



Asian Control Association

Bucheon Techno Park 401-1506, 193 Yakdae-dong, Wonmi-gu, Bucheon, Gyeonggi-do 420-734, Korea
Tel: +82-32-234-5805, Fax: +82-32-234-5807, <http://www.asia-control.org>, E-mail: aca@asia-control.org

Newsletter

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Message from the President

President of 2012-2013

I felt truly honored to serve as President of Asian Control Association (ACA), a great organization dedicated to promoting various activities on control science and technology in Asia, for years 2012-2013. As the 4th President, I would like to express my utmost appreciation to all three former Presidents, Prof. Kimura, Prof. Kwon, and Prof. Xi, for their devotion and great leadership as well as all past Steering Committee members for their strong support to establish a solid foundation of ACA.

Besides the above-mentioned mission, ACA has so far also served as a platform for control societies and individuals in Asia Pacific to collaborate or to exchange information in various control aspects. When such service's ultimate goal is attained, ACA can actually have members from East Asia (Japan, Korea, China, Taiwan, etc.), South East Asia (Singapore, Thailand, Malaysia, Indonesia, Vietnam, Philippines, etc.), South Asia (India, Pakistan, etc.), West Asia (Turkey, Iran, Iraq, etc.), and Oceania (Australia, etc.). With giant coverage of possible members in the globe, ACA can surely play a more active role in serving more countries and regions belonging to its membership area. Given this thought, we believe intensive promotion of this association among various control communities of our members through newsletter, website, technical activities, etc. will be crucial. Once ACA is recognized world-wide and is with more and more members, we then need to further strengthen our function serving as a platform and open it to all our members. As long as our technical help and support can be accessed by them from this association, all the local control activities from our members will likely request for our technical sponsorship. Until then, I am sure ACA will truly become a control body that may fully represent all the control societies from all our members, and will be more strongly needed by them all.

Looking around the world, there are a number of control bodies also serving as platforms for various groups of control societies, respectively, such as IFAC, EUCA, IEEE CSS and ASME DSC. Although the nature of ACA may not be exactly the same as those control bodies, its influence to its members can be just as great as any of them. To reach that stage, we believe ACA still holds room for improvements in order to let those control bodies to recognize it. Once being recognized, our association may like to seek joint efforts to publish technical materials with other platforms or even hold joint technical activities so that all parties can benefit from the collaboration.

Last but not least, to fulfill our ambitious dream, I hereby heartily invite leaders of various control institutions as well as individual from our membership area to join ACA or to collaborate more actively with it. I am sure that your involvement and dedication will truly be a source of growing power to ACA.

Li-chen Fu
President of ACA
National Taiwan University

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Message from the Vice President for Publication

by Prof. Lee Tong Heng



In this next stage of ACA development, the ACA VP (Publication) position will actively work closely with important key Control Systems conferences in the Asia Region to generate exciting Special Issues in the Asian Journal of Control (AJC) that will showcase the great advances in Asian-related Control Systems publications. Furthermore, in the past years, the Asian Journal of Control has been very successfully developed as a very strong partner of ACA, and this close partnership will continue and be further developed to promote even greater growth in Asian-related Control Systems contributions and achievements. Where possible, additional new partnerships with other high-impact publications with mutually beneficial interests will also be explored and developed.

Message from the Vice President for Education

by Prof. Li Shaoyuan



The Asian Control Association (ACA) has made great contributions to the development of Control and Automation in Asia through organizing various activities such as ASCC, providing a platform for control scholars in Asian countries to communicate new thoughts and promote further development of scientific work. And the Newsletter works well as a bridge of sharing visions as well as the latest information. Hopefully, under the new leadership of ACA, further cooperation on issues of common concern can be carried out. For instance, Optimal Control for Large Scale Complex Engineering Network System has been highlighted, which can be exhibited in Smart Grid, Intelligent Transportation, and Smart City, etc.

I feel honored to serve as the Vice President for Education. As is known, communication and collaboration are key to promoting the overall development of Control Science in Asia. And organizing diversified educational activities in related areas is indispensable in advancing the exchange of ideas and sharing of new technology, beneficial for the development of control theory and its application. Besides, a human network sets the fundamental basis for cultivating friendly collaborations. Hence, it's essential to bring together professors and other colleagues involved in scientific research and education from Asian Control academia so as to brainstorm such activities catering to the need of social development and in accordance with the world trend.

