

# The 34th Chinese Control Conference and SICE Annual Conference 2015 (CCC&SICE 2015)

The 34th Chinese Control Conference and SICE Annual Conference 2015 (CCC&SICE 2015) was held July 28–30, 2015 at the Intercontinental Hangzhou Hotel, Hangzhou, Zhejiang Province, China. As an ancient city of China, Hangzhou has numerous cultural and historical sites to visit. Since ancient times, Hangzhou has had the reputation of being a paradise and is also known as the “land of fish and rice,” “silk house,” and for tea. Registration for the conference was over 2000, including 30 faculty and staff volunteers and over 350 student volunteers from the Hangzhou Dianzi University (HDU).

The CCC&SICE 2015 was sponsored by the Technical Committee on Control Theory (TCCT) of the Chinese Association of Automation and the Society of Instrument and Control Engineers (SICE) of Japan and locally organized by HDU. The conference was also cosponsored by several organizations, both domestic and abroad, including

- » Academy of Mathematics and Systems Science (AMSS) of the Chinese Academy of Sciences (CAS)
- » Asian Control Association (ACA)
- » China Society for Industrial and Applied Mathematics
- » IEEE Control Systems Society (CSS)
- » IEEE Industrial Electronics Society
- » IEEE Robotics and Automation Society
- » Institute of Control, Robotics and Systems (ICROS) of Korea
- » International Society of Automation
- » National Natural Science Foundation of China
- » State Key Lab of Industrial Control Technology
- » Zhejiang University



General Chairman Anke Xue addresses the opening ceremony of the conference.



Hirofumi Akagi delivers his plenary talk “The Cutting Edge of Power Electronics for High-Power Applications.”



Prof. Tzyh-Jong Tarn, who won the second Chen Han-Fu Award, gives an acceptance speech at the opening ceremony of the conference.



P.R. Kumar delivers his plenary talk “Provably Safe Design of Cyber-physical Systems.”

- » Systems Engineering Society of China
- » Zhejiang Provincial Natural Science Foundation, China.

Many distinguished guests from these sponsoring and cosponsoring organizations attended the conference, including Prof. Han-Fu Chen (AMSS), Prof. Lei Guo (AMSS), Prof. Youxian Sun (Zhejiang University),



Youxian Sun gives his plenary talk “Research and Application of Advanced Control Equipment and Systems.”



West Lake is a famous and beautiful lake in Hangzhou, the host city of CCC&SICE 2015.



Satoshi Tadokoro presents his plenary talk "Challenge of Disaster Robotics."



Maria Elena Valcher delivers her plenary talk "Fault Detection Problems for Boolean Control Networks."



Richard M. Murray gives his plenary talk "Feedback and Control in Biological Circuit Design."



Yongchun Xie delivers her plenary talk "Characteristic Modeling Theory and Its Application in Rendezvous and Docking Control."

Prof. Ji-Feng Zhang (TCCT chair), Prof. Satoshi Honda (SICE president), Prof. Anke Xue and Prof. Tielong Shen (general chairs of CCC&SICE 2015), Prof. Maria Elena Valcher (IEEE CSS president), Prof. Sangchul Won (ACA



A poster session in progress.



Ji-Feng Zhang (second from right), chair of the Technical Committee on Control Theory (TCCT), and Guangren Duan (first from left), vice-chair of TCCT, present the TCCT Outstanding Contribution Award to Prof. Han-Fu Chen, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, and Prof. Jie Huang, Chinese University of Hong Kong, China.

president), Prof. Keum-Shik Hong (president of ICROS of Korea), and more than 100 consultants and committee members of the TCCT.

## THE TECHNICAL PROGRAM

This year, 2408 papers were submitted by authors from 28 countries and regions including Australia, Canada, mainland China, Comoros, Ecuador, Finland, France, Germany, Hong

Kong, India, Italy, Japan, Kazakhstan, Korea, Mexico, Norway, Pakistan, Poland, Romania, Russia, Serbia and Montenegro, Singapore, South Africa, Sweden, Taiwan, the United Arab Emirates, Ukraine, the United Kingdom, the United States of America, and Yugoslavia. After a rigorous peer-review process organized by the conference program committee, 1627 papers were accepted and included in





Lei Guo (on left), chair of the Evaluation Committee for the Guan Zhao-Zhi Award, presents the award to representatives of the two winning papers.



