi, Kazuma  
Nonaka, Kenichiro  

Tokyo City University

17:20-17:40, Paper TuC1.4

### On the Controller Implementation in the Real Underactuated Walking Robot Model

Anderle, Milan  
Celikovsky, Sergej  

Institute of Information Theory and Automation of the CAS, Academy of Sciences of the Czech Republic

17:40-18:00, Paper TuC1.5

### On Using Unscented Kalman Filter Based Multi Sensors Fusion for Train Localization

Nazaruddin, Yul Yunazwin  
Tamba, Tua  
Fanqi, Ismat  
Wukyi, M. Brahna  
Widyotratmo, Augie  

Institut Teknologi Bandung, Parahyangan Catholic University, Institut Teknologi Bandung, Institut Teknologi Bandung, Bandung Institute of Technology

18:00-18:20, Paper TuC1.6

### Distributed Coordinated Control of Spacecraft Formation Flying under Limited Resources

Shi, Yingqi  
Hu, Qinglei  
Wang, Chenliang  
Shao, Xiaodong  

Beihang University, Harbin Institute of Technology, Beihang University, Beihang University

16:20-16:40, Paper TuC2.1

### A Distributed Adaptive State Feedback Control Scheme for Output Consensus of Multi-Agent Systems

Song, Ge  
Tan, Gang  
Tan, Chang  

University of Virginia, Univ. of Virginia, East China Jiaotong University

17:00-17:20, Paper TuC2.3

### Distributed Connectivity Control in Low Probability of Detection Operations

Sim, Brendan  
Zamani, Mohammad  
Hurlet, Robert  

Defence Science and Technology Group, DSTG, Defence Science and Technology Group

17:20-17:40, Paper TuC2.4

### Robustness of Hierarchical Schemes for Multi-Agent Systems

Raza, Ali  

Department of Electrical Engineering, International Islamic Univ

17:40-18:00, Paper TuC2.5
# TuC3

**System Theory (3)**  
**Conference Room 21CD**  
**Regular Session**

**Chair:** McEneaney, William  
University of California, San Diego

**Co-Chair:** Katayama, Hitoshi  
Shizuoka University

### 16:20-16:40, Paper TuC3.1

*Design of a State and Disturbance Reduced-Order Observer for Sampled-Data Underactuated Ships with Constant Disturbance*

Katayama, Hitoshi  
Shizuoka University

### 16:40-17:00, Paper TuC3.2

*Employing the Staticization Operator in Conservative Dynamical Systems and the Schrödinger Equation*

McEneaney, William  
University of California, San Diego

Zhao, Ruobing  
University of California, San Diego

### 17:00-17:20, Paper TuC3.3

*Effects of Imperfect Observation on Quantum State Estimation*

Song, Hongting  
China Academy of Space Technology

XL, Zerong  
Laboratory of Systems Andcontrol, Institute of Systems Science, A

### 17:20-17:40, Paper TuC3.4

*Effect of Second-Stage Operation to Rapid Swing-Up Control of a Pendulum under Piecewise Sampled-Data Control with Vibration Manipulation Function*

Kotake, Shigeo  
Mie University

Okamura, Daichi  
Mie University

### 17:40-18:00, Paper TuC3.5

*On a Time-Varying Delay Model for Asynchronous Sample-And-Hold*

Cantoni, Michael  
The University of Melbourne

Fabbro, Mark  
The University of Melbourne

Kao, Chung-Yao  
National Sun Yat-Sen University

# TuC4

**Mechatronics (2)**  
**Conference Room 21AB**  
**Regular Session**

**Chair:** Kang, Chul-Goo  
Konkuk University

**Co-Chair:** Ueno, Satoshi  
Ritsumeikan University

### 16:20-16:40, Paper TuC4.1

*Modeling Analysis for System Parameters of a Vertical Input Shaping Control Apparatus*

Kim, Wonjin  
Konkuk University

Shin, Yeji  
Konkuk University

Kim, Taehoon  
Konkuk University

Kang, Chul-Goo  
Konkuk University

### 16:40-17:00, Paper TuC4.2

*Investigation of Lateral Stiffness and Damping in Levitation System with Opposite Electromagnets*

Piat, Adam  
AGH University of Science and Technology

Sikora, Bartłomiej  
AGH University of Science and Technology

Zębierski, Jakub  
AGH University of Science and Technology

### 17:00-17:20, Paper TuC4.3

*Improvement of Stability of a Tilt-Controlling Axial Gap Self-Bearing Motor with Single Stator*

