

ASAC 2019

Report

IFAC ASEAN School of Advanced Control

From Fundamental Theory to Robust and Networked
Control Technologies towards Smart Cities

January 15-16, 2019

Chulalongkorn University, Bangkok, Thailand

Supported IFAC NMOs: Singapore and Malesia NMOs

Supported in part by

Department of Electrical Engineering, Chulalongkorn University, Thailand

JICA (Japan International Cooperation Agency) AUN/SEED-Net Program

(ASEAN University Network /South East Asia Engineering Education Development Network)

Jointly with

ICA-SYMP 2019 (International Symposium on Instrumentation, Control, Artificial Intelligence, and Robotics) held on January 16-18, 2019, which was organized by Electrical Engineering/Electronics, Computer, telecommunications and Information Technology (ECTI), Thailand

Final Program

January 15 (Tue), 2019

- 8:20 - 8:40 **Opening Session**
8:40 - 9:50 **Lecture T1** (Prof. Shinji Hara)
Introduction to Control Theory and Technology towards Smart Cities (1)
From Classical and Optimal Control to Robust Control
<Coffee break>
- 10:10 - 11:20 **Lecture T2** (Prof. Mi-Ching Tsai)
Robust Control Synthesis with Industrial Applications (1)
Robust Control and H infinity Control Synthesis
- 11:20 - 12:30 **Lecture T3** (Prof. Mi-Ching Tsai)
Robust Control Synthesis with Industrial Applications (2)
Industrial Applications
<Lunch break>
- 14:00 - 15:10 **Lecture T4** (Shinji Hara)
Introduction to Control Theory and Technology towards Smart Cities (2)
From Robust Control to Decentralized Control for Multi-agent Systems
<Coffee break>
- 15:30 - 16:30 **Online lecture T5** (Prof. Su Rong)
Smart City Applications (1)
Distributed Adaptive Urban Traffic Signal Control based on V2X
Information Infrastructure
- 16:30 - 17:30 **Lecture T6** (Prof. Shinji Hara)
Smart City Applications (2)
Global Control for Energy Network Systems
- 18:00 - 20:00 **Reception**

January 16 (Wed), 2019

- 8:40 - 10:10 **Lecture W1** (Prof. Hyungbo Shim)
Networked Control for Multi-agent Systems (1)
Analysis and Synthesis
<Coffee break>
- 10:30 - 12:00 **Lecture W2** (Prof. Itthisek Nilkhamhang)
Networked Control for Multi-agent Systems (2)
Applications to Smart Manufacturing
- 12:00 - 12:30 **Short Presentations** for Poster Papers
<Lunch break>
- 13:50 - 15:30 **Poster Session**
15:45 - 16:00 **Closing Session**

Poster Session Program

- 1 Development of Computer Vision-Based Movement Controlling in Mecanum Wheel Robotic Car MIN YAN NAING, Yangon Technological University, Myanmar
- 2 Aircraft at Height Angles of Attack with Sliding Mode Control Nurhana Binti MOHMAD ROUYAN, Universiti Putra Malaysia, Malaysia
- 3 Design and Implementation Fast Response System Monitoring Server Using Simple Network Management Protocol (SNMP) ISTAS PRATOMO, Institut Teknologi Sepuluh Nopember, Indonesia
- 4 Solving Travelling Salesman Problem by using Hybrid Bees Algorithm Liengheng YANG, Universiti Putra Malaysia, Malaysia
- 5 Visual Odometry for GPS Denied Navigation Tunnels Matthew Rongfa NG, Singapore University of Technology and Design, Singapore
- 6 Real-Time Self-Driving Car Navigation using Deep Neural Network Minh Thien DUONG, Ho Chi Minh City University of Technology and Education, Vietnam
- 7 Experiment on Real-Time Image Processing in the Controlling of Mecanum Wheel Robotic Car AUNG SAN OO, Yangon Technological University, Myanmar
- 8 Real-time Night Time Driver Drowsiness Detection using Deep Neural Network Truong-Dong DO, Ho Chi Minh City University of Technology and Education, Vietnam
- 9 Design and Implementation of Fixed-Wing Unmanned Aerial Vehicle (Mathematical modeling and Stability Analysis) Hteik Tin Cho NYUNT, Yangon Technological University, Myanmar
- 10 Appliance Classification Method Based On K-Nearest Neighbors for Home Energy Management System Thanh-Dat NGUYEN, Ho Chi Minh City University of Technology and Education, Vietnam
- 11 Design and Implementation of Fixed-Wing Unmanned Aerial Vehicle (Autopilot) Thanda WIN, Yangon Technological University, Myanmar
- 12 Immersive Virtual Reality Application of Engine Assembly and Disassembly to enhance learning performance Lai Lai WIN, Universiti Putra Malaysia, Malaysia