I believe, with the collaborative efforts of EB and SC members, and all ACA people, as well as other colleagues in Asian Control world, Control Science will harvest greater achievements, and thus better benefits the all-round development of the society.

Message from the Vice President for Membership

by Prof. Uchida, Kenko



In "Towards Solving Important Social Issues by System-building Through Systems Science and Technology"(CRDS-FY2010-SP-04, <http://crds.jst.go.jp>), it is stated that enjoying the benefits of science and technology through a variety of systems is a characteristic of the present "age of systems."

The benefits of science and technology that we enjoy are provided by purposeful functions of systems and, on the other hand, most of social issues that we face today result from unexpected functions of complicated systems. For good and bad, we are actually in the age of systems. Functions of systems are realized by controls, and the current social issues must be caused by failure of control and/or from lack of control. We could say also that we are in a new age of system control. We face a lot of new control problems for solving several issues of modern society; examples are found in building social and environmental systems for coexistence of human and nature, energy demand and supply systems containing renewable energy, and human support systems for welfare, healthcare and medicine. Such control problems are different from the traditional ones in producing mechanical and/or electrical elements and realizing high performances of the elements, and may require new methodologies and tools of control to integrate a large number of system elements of different quality, including human, into intelligent networked systems.

These provide the control community, especially the Asian control community experiencing currently emerging economics and social developments, challenges and opportunities to increase its role not only in the world's scientific area but also in building sustainable welfare-societies. In the space development project in 1960s, control science and technology drew greatly social attentions and expectations and made a great advance. If we call that space development age the first golden wave of control, we encounter today the second golden wave of control.

ACA will provide a worldwide platform for control community to solve the control problems of society and make great progress on the second golden wave, by promoting initiatives, especially two initiatives in stirring the Asian Control Conference and in publishing Asian Journal Control, aiming at exchanging new ideas and application experiences and at coordinating research relations.

Professor Bambang Riyanto Trilaksono



Professor Bambang Riyanto Trilaksono was born in Bangyuwangi, Indonesia, on November 15, 1962. He received his engineering degree in Electrical Engineering from Bandung Institute of Technology, Indonesia in 1986. He received master and doctorate degree from Waseda University, Japan in 1991 and 1994 respectively. Now, he is Professor at Department of Electrical Engineering, Bandung Institute of Technology, Indonesia. He is a well known researcher in control engineering in Indonesia as well as in interational control engineering society. His research interests include robust control, intelligent control and intelligent systems, discrete event systems, control applications, telerobotics, embedded control systems and robotics.

Professor Ian R. Petersen



Ian R. Petersen was born in Victoria, Australia. He received his Ph.D. in Electrical Engineering in 1984 from the University of Rochester. From 1983 to 1985 he was a Postdoctoral Fellow at the Australian National University. In 1985 he joined the University of New SouthWales at the Australian Defence Force Academy where he is currently a Professor and an Australian Research Council Federation Fellow in the School of Information Technology and Electrical Engineering. He has served as an Associate Editor for the IEEE Transactions on Automatic Control, Systems and Control Letters, Automatica, and SIAMJournal on Control and Optimization. Currently he is an Editor for Automatica. He is a fellow of the IEEE. His main research interests are in robust control theory, quantum control theory and stochastic control theory.

Professor Li Qiu



He was born in the city of Changsha (the capital of Hunan province) in the People's Republic of China. He received his Bachelor's degree from Hunan University in 1981 and his Masters and Ph.D. from the University of Toronto in 1987 and 1990 respectively.

Since 1990, Dr. Li Qiu has held research and teaching positions at the University of Toronto, the Canadian Space Agency, the University of Waterloo, the Fields Institute for Research in Mathematical Sciences, and the University of Minnesota. He joined the Hong Kong University of Science and Technology in 1993 and has also held visiting positions at Zhejiang University, Australian Defense Force Academy, and Harbin Institute of Technology. He is currently a professor in the Department of Electronic and Computer Engineering, at the Hong Kong University of Science and Technology.

Dr. Li Qiu is a fellow of IEEE and a fellow of IFAC. He is a member of the IEEE Control Systems Society Board of Governors. He served as a distinguished lecturer of the IEEE Control Systems Society from 2007 to 2009 and the general chair of the 7th Asian Control Conference which was held in Hong Kong in August 2009. He has served as an associate editor of the publications IEEE Transactions on Automatic Control and Automatica. He is now a member of the editorial board of International Journal of Control.