Ueno, Satoshi  
Ritsumeikan University

Nakazawa, Kanta  
Ritsumeikan University

Jang, Changan  
Ritsumeikan University

### 17:20-17:40, Paper TuC4.4

*Stiffness Analysis of Vertical-Axis Wind Turbines Rotors Using Permanent Magnet Attractive Type Passive Magnetic Bearings*

Sayed Mahmoud, Mahmoud  
Ritsumeikan University

Ueno, Satoshi  
Ritsumeikan University

Jang, Changan  
Ritsumeikan University

### 17:40-18:00, Paper TuC4.5

*Ride Comfort Control System Considering Physiological, Psychological, and Psychological Characteristics: Experimental Study of LRT*

Ikeda, Keigo  
Tokai University

Minowa, Ryosuke  
Tokai University

Endo, Ayato  
Tokai University

Kato, Hiroaki  
Tokai University
18:00-18:20, Paper TuC4.6
Nonlinear Internal Model Control of EGR Valve
Tan, Yonghong
Dong, Rui
Tan, Qingyuan
Chen, Xiang
Tokai University
Shanghai Normal University
University of Windsor
University of Windsor

TuC5
Conference Room 22
Nonlinear Control (3)
Regular Session

Chair: Cheng, Chih-Chiang
Co-Chair: Lee, Min Cheol
National Sun Yat-Sen University
Pusan National University

16:20-16:40, Paper TuC5.1
Design of Adaptive Block Backstepping Controllers for Perturbed Systems with Input Nonlinearity and Dead Zone
Cheng, Chih-Chiang
Ju, Song-Hua
National Sun Yat-Sen University
National Sun Yat-Sen University

16:40-17:00, Paper TuC5.2
Trajectory Planning and Tracking Control for Positioning of Planar Three-Link Underactuated Manipulator
Huang, Zixin
Lai, Xuzhi
Zhang, Pan
Wu, Min
School of Automation, China University of Geosciences; Hubei Key Lab
China University of Geosciences
School of Automation, China University of Geosciences; Hubei Key Lab
China University of Geosciences

17:00-17:20, Paper TuC5.3
Efficient Control of Non-Linear System Using Modified Sliding Mode Control
abbasi, saad jamshed
Kalu, Karam Dad
Lee, Min Cheol
WANG, JIE
Pusan National University
Pusan National University
Pusan National University
Pusan National University

17:20-17:40, Paper TuC5.4
Switching Control of Singularly Perturbed Uncertain Systems Using Finite Frequency Strategy
Xu, Jing
Niu, Yugang
East China University of Science and Technology
East China University of Science & Technology

17:40-18:00, Paper TuC5.5
Fast Finite-Time Partial State Feedback Stabilization of High-Order Nonlinear Systems with Dynamic Uncertainties
Sun, Zong-Yao
Xie, Xuejun
Liu, Cai-Yun
Qufu Normal University
Qufu Normal University
Qufu Normal University

18:00-18:20, Paper TuC6.1
Model Predictive Controller for Path Tracking and Obstacle Avoidance Maneuver on Autonomous Vehicles
Ali Leman, Zulkarnain
Mohd Hatta, Mohammad Ariff
Zamzuri, Hairi
Abdul Rahman, Mohd Asri
Mazlan, Safi Aini
MUJT KL
Universiti Teknologi Malaysia
Malaysia-Japan International Institute of Technology University
MUJT KL
MUJT KL

16:20-16:40, Paper TuC6.2
Constrained Data-Driven RMPC with Guaranteed Stability
yang, Lingyi
Li, Dewei
Xu, Yunnaen
Xu, Tuyeng
Shanghai Jiaotong University
Shanghai Jiaotong University
Shanghai Jiaotong University
Shanghai Jiaotong University