Ji-Feng Zhang (center), chair of the Technical Committee on Control Theory, presents the award to representatives of the two winners of the Ninth Poster Paper Award.



Jie Chen (right), City University of Hong Kong, presents the IEEE CSS Beijing Chapter Young Author Prize to Siyu Xie from the Academy of Mathematics and Systems Science, Chinese Academy of Sciences.

the proceedings (IEEE catalog number CFP1540A).

There were seven distinguished plenary speakers and presentations.

- » “Research and Application of Advanced Control Equipments and Systems” by Youxian Sun, Zhejiang University, China
- » “The Cutting Edge of Power Electronics for High-Power Applications” by Hirofumi Akagi, Tokyo Institute of Technology, Japan
- » “Provably Safe Design of Cyber-physical System” by P. R. Kumar, Texas A&M University, United States
- » “Challenge of Disaster Robotics”

by Satoshi Tadokoro, Tohoku University, Japan

- » “Fault Detection Problems for Boolean Control Networks” by Maria Elena Valcher, University of Padova, Italy
- » “Feedback and Control in Biological Circuit Design” by Richard M. Murray, California Institute of Technology, United States
- » “Characteristic Modeling Theory and Its Application in Rendezvous and Docking Control” by Yongchun Xie, Beijing Institute of Control Engineering, China Academy of Space Technology.

These plenary sessions were chaired, respectively, by Guangre Duan, Daizhan Cheng, Lei Guo, Min Choel Lee, Masayuki Fujita, Lihua Xie, and Qianchuan Zhao.

In addition to these plenary speeches, there were 187 oral sessions, including 55 oral sessions of SICE, arranged in 30 parallel tracks, so that a total of 1134 papers were presented in oral session papers. There were also five poster sessions. The conference languages were Chinese and English. Papers in English sessions were presented in English, and papers in other sessions could be presented in either English or Chinese.

## AWARDS

To recognize and honor scholars who have made outstanding contributions to the field of control and systems sciences, to inspire and stimulate innovative and original research, and to advance control and systems sciences in China, the TCCT established the Chen Han-Fu Award in early 2014. At the opening ceremony of CCC&SICE 2015, Prof. Lei Guo, chair of the Evaluation Committee of Chen Han-Fu Award, announced that the winner was Prof. Tzyh-Jong Tarn, for significant contributions to robot control and quantum control. Prof. Daizhan Cheng from AMSS made a brief introduction to Prof. Tarn’s work, and then Prof. Tarn gave an acceptance speech, in which





Ji-Feng Zhang (on left), chair of the Technical Committee on Control Theory, Anke Xue (second from left), general chair of the conference, Tielong Shen (on right), Sophia University, Japan, and Satoshi Honda (second from right), SICE president, present the Outstanding Volunteers Award to student volunteers from Hangzhou Dianzi University, China.

he extended his appreciation to the Evaluation Committee.

At the closing ceremony, the following awards from the conference were presented: the Third TCCT Outstanding Contribution Award, the 21st Guan Zhao-Zhi Award, the Ninth Poster Paper Award, the IEEE CSS Beijing Chapter Young-Author Prize, and the Outstanding Volunteers Award. The winners of the Third TCCT Outstanding Contribution Award were Han-Fu Chen, AMSS, and Jie Huang, Chinese University of Hong Kong. The winning papers for the 21st Guan Zhao-Zhi Award were "Stability Conditions and Phase Transition for Kalman Filtering over Markovian Channels," by Junfeng Wu, Guodong Shi, Brian D.O. Anderson, and Karl Henrik Johansson, and "A Unified Framework for Fault Tolerant Quantum Filtering



Student volunteers in yellow provide thoughtful service throughout the conference.

and Fault Detection," by Qing Gao, Daoyi Dong, and Ian Petersen. The honorable mention for the 21st Guan

Zhao-Zhi Award was "Generalized Formation Control for Unicycles" by Yi Dong and Xiaoming Hu.



Members of the Technical Committee on Control Theory after their meeting during CCC&SICE 2015.



Welcome to CCC 2016 in Chengdu.