Professor Manop Wongsaisuan



Professor Manop Wongsaisuan received his B.Eng. from Chulalongkorn University in 1988, his M.Eng. and D.Eng. from Tokyo Institute of Technology in 1991 and 1995, respectively. From 1994 to 1995, he served as Research Associate in Department of Control Engineering, Tokyo Institute of Technology. Since 1995, he has been with Department of Electrical Engineering, Chulalongkorn University where he is currently Assistant Professor. His research interests include Robust Control, Robotics and Computer Application in Control Engineering.

Doctor Ying Tan



Dr. Ying Tan received her B. Eng in Electrical Engineering, Department of Power System and Automation from Tianjin University, P. R. China in 1995, and her M. Eng in Systems Engineering, Institute of Systems Engineering from Tianjin University, P. R. China in 1998. She then received her PhD in Electrical Engineering, Department of Electrical and Computer Engineering from National University of Singapore, Singapore in 2002. Since 2004, she has been with Department of Electrical and Electronic Engineering at the University of Melbourne, Australia. She is now an ARC Future Fellow (2009-2013). Her research interests include intelligent control systems and applications, and nonlinear control systems and applications.

Robotics Research Laboratory in KAIST



Prof. Myung Jin Chung

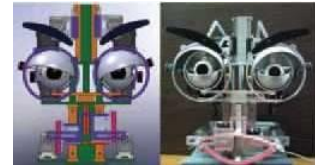
Dept. of Electrical Engineering, KAIST, Korea
<http://cheonji.kaist.ac.kr/main.htm>

Robotics Research Laboratory was founded to solve the problems in the area of control systems and robotics in 1985.

In control research area, robust control such as VSC and H-infinity for accommodating system uncertainty and time-delay has been studied in conjunction with optical disc drives and robot systems. Also, iterative learning control based frequency domain was studied. In robotics research area, planning and control of redundant manipulators, real-time programming systems, and sensor fusion have been studied. Currently, we put emphasis on developing various algorithms for human-robot interaction which is applied to social and assistive robot systems. Also, using vision-based sensor fusion, 3D world modeling and localization algorithms are developed for autonomous robots as well as a driver assistance system.

Let us introduce our current on-going projects. Studies for a robot with integrated emotion generation and expression have been carried out to increase the effectiveness of social and emotional interaction between human and a robot. For emotion generation, energy, entropy, and homeostasis are considered. For emotion expression, a new face robot hardware has been developed with auto body gesture.

A newly developed facial robot



Semantic Mapping of KAIST campus

The environment perception is a fundamental capability for many applications in robotics. Our mobile platform equips with multiple sensors for 3D outdoor world modeling. The data from GPS and IMU on the platform are fused to provide vehicle pose on the ground. The laterally installed LRFs (Laser Range Finder) on each side of the vehicle give environmental information. The data from the LRFs are fused with cameras in order to make colored LRF points. With these multiple sensors, we have successfully built spatio-temporal integrated 3D world models of outdoor environments.

Recently a research on extracting semantic knowledge in urban environments is ongoing in order to execute high-level tasks for an autonomous vehicle. This research investigates the design of a system and algorithms for recognizing urban objects based on 3D point clouds collected by our mobile platform.

From 1985 to 2012, 99 Masters and 34 Ph.Ds have been produced from this lab. Most of them are working in various research labs and universities. Currently, 10 Ph.D. students and 4 Master students are actively involved in the research area of robotics and control.

Key Achievements

- [1] D.S. Yoo, M.J. Chung, "A Variable Structure Control with Simple Adaptation Laws for Upper Bounds on the Norm of the Uncertainties," IEEE Transactions on Automatic Control, Vol. 37, No. 6, pp. 860-864, 1992.
- [2] H.H. Choi, M.J. Chung, "An LMI Approach to H-infinity Controller Design for Linear Time-Delay Systems," Automatica, Vol. 33, No. 4, pp. 737 - 739, 1997.
- [3] J.S. Park, M.J. Chung, "Path Planning with Uncalibrated Stereo Rig for Image-Based Visual Servoing Under Large Pose Discrepancy," IEEE Transactions on Robotics and Automation, Vol. 19, No. 2, pp. 250 - 258, 2003.
- [4] D.H. Yoo, M.J. Chung, "A Novel Non-intrusive Eye Gaze Estimation System using Cross-ratio under Large Head Motion," Computer Vision and Image Understanding, Vol. 98, No. 1, pp. 25 - 51, 2005.
- [5] H.S. Lee, J.W. Park, M.J. Chung, "A Linear Affect-Expression Space Model and Control Points for a Mascot-Type Facial Robot," IEEE Transactions on Robotics, Vol. 23, No. 5, pp. 863 - 873, 2007.