17:00-17:20, Paper TuC6.3
An Efficient Iterative Approach for Dynamic Output Feedback Robust Model Predictive Control
HU, JIANCHENG
Ding, Baocang
Wang, Yong
Zhang, Jun
Shenyang Institute of Automation, Chinese Academy of Sciences
Xian Jiaotong University
Xian Jiaotong University
Zhejiang University
Zhejiang University
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<tr>
<th>Time</th>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>17:20-17:40, Paper TuC6.4</td>
<td></td>
<td>Predictive Converter Control Using Real Time Quadratically Constrained Optimization</td>
<td>Yang, Yuanqing Xi'an Jiaotong University, Ping, Xubin Xidian University</td>
</tr>
<tr>
<td>17:40-18:00, Paper TuC6.5</td>
<td></td>
<td>Dynamic Matrix Control with Feed-Forward for Target Tracking</td>
<td>Almer, Stefan ABB Schweiz AG, Frick, Damian ETH Zürich, Torrisi, Giampaolo ETH Zurich, Mariethoz, Sebastien BFH</td>
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<td></td>
<td>TuC7</td>
<td>Identification and Estimation (2)</td>
<td>Chair: Nguyen, Dinh Hoa Kyushu University, Co-Chair: Suh, Young Soo University of Ulsan</td>
</tr>
<tr>
<td>16:20-16:40, Paper TuC7.1</td>
<td></td>
<td>A Machine Learning-Based Approach for the Prediction of Electricity Consumption</td>
<td>Nguyen, Dinh Hoa Kyushu University, Nguyen, Anh Tung Hanoi University of Science and Technology</td>
</tr>
<tr>
<td>16:40-17:00, Paper TuC7.2</td>
<td></td>
<td>Parameter Estimation of the System Composed of a Piezoelectric Element and Multiple Vibration Modes</td>
<td>Matsuda, Tatsuki Kanazawa University, Ikuja, Ichiro Kanazawa University, Hori, Yasuaki Kanazawa University, Takagi, Kentaro Nagoya University</td>
</tr>
<tr>
<td>17:00-17:20, Paper TuC7.3</td>
<td></td>
<td>On the Uniqueness of the Estimate of Innovations Model</td>
<td>Ikeda, Kenji Tokushima University, Tanaka, Hideyuki Hiroshima University</td>
</tr>
<tr>
<td>17:20-17:40, Paper TuC7.4</td>
<td></td>
<td>Gait Analysis Using Foot-Mounted Inertial Sensors and Permanent Magnet</td>
<td>Dang, Duc Cong University of Ulsan, Suh, Young Soo University of Ulsan</td>
</tr>
<tr>
<td>17:40-18:00, Paper TuC7.5</td>
<td></td>
<td>Input Design to Maximize Information for Identification of MIMO Systems</td>
<td>Häggblom, Kurt E. Abo Akademi Univ</td>
</tr>
<tr>
<td>18:00-18:20, Paper TuC7.6</td>
<td></td>
<td>A Novel Online Learning RECCG-KFDA Method for Lithologic Identification in Drilling Process</td>
<td>Cao, Weihua China University of Geosciences, Gan, Chao China University of Geosciences, Wu, Min China University of Geosciences</td>
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</tbody>
</table>
## WePPI: Main Hall

**Control of Large-Scale Network Systems for Societal System Design, Prof. Jun-Ichi Imura**

**Chair:** Hirata, Mitsuo  
Utsunomiya University

### WeA1: Conference Room 11

**Advance of FDI and FTC with Applications**

**Chair:** YANG, Hao  
Nanjing University of Aeronautics and Astronautics

**Co-Chair:** Ye, Dan  
Northeastern University

**Organizer:** YANG, Hao  
Nanjing University of Aeronautics and Astronautics

**Organizer:** Jiang, Bin  
NUAA

10:20-10:40, Paper WeA1.1  
Decentralized Adaptive Fault-Tolerant Cooperative Control of Multi-UAVs under Actuator Faults and Directed Communication Topology (I)

**Yu, Ziquan**  
Northwestern Polytechnical University

**Zhang, Youmin**  
Concordia University

**Gu, Yaohong**  
Northwestern Polytechnical University

**Su, Chun-Yi**  
Concordia Univ

**MA, Yajie**  
Nanjing University of Aeronautics and Astronautics

**Jiang, Bin**  
NUAA

10:40-11:00, Paper WeA1.2  
Adaptive Actuator Failure Compensation for Multivariable Systems Using a Multiple-Model Design (I)

**Tan, Chang**  
East China Jiaotong University

**Tao, Gang**  
Univ. of Virginia

**Yang, Hui**  
East China Jiaotong University

**Lu, Pengru**  
East China Jiaotong University

11:00-11:20, Paper WeA1.3  
Detection for Controller-To-Actuator Replay Attack in Cyber-Physical Systems Via Pseudo-Random Code (I)