Group Photo after the Morning Session of the First Day



Group Photo after the Closing Ceremony of the Second Day
(Invited Speakers, Operating Committee Members, and Poster Session Speakers)

Summary of Participants

5 Invited Speakers

Shinji Hara (Chuo Univ., Japan)

Mi-Ching Tsai (National Cheng Kung Univ., Taiwan)

Hyungbo Shim (Seoul National Univ., Korea)

Itthisek Nilkhamhang (Thammasat Univ., Thailand)

Su Rong (Nanyang Technological Univ., Singapore)

5 Operating Committee Members (all from Thailand)

12 Participants from ASEAN Countries supported by IFAC Foundation

All of them are Poster Session Presenters

(see the Poster Session Program)

37 Participants from Thailand

(pre-registration without support by IFAC Foundation)

Several other people who originally registered to ICA-SYMP2019

Summary of Expense

- **Total amount of expenses: 196,690 THB** (app. = 6,220 USD, 5,470 EUR)

- a. 12 overseas participants (Poster Session presenters): 113,319 THB
airplane tickets: 98,319 THB, accommodation (CU iHouse): 15,000 THB
- b. accommodation (Hotel) for 3 overseas invited lecturers: 29,700 THB
- c. welcome reception, lunch and coffee break: 47,852 THB
- d. others (printing and poster session): 5,819 THB

- **Remarks:**

The total amount of expenses is less than the half of the budget. The reasons are

- (i) The number of the participants supported is the three quarter of the original plan, and the costs of air tickets and accommodations were cheaper than expected.
- (ii) The number of the overseas speakers is also the three quarter of the original plan, because Su Rong gave his lecture by a video.
- (iii) One of the receptions was jointly organized with ICA-SYMP2019, which covered all the costs for the reception.

Evaluation

• Evaluation on the school:

(i) **Number of participants:** We have expected in total 16, two people from each ASEAN countries except Thailand. However, unfortunately, there was no applications from Cambodia, Laos, and Philippines, and hence the total is reduced to twelve. The number of participants from Thailand is 37, which is nearly equal to our expectation. We also had some extra participants, who registered to ICA-SYMP2019. This is one of the benefits of the idea of holding the school with ICA-SYMP2019.

(ii) **Program of the school:** Most of the participants had positive comments for the combination of fundamental part and advanced part for lectures. The poster session was very successful. It was a good occasion for the presenters to have discussions with the invited speakers, which we can expect the improvement of their researches. It also provided a chance of collaborations among them.

• Benefits for future:

(i) **Collaborations in Asia:** This school is start of collaborations among not only ASEAN countries but also all in Asia. More collaborations in Asia through several activities by ACA (Asian Control Association) could be expected.

(ii) **IFAC:** Higher level of control education and research activities, which might yield increase of paper submissions of IFAC2023 in Yokohama, Japan. Thailand recently decided to become a member of IFAC. Note that one of the main reasons for starting the ICA-SYMP is to get the money for paying the membership fee. We may expect that we have more IFAC members from Asia through this kind of events for supporting their activities.

Operating Committee Members

Chair	Shinji Hara (Japan)
Coordinator	David Banjerdpongchai (Thailand)
Secretary	Sungwan Boksuwan (Thailand)
Registration	Napasool Wongvanich (Thailand)
Local Arrangement	Jitkomut Songsiri (Thailand)
Publication	Supachai Vorapojpisut (Thailand)