Computational Intelligence and Industrial Application Laboratory



Prof. Wei Wang

School of Control Sciences and Engineering, Dalian University of Technology, China

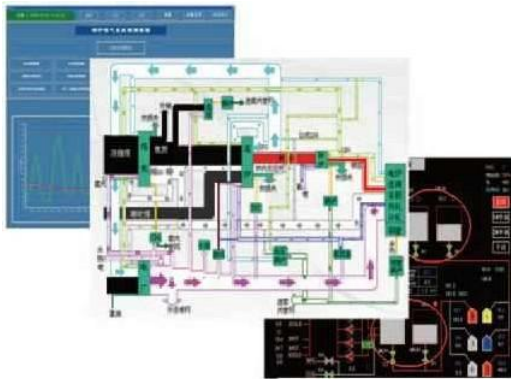
The Computational Intelligence and Industrial Application Laboratory (CHIAL) led by Professor Wei Wang, in the school of Control Sciences and Engineering at Dalian University of Technology has been working on various research topics including complex industrial system modeling, production planning and scheduling, industrial data mining, pattern recognition, etc.

Our interests of research include

- Intelligent optimization
- Data-driven based system modeling
- Industrial system simulation

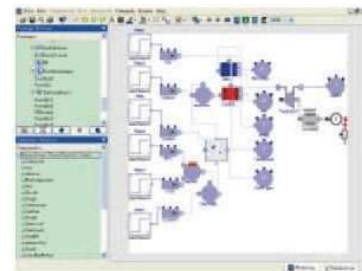


The Intelligent Optimization Group is mainly conducting research on industrial production planning and scheduling. Through modeling the scheduling problem, this group focuses on a series of application-oriented intelligent algorithms based on evolutionary computing and swarm intelligence. For the running efficiency of our developed industrial software, the parallel processing based on GPU architecture is also the concentration of our group. Since 2005, this group had worked on some government-supported projects and published a number of research papers in some international journals; and had developed the Hot Rolling Production Scheduling System and the Integrated Production Planning and Scheduling System for Cold Rolling, which had been successfully applied to the rolling plant in Baosteel Co. Ltd, China.



The main focus of the Data-driven Modeling Group aims at studying the energy balance and scheduling in industry by data processing and data-based modeling methodologies, such as NN-based method, Granular Computing, etc. Since 2008, this group had been completing several National High-Tech R&D Programs and National Natural Sciences Foundation of China; and had published on a number of well-known international journals, such as IEEE TCST, IEEE TNNLS, Control Engineering Practice, Neurocomputing, etc. In industrial application perspective, the developed Energy Prediction and Scheduling System software presents multi-scale real-time prediction and scheduling solution, which had been successfully applied to several steel plants of China, including Baosteel, Hebei Iron& Steel Group, Ma'anshan Steel, etc.

The Industrial System Simulation Group pays special attention to the construction of simulation platforms of the industrial production equipments, especially for metallurgical industry. Based on the physical, chemical and energy principles, we have established the simulation platforms for CCPP plant, generic power plant, boiler, blast furnace, coke oven, air separator, etc, which enable to simulate the real industrial production practice and complete the integration of control strategy and scheduling solution.



Intelligent System Control Integration (ISCI) Lab



Professor Kai-Tai Song

Institute of Electrical Control Engineering
National Chiao Tung University, Hsinchu Taiwan

Intelligent System Control Integration (ISCI) Lab led by Professor Kai-Tai Song was established on 1991 in the Institute of Electrical Control Engineering, National Chiao Tung University, Hsinchu Taiwan. ISCI Lab has been working on various areas in control engineering, including robotic control systems, robotic vision, visual tracking control systems, sensor and sensing technologies, image processing, emotional robotic systems and compliance control systems.



The research team of Prof. Kai-Tai Song has developed several prototype of domestic and service robots and won many honors in national and international robotics competitions. The home assistant robot ROLA (Robot of Living Aid), was designed to handle certain emergency conditions in a home setting to help the elderly through multi-modal sensing and control functions. This robot has won the second prize award in 2007 TECO Technology Innovation Contest on Robotics. With the implemented functions include visual tracking, video transmission, location aware, navigation, body pose recognition and emergency call out, ROLA can accommodate smoothly to the movement of a user through face tracking and performs robot-assisted video conferencing. With a tri-axial accelerometer and a ZigBee module mounted on the waist of the elderly, ROLA can help the elderly as he/she falls down and provides timely help through automatic call out and wireless video transmission. This nursing technology of ROLA has obtained a patent in US and Taiwan.