**Zhang, Tian-Yu**  
Northeastern University

**Ye, Dan**  
Northeastern University

**Long, Yue**  
Liaoning University

11:20-12:00, Paper WeA1.5  
Optimal Fault-Tolerant Control for a Class of Nonlinear Systems by Using Zero-Sum Differential Game (I)

**Xu, Yuhang**  
Nanjing University of Aeronautics and Astronautics

**YANG, Hao**  
Nanjing University of Aeronautics and Astronautics

**Jiang, Bin**  
NUAA

## WeA2: International Conference Room

**Recent Advances on Control Technologies towards Realizing Society 5.0**

**Chair:** Taka, Shigemasa  
Osaka University

**Co-Chair:** Nagahara, Masaaki  
The University of Kitakyushu

**Organizer:** Taka, Shigemasa  
Osaka University

**Organizer:** Nagahara, Masaaki  
The University of Kitakyushu

**Organizer:** Namerikawa, Tomy  
Keio University

**Organizer:** Hatanaka, Takeshi  
Osaka University

**Organizer:** Kobayashi, Koichi  
Hokkaido University

**Organizer:** Hayashi, Naoki  
Osaka University

10:20-10:40, Paper WeA2.1  
Cooperative Transport of Quad-Rotor by Consensus Algorithm (I)
<table>
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<tr>
<th>Time</th>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
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<tbody>
<tr>
<td>10:40-11:00</td>
<td>Paper</td>
<td>Round-Robin Temporal Scheduling of Exponentially Stabilizing Controllers (I)</td>
<td>Maheshwari, Chinmay; Sukumary, Srikanth; Chatterjee, Debasish</td>
<td>Keio University; IIT Bombay; Indian Institute of Technology, Bombay</td>
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<tr>
<td>11:00-11:20</td>
<td>Paper</td>
<td>State-Space Realization of Linear Time-Invariant Systems with Maximum Measure of Quality (II)</td>
<td>Sheriff, Mohammed Rayyan; Nagahara, Masaaki</td>
<td>IIT Bombay; The University of Kitakyushu</td>
</tr>
<tr>
<td>11:20-11:40</td>
<td>Paper</td>
<td>Control Flow Verification for Program Safety Update (I)</td>
<td>Kishida, Takamitsu; Sawada, Kenji; Shin, Seichi</td>
<td>The University of Electro-Communications</td>
</tr>
<tr>
<td>11:40-12:00</td>
<td>Paper</td>
<td>Distributed Estimation Over Delayed Sensor Networks with Cyclic Structure (I)</td>
<td>Adachi, Ryosuke; Yamashita, Yuh; Kobayashi, Koichi</td>
<td>Hokkaido University; Hokkaido University; Hokkaido University</td>
</tr>
<tr>
<td>12:00-12:20</td>
<td>Paper</td>
<td>Decentralized Event-Triggered Control of Discrete-Time Linear Systems Based on Uniformly Ultimate Boundedness (I)</td>
<td>Kobayashi, Koichi; Nakajima, Kyohei; Yamashita, Yuh</td>
<td>Hokkaido University; Hokkaido University; Hokkaido University</td>
</tr>
<tr>
<td>10:20-10:40</td>
<td>Paper</td>
<td>Classification of Steel Surface Defect Using Convolutional Neural Network with Few Images</td>
<td>Kim, Min Su; Park, Taesu; Park, PooGyeon</td>
<td>Pohang University of Science and Technology; Pohang University of Science and Technology; Pohang University of Science &amp; Tech</td>
</tr>
<tr>
<td>10:40-11:00</td>
<td>Paper</td>
<td>Emotion Regulation Based on Multi-Objective Weighted Reinforcement Learning for Human-Robot Interaction</td>
<td>Hao, Man; Cao, Waihua; Liu, Zhehao; Wu, Min; Yuan, Yan</td>
<td>China University of Geosciences; China University of Geosciences, Wuhan, China; China University of Geosciences; China University of Geosciences</td>
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<tr>
<td>11:00-11:20</td>
<td>Paper</td>
<td>An Improved Bat Algorithm Based on Multi-Subpopulation Search Strategy</td>
<td>Yang, Bo; Shen, Yanjun; Yu, Hui</td>
<td>China Three Gorges University; China Three Gorges University; China Three Gorges University</td>
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<tr>
<td>11:20-11:40</td>
<td>Paper</td>
<td>MLcC: A Cloud Framework Adopting Machine Learning for Industrial Automation</td>
<td>Sun, Wen-Lin; Yeh, Kai-Wei; Huang, Yu-Lun</td>
<td>Dept. of Electrical and Computer Engineering, National Chiao Tung University; Dept. of Electrical and Computer Engineering, National Chiao Tung University; National Chiao Tung University</td>
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<tr>
<td>11:40-12:00</td>
<td>Paper</td>
<td>Control Approach Combining Reinforcement Learning and Model-Based Control (I)</td>
<td>Okawa, Yoshhiro; Sasaki, Tomotake; lwane, Hidenao</td>
<td>Fujitsu Laboratories Ltd; Fujitsu Laboratories Ltd.; Massachusetts Institute of Technology; Fujitsu Laboratories Ltd</td>
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<tr>
<td>10:20-10:40</td>
<td>Paper</td>
<td>Variable-Structure/Sliding-Mode Control (I)</td>
<td>Fai, Jiantao; Zhao, Dongye</td>
<td>Hohei University; China University of Petroleum</td>
</tr>
</tbody>
</table>