Two papers received the Ninth Poster Paper Award: "Integration of Gradient Adaptation and Quadratic Approximation in Real-Time Optimization," by Weihua Gao, Simon Wenzel, and Sebastian Engell, and "Twisting Sliding Mode Control of An Electrostatic MEMS Micromirror for A Laser Scanning System," by Hui Chen, Zhendong Sun, Weijie Sun, and John T.W. Yeow. The winner for the IEEE CSS Beijing Chapter Young-Author Prize was Siyu Xie from AMSS, for the paper "Stability of Distributed LMS Under Cooperative Stochastic Excitation," coauthored by Lei Guo. Twenty-eight students from Hangzhou Dianzi University were evaluated as the Outstanding Volunteers.

## PANEL DISCUSSIONS

Jie Huang from the Chinese University of Hong Kong and Jie Chen from the Beijing Institute of Technology organized two panel discussions at the conference. Panelists for "All About Systems and Control" were Zongli Lin from the University of Virginia, United States, Xiaohua Xia from the University of Pretoria, South Africa, Lihua Xie from the Nanyang Technological University, Singapore, and Ji-Feng Zhang from the AMSS. The panel session "Robot and Cybernetics" included Philip Chen from the University of Macau, China, Jun Wang from the Chinese University of Hong Kong, China, Max Q.-H. Meng from the Chinese University of Hong Kong, China, and Qiang Huang from the Beijing Institute of Technology, China, as panelists. Panelists discussed the problems encountered in the practice of robotics and control theory and the future development of this area. The panel discussions were enthusiastically greeted by the audience who appeared to appreciate the face-to-face discussion format.

## PRECONFERENCE WORKSHOPS

Two preconference workshops, organized by Shaoyuan Li, Shanghai Jiao Tong University, China, and Dongliang Peng, Hangzhou Dianzi University, China, and cosponsored by State Key Lab of Industrial Control Technology, Zhejiang University, China, were held at the New Building of the Department of Control, Yuquan Campus, Zhejiang University. The workshop "Event-Based State Estimation and Sensor Scheduling: A Stochastic Perspective" featured three speakers:

- » Tongwen Chen, University of Alberta, Canada
- » Ling Shi, Hong Kong University of Science and Technology, China
- » Dawei Shi, Beijing Institute of Technology, China.

The workshop "Robust Model Predictive Control (MPC) and Distributed MPC for Networked Dynamic Systems" also had three speakers:

- » Yang Shi, University of Victoria, Canada
- » Huiping Li, Northwestern Polytechnical University
- » Xiaotao Liu, University of Alberta, Canada.

## CONCLUDING REMARKS AND INVITATION TO CCC 2016

The members of the conference committees, authors, and individuals contributed to the success of the conference in many ways. The Program Committee of over 400 members undertook the task of reviewing papers, compiling the final program, and editing the book of abstracts and proceedings. Eight program regional chairs were responsible for promoting the conference within their respective regions and for organizing invited sessions. These chairs are

- » Tongwen Chen, University of Alberta, Canada
- » Shuzhi Sam Ge, National University of Singapore, ASEAN
- » Xiaoming Hu, KTH, Sweden
- » Zidong Wang, Brunel University, United Kingdom
- » Xiaolan Xie, ENSM.SE, France
- » Xinghuo Yu, RMIT University, Australia
- » Wei Ren, University of California, Riverside, United States
- » and Daniel Ho, City University of Hong Kong, Hong Kong.

Moreover, the organizing committee successfully completed the daunting task of local arrangements. There were over 350 student volunteers in yellow shirts serving throughout the conference, and their smiles and considerate service provided a pleasant experience for all attendees and helped the conference run smoothly.

At the closing ceremony of CCC&SICE 2015, General Chair Tielong Shen gave a detailed summary of the conference and expressed the most sincere thanks to the units and individuals that contributed to the conference. Then Kemin Zhou, the general chair of CCC 2016, reported on the progress of the preparation work for CCC 2016 and extended a warm invitation to colleagues to participate in the coming conference.

The next CCC will be held on July 28–30, 2016 in Chengdu, the first Asian city that won a UNESCO City of Gastronomy accolade. More information on CCC 2016 is available on the conference website: <http://ccc2016.swjtu.edu.cn/>. We look forward to seeing you in Chengdu next July!

**Qianchuan Zhao**

*Program Chair, CCC&SICE 2015*

**Yanlong Zhao**

*General Secretary, TCCT and CCC&SICE 2015*

**Ying Qu**

*Secretary, TCCT and CCC&SICE 2015 Secretariat*