Up.bot, (Ubiquitous Patrol robot) is a prototype home security robot. Up.bot integrates wireless sensor network (WSN) to form a reliable intruder detection system. The network can be constructed easily by placing multiple ZigBee wireless sensor modules over the environment. If any intruder or abnormal conditions are detected, the status and location of this alert will be transmitted to the monitoring center and the robot via the WSN. By the localization system, the robot can autonomously navigate to where the alerts take place and transmit images to mobile devices via both WiFi and 3G networks. The security guards as well as users can therefore easily determine the exact situation in real time. The Smart Guard Robot of ISCI Lab won the Championship Award of 2008 SKS Intelligent Robot Innovation Contest in Taiwan.



In order for a robot to provide human-centric service, ISCI Lab has developed Aladdin: an on-demand robot. Aladdin features a dual-arm and omni-directional mobile robot. With equipped ZigBee-based location-aware system and human face and body detection system, it can estimate the position of the user who needs assistance and travel toward the user in a timely manner. Furthermore, a vision-based grasping behavior is provided to locate and grasp an interested object. Using both the image and depth information acquired from a Kinect camera, the robot can recognize and locate the target object and construct a 3D potential field for motion planning. The developed algorithm can thus smoothly guide the robot arm to grasp the object while avoiding any observable and predictable collision beforehand. Aladdin: an on-demand robot won the third prize award in 2011 National Intelligent Robot Innovation Contest.



AJC Report of 2011

We are joyful to report that in the last year, the submissions, circulations, average review turnaround time, and international visibility of Asian Journal of Control have advanced steadily. Also, the 2011 Impact Factor of our journal has grown to 1.034 and the ranking is 27 out of 58 in the category Automation & Control Systems. The Asian Journal of Control has gone through several changes in 2011 based on the suggestions we received in the Editorial Board meeting in September, 2011. In the following report, we will present you the updates of these changes and progresses of Asian Journal of Control.

Last year, we restructured the Editorial Board by adding one more level above Editors, namely Editors-at-Large, and invited more Associate Editors to join the Editorial Board, so that the current Board consists of one Honorary Editor-in-Chief, one Editor-in-Chief, two Advisory Editors, fifteen Editors-at-Large, five Editors, and thirty two Associate Editors. We also recruited two editorial assistants to help invite authors of high-quality international conferences papers to submit their further research results as a journal paper to AJC, and we have received more than 100 positive responses so far, indicating that the reputation of our journal is well recognized.

In the previous years, due to limit of page budget, the unpleasant backlog problem bothers us. Last year, the publisher John Wiley & Sons agreed to move up the page budget from November, 2011 to the end of 2012. With the help from John Wiley & Sons, the just mentioned backlog problem up to the end of 2012 has considerably been alleviated. Meanwhile, we keep publishing early view papers online at our Early View Center, presenting more than 135 papers online, which also helps in relieving the backlog problem resulted before the page budget was increased.

([http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1934-6093/earlyview](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1934-6093/earlyview))

In May, 2011, we held a Best Paper Award and elected Prof. Roel Merry's paper to be the best paper over years 2009~2010 (<http://www.ajc.org.tw/pages/nominationmain.htm>). Despite the Best Paper Award, we invite our AEs to single out nine Outstanding Reviewers of 2011, to whom we provide the certification to appreciate them providing solid review comments for AJC (<http://www.ajc.org.tw/pages/outstandingmain.htm>).

Furthermore, we published two special issues: "Iterative Learning Control" and "Analysis and Control of Biological Networks" in January, 2011 and September, 2011, respectively. We also launched two special issues in 2011: "Advances in Fractional Order Control and Estimation" and "Advances in Active Control of Sound and Vibration." The deadline of the first one is already over, and we have received higher than 30 papers submitted to "Advances in Fractional Order Control and Estimation", which shows the popularity of the theme. In the future, we will keep encouraging our editorial board members and respectable scholars to propose more popular and interesting special issues.

Because of the above-mentioned advances, AJC has received 480 submissions in 2011, which are 100 more than the highest one over the previous three years. Besides, the regional distribution of submissions becomes diversified: we have 123 submissions (25.6% of 480) from regions other than Asian countries, which is higher than the percentage of 19.6% in 2010, showing that the journal is becoming a more internationally recognized journal. In 2012, we are focusing on increasing the efficiency of review process and the quality of the accepted papers.