**WeA3**

**Conference Room 21CD**

**Artificial Intelligence**

Chair: Okawa, Yoshhiro
Co-Chair: Huang, Yu-Lun

10:20-10:40, Paper WeA3.1

Classification of Steel Surface Defect Using Convolutional Neural Network with Few Images

Kim, Min Su; Park, Taesu; Park, PooGyeon

Pohang University of Science and Technology; Pohang University of Science and Technology; Pohang University of Science & Tech

10:40-11:00, Paper WeA3.2

Emotion Regulation Based on Multi-Objective Weighted Reinforcement Learning for Human-Robot Interaction

Hao, Man; Cao, Waihua; Liu, Zhehao; Wu, Min; Yuan, Yan

China University of Geosciences; China University of Geosciences, Wuhan, China; China University of Geosciences; China University of Geosciences; China University of Geosciences (Wuhan)

11:00-11:20, Paper WeA3.3

An Improved Bat Algorithm Based on Multi-Subpopulation Search Strategy

Yang, Bo; Shen, Yanjun; Yu, Hui

China Three Gorges University; China Three Gorges University; China Three Gorges University

11:20-11:40, Paper WeA3.4

MLcC: A Cloud Framework Adopting Machine Learning for Industrial Automation

Sun, Wen-Lin; Yeh, Kai-Wei; Huang, Yu-Lun

Dept. of Electrical and Computer Engineering, National Chiao Tung University; Dept. of Electrical and Computer Engineering, National Chiao Tung University; National Chiao Tung University

11:40-12:00, Paper WeA3.5

Control Approach Combining Reinforcement Learning and Model-Based Control (I)

Okawa, Yoshhiro; Sasaki, Tomotake; lwane, Hidenao

Fujitsu Laboratories Ltd; Fujitsu Laboratories Ltd.; Massachusetts Institute of Technology; Fujitsu Laboratories Ltd

**WeA4**

**Conference Room 21AB**

**Variable-Structure/Sliding-Mode Control (I)**

Chair: Fai, Jiantao
Co-Chair: Zhao, Dongye

China University of Petroleum
10:20-10:40, Paper WeA4.1
**Adaptive Fuzzy Super-Twisting Sliding Mode Control for Micro Gyroscope**
Fei, Juntao  
Feng, Zhilin  
Hohai University

10:40-11:00, Paper WeA4.2
**Sliding Mode Control of State-Saturated Systems under Dynamic Event-Triggered Protocol**
Song, Jun  
Niu, Yugang  
Chen, Bei  
East China University of Science and Technology  
East China University of Science & Technology  
Shanghai University of Engineering Science

11:00-11:20, Paper WeA4.3
**Sliding Mode Control with a Time-Varying Lemniscate-Based Sliding Surface**
Mizoshiri, Taichi  
Mor, Yasuchika  
Tokyo Metropolitan University  
Transportation Systems & Electric Co., Ltd

11:20-11:40, Paper WeA4.4
**Output Feedback Sliding Mode Control for Continuous Stirred Tank Reactors**
Feng, Jiehua  
Ma, Luning  
Zhao, Dongya  
Yan, Xing-Gang  
China University of Petroleum (East China)  
China University of Petroleum  
China University of Petroleum  
Shanghai Jiao Tong University  
University of Kent  
University College London

11:40-12:00, Paper WeA4.5
**Sliding Mode Control of Uncertain Switched Systems with Partly Known Sojourn Probabilities**
Zhao, Haijuan  
Niu, Yugang  
Zou, Yuanyuan  
East China University of Science and Technology  
East China University of Science & Technology  
Shanghai Jiao Tong University

**WeA5 Aerospace Engineering Conference Room 22**
Chair: Zhang, Ying  
Co-Chair: Park, Chan Gook  
Harbin Institute of Technology  
Seoul National University

10:20-10:40, Paper WeA5.1
**Adaptive Scene-Matching Algorithm Based on Frequency Analysis for Aerial Vehicle**
Choi, Sung Hyuk  
Park, Chan Gook  
Seoul National University  
Seoul National University

10:40-11:00, Paper WeA5.2
**Finite-Element Collocation Based Successive Convexification for Powered Landing Guidance of Reusable Rockets**
Ma, Lin  
Wang, Kevin  
Shao, Zhijiang  
Song, Zhengyu  
Biegler, Lorenz T  
Zhejiang University  
Zhejiang University  
Zhejiang University  
China Academy of Launch Vehicle Technology  
Carnegie Mellon Univ

11:00-11:20, Paper WeA5.3
**Inscribed Polygon Method for Spacecraft Maneuvering Problem Arising in Single Axis Thruster Configuration**
Iskender, Burak Omer  
Ling, Keck-Voon  
DUBANCHET, VINCENT  
Simonini, Luca  
Nanyang Technological University  
Nanyang Technological University  
Thales Alenia Space  
Thales Alenia Space

11:20-11:40, Paper WeA5.4
**Attitude Stabilization for Flexible Spacecraft with Inertia Uncertainty by a Sliding Mode Control Law**
Wu, Ai-Guo  
Dong, Rui-Qi  
Zhang, Ying  
He, Liang  
Harbin Institute of Technology (Shenzhen)  
Harbin Institute of Technology Shenzhen Graduate School  
Harbin Institute of Technology  
Shanghai Aerospace Control Technology Institute

11:40-12:00, Paper WeA5.5
**Attitude Control Reconfigurability Analysis of 4-CMGs Pyramid Configuration Spacecraft**
Meng, Qingkai  
Yang, Hao  
liao, bin  
Nanjing University of Aeronautics and Astronautics  
Nanjing University of Aeronautics and Astronautics  
College of Automation Engineering, Nanjing University of Aeronautics and Astronautics

**WeA6 Fault Detection (1) Conference Room 32**
Chair: Ji, Xing Jian  
Co-Chair: Martynova, Dina  
Hong Kong Polytechnic University  
University of Kaiserslautern

10:20-10:40, Paper WeA6.1
**Locating Bolt-Loosening Faults in Structures Using a Novel Second-Order Output Spectrum Based Method with a Local Tuning Approach**
Li, Guankun  
Hong Kong Polytechnic University
10:40-11:00, Paper WeA6.2

**Kernel Adaptive Filtering Multiple-Model Actuator Fault Diagnostic for Multi-Effectors Aircraft**

Jing, Xing Jian Hong Kong Polytechnic University

10:40-11:00, Paper WeA6.3

**Fault Diagnosis of Chemical Processes Based on a Novel Adaptive Kernel Principal Component Analysis**

Zhu, Peng Air Force Engineering University

Dong, Wenhan Aeronautics Engineering College, Air Force Engineering University

Ma, Xiaoshan Aeronautics Engineering College, Air Force Engineering University

11:00-11:20, Paper WeA6.4

**An Approach to Encrypted Fault Detection of Cyber-Physical Systems**

Martynova, Dina University of Kaiserslautern

Zhang, Ping University of Kaiserslautern

11:20-11:40, Paper WeA6.5

**Vector Dissipativity-Based Distributed Fault Detection for Plantwide Chemical Processes**

Li, Wangyan University of New South Wales

Yan, Yitao University of New South Wales

Bao, Jie The University of New South Wales

10:20-10:40, Paper WeA7.1

**Assignment of Encryption Data Using Fog Computing Technology in Food Manufacturing Industry**

Sano, Tomonori JPT Co., Ltd

Uraguchi, Tomotaka PST Inc

Hiroshi, Deguchi Tokyo Institute of Technology

Kurata, Tadashi PieCake Inc

10:40-11:00, Paper WeA7.2

**Two-Stream Convolutional Neural Networks with Natural Light and Depth Images for Hand Gesture Recognition**

Yan, Meiyang Beijing Institute of Technology

Li, Yuan Beijing Institute of Technology

11:00-11:20, Paper WeA7.3

**Hand-Held 3D Dense Map Construction System Based on Improved ICP Algorithm**

Yu, Lei Soochow University

Fu, Xiaofan Soochow University

Xu, Haonan Soochow University

fei, shumin Southeast University

11:20-11:40, Paper WeA7.4

**An RGBD-SLAM with Bi-Directional PnP Method and Fuzzy Frame Detection Module**

Li, Wenfa Shanghai Jiao Tong University

Li, Dewei Shanghai Jiao Tong University

Xu, Yunwen Shanghai Jiao Tong University

11:40-12:00, Paper WeA7.5

**Spatio-Temporal Broad Learning Networks for Traffic Speed Prediction**

Cui, Ziqiang Zhejiang University

Zhao, Chunhui Zhejiang University

12:00-12:20, Paper WeA7.6

**Design of a Novel Functional Near-Infrared Spectroscopy System for Human Brain Imaging**

Yaqub, Muhammad Atif Pusan National University

Zafar, Arif Pusan National University

Ghafoor, Usman Pusan National University

Hong, Keum-Shik Pusan National University

10:20-10:40, Paper WeB1.1

**Some Developments on Hybrid Systems**

Chair: Toyota, Mitsuru The Institute of Statistical Mathematics

Co-Chair: Lu, Jianquan Southsea University

Organizer: Li, Hai-Tao Shandong Normal University
<table>
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<th>Time</th>
<th>Session/ID</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>14:00-14:20</td>
<td>Paper WeB1.1</td>
<td>Matrix Approach to Reachability of Parallel Interconnected Asynchronous Sequential Machines (I)</td>
<td>Wang, Biao, Feng, June (Shandong University)</td>
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<tr>
<td>14:20-14:40</td>
<td>Paper WeB1.2</td>
<td>The Analysis of Local Convergence of Boolean Networks with State-Based Disturbances (I)</td>
<td>Li, Bowen, Lu, Jianquan, Li, Lulu, Zhong, Je, Lou, Jungang (Southeast University, Hefei University of Technology, City University of Hong Kong)</td>
</tr>
<tr>
<td>14:40-15:00</td>
<td>Paper WeB1.3</td>
<td>MCMC Based Selection Probability Estimation for Probabilistic Boolean Networks (I)</td>
<td>Toyoda, Mitsuru (The Institute of Statistical Mathematics), Wu, Yuhu (Dalian University of Technology)</td>
</tr>
<tr>
<td>15:00-15:20</td>
<td>Paper WeB1.4</td>
<td>Event-Triggered Control for Output Regulation of Boolean Control Networks (I)</td>
<td>Jingyi, He, Liu, Yang (Zhejiang Normal University)</td>
</tr>
<tr>
<td>15:20-15:40</td>
<td>Paper WeB1.5</td>
<td>Consensus of Heterogeneous Multiagent Systems Based on Decentralized Event-Triggered Scheme</td>
<td>Yanna, Shi, Yan, Huacheng, Zhou, Ge, Shao, Changping, Zhang, Hao, Wang, Mengjing (East China University of Science and Technology, Shanghai Electromechanical Engineering Institute)</td>
</tr>
<tr>
<td>15:40-16:00</td>
<td>Paper WeB1.6</td>
<td>A Hybrid Aperiodic Sampled-Data Strategy for Distributed Networked Control System</td>
<td>Bansal, Amitika, Mukhija, Paranj (National Institute of Technology Delhi)</td>
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<td>Neural Network Based Pulley Friction Compensation for Tension Control of a Cable-Driven Parallel Robot</td>
<td>Park, Jae-Hyun, Piao, Jinlong, Kim, Eui-sun, Choi, Eunpyo, Park, Jong-Oh, Kim, Chang-Sei (Chonnam National University)</td>
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<td>Paper WeB3.2</td>
<td>Improved Control Design of Discrete-Time Takagi-Sugeno Fuzzy Systems</td>
<td>Yoneyama, Jun (Aoyama Gakuin University)</td>
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<td>Paper WeB3.3</td>
<td>Relaxing the Control-Gain Assumptions of DSC Design for Nonlinear MIMO Systems</td>
<td>Chen, Ying (Aeronautics Engineering College, Air Force Engineering University), Lv, Maojiong (Delft University of Technology), Bai, Simone (Air Force Engineering University), Liu, Zongchun, Zhang, Wengen, Zhou, Yang (Air Force Engineering University)</td>
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<td>A Unified Analysis Tool in Iterative Learning Control: Composite Energy Function</td>
<td>Sebastian, Gijo (University of Melbourne), Tan, Ying (The University of Melbourne), Oetomo, Denny (University of Melbourne)</td>
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<td>Paper WeB3.5</td>
<td>Force Observer for an Upper Limb Rehabilitation Robotic Device Using Iterative Learning Control</td>
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### WeB4
**Variable-Structure/Sliding-Mode Control (2)**

**Chair:** Yan, Xing-Gang  
**Co-Chair:** Pan, Tianhong  

- **14:00-14:20, Paper WeB4.1**  
  *Satellite Attitude Control and Power Tracking with VSCMGs During Large-Angle and Agile Attitude Maneuvers*  
  Yoshihara, Hiroyuki  
  Takahashi, Masaki  
  Keio University  
  - **14:20-14:40, Paper WeB4.2**  
  *A Novel Super-Twisting Algorithm-Based Direct Power Control Strategy for Doubly Fed Induction Generator*  
  Han, Yaozhen  
  Ma, Ronglin  
  Pan, Weigang  
  Wang, Chanzhun  
  Shandong Jiaotong University  
  - **14:40-15:00, Paper WeB4.3**  
  *Reheat Turbine LFC of Power Systems with Multiple Delays Based on Sliding Mode Techniques*  
  Onyeka, Adrian E.  
  Yan, Xing-Gang  
  Mao, Zehui  
  Zhao, Dongya  
  Jiang, Bin  
  University of Kent  
  Nanjing University of Aeronautics and Astronautics  
  China University of Petroleum  
  NUAA

### WeB5
**Control Applications for Aerospace**

**Chair:** Sato, Kazuya  
**Co-Chair:** Xu, Dabo  

- **14:00-14:20, Paper WeB5.1**  
  *Simple Autonomous Flight Control of a UAV Flying above a UGV Using Onboard Camera Vision*  
  Hidaka, Kenta  
  Sato, Kazuya  
  Saga University
- **14:20-14:40, Paper WeB5.2**  
  *Robust Nonlinear Tracking Control of a 2-DOF Helicopter System*  
  Steinbusch, Aaron  
  Reyhanoglu, Mahmut  
  Eindhoven University of Technology  
  University of North Carolina at Asheville
- **14:40-15:00, Paper WeB5.3**  
  *Robust Nonlinear Output Feedback Control of a 6-DOF Quadrotor UAV*  
  Steinbusch, Aaron  
  Reyhanoglu, Mahmut  
  Eindhoven University of Technology  
  University of North Carolina at Asheville
- **15:00-15:20, Paper WeB5.4**  
  *Event-Triggered Attitude Regulation of Rigid Spacecraft with Uncertain Inertia Matrix*  
  He, Jiafan  
  Su, Youfeng  
  Xu, Dabo  
  Sheng, Andong  
  Nanjing University of Science and Technology  
  Fuzhou University  
  Nanjing University of Science and Technology

### WeB6
**Fault Detection (2)**

**Chair:** Koe, Tial  
**Co-Chair:** Zhao, Chunhui  

- **14:00-14:20, Paper WeB6.1**  
  *Adaptive Fault-Tolerant Control of a Two-Car High-Speed Train Model with Inter-Car Flexible Link and Traction Actuator Failures*  
  Mao, Zehui  
  Nanjing University of Aeronautics and Astronautics
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<td>14:20-14:40</td>
<td>Paper WeB6.2</td>
<td>Process Monitoring under Closed-Loop Control with Performance-Relevant Full Decomposition of Slow Feature Analysis</td>
<td>Tao, Gang, Univ. of Virginia; Jiang, Bin, NUAA; Yan, Xing-Gang, University of Kent; Xue, Yali, Nanjing University of Aeronautics and Astronautics</td>
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<td>Supervisory Fault Tolerant Control for a Class of Semilinear Wave Equations</td>
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<td>Secure State Estimation under Measurement Attacks Using Virtual State in Distributed Observer System</td>
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