Steering Committee Meeting of ACA

Date : March 25, 9:30 - 12:00

Place : Pulau Springs, Johor Bahru, Malaysia

Participants: D. Banjerdpongchai, X.R. Cao, H.S. Cho, L.C. Fu, W. H. Kwon, M. Khalid, A. Sano, K.T. Song, Kok K. Tan (T. H. Lee), H. Tjokonegoro, S.C. Won, Yugeng Xi, Ji-Feng Zhang, (E. Shimemura),(Tatsuo Kitajima), Jinhu Lu(Okay Kaynak), Seul Jung (14,(17))

Apology : M. J. Chung, N. Dung, H. Kimura, I. Mareels, M. Sampei, M. Shaikh, K. Uchida ,W. Wang, L. Vlacic, (K. S. Hong) (10, (11))



1. Terms of SC members

- President Xi brought the proposal for the SC of the term 2012-2013 based on the discussion with AC members and some SC members.
- According to the number of the terms for VPs and SC members, President Xi suggested that two VPs and around 1/3 SC members would be replaced this time.
- President Xi asked SC members to change the bylaws and it has been approved by SC

2. SC Committee Affairs

- Election of New President, Vice president
- Pro. Fu was elected as the new president of ACA and Prof. Won as the President-elect
- Prof. Marzuki Khalid (Malaysia) and Prof. Shaoyuan Li was elected as the new VPs.

3. ASCC 2013

Prof. Junliu reported a plan of ASCC 2013.

4. ASCC 2015

Prof. Marzuki Khalid reported a plan of ASCC 2015.

5. Next SC meeting date and place

The next SC meeting will be held in Turkey, 2013.



The Minutes of Controlling Forum, March 25, Johor Bahru, Malaysia

Date : March 25, 9:30 - 12:00

Place : Pulau Springs, Johor Bahru, Malaysia

Participants: D. Banjerdpongchai, X.R. Cao, H.S. Cho, L.C. Fu, W. H. Kwon, M. Khalid, A. Sano, K.T. Song, Kok K. Tan (T. H. Lee), H. Tjokonegoro, S.C. Won, Yugeng Xi, Ji-Feng Zhang, (E. Shimemura),(Tatsuo Kitajima), Jinhu Lu (Okay Kaynak), Seul Jung (14, (17))

Apology: M. J. Chung, N. Dung, H. Kimura, I. Mareels, M. Sampei, M. Shaikh, K. Uchida ,W. Wang, L. Vlacic, (K. S. Hong) (10,(11))

• Summary of Prof. Song's Talk - Fun and Technology in Making Smart Robots

An autonomous robot is basically an intelligent machine that can understand its own state as well as the external environment such that it can take smart actions based on

the acquired information. Control is a key technology for smart interaction of a robot with the external world. Feedback control is the basic and most important concept

in the study of intelligent robots. However, robotic technologies such as electrical drives, motion control, sensor perception and computer programming should be learned through practical exercises. In the product side, various robotic systems will come into existence and emerging into our daily life. With increasing number of aging people, taking care of the elderly will become more and more important for future society, especially for the elderly living alone. We have developed an autonomous mobile robot ROLA (Robot of Living Aid), which can handle several emergency conditions in a home setting to help the elderly through multi-modal sensing and control behaviors. Especially, the healthcare robot ROLA can help the elderly as he/she falls down carelessly at home. This abnormal situation can be detected with a 3-axis accelerometer mounted on the waist of the elderly. The robot will approach to the elderly by the help of a location aware system and provides timely help through automatic call out and wireless video transmission. Also, to prevent accidental fall of the elderly, a walk assist robot (Walbot) estimates motion intention of the user through measurement of motor current and rotational speed. The compliant control of the robot provides useful assistance to the motion of the elderly at home. A call-to-service system integrated with the robot further enhances the usability of the smart machine.

• Summary of Prof. Banjerdpongchai's Talk - Senior Projects on Robust Control Design with Application to Flexible Link

This talk aims to share our experience of the senior projects on robust control design with application to flexible link. In control system curriculum, we emphasize the importance of fundamental concepts and tools on systems and controls such as stability, performance, robustness, and optimization. However, there appears to have many obstacles for students to appreciate these ideas. One of the major hindrances is a lack of practical opportunities on the robust control design and experiment. Thus, we propose a series of senior projects which aim to reduce a gap between what they know from textbooks and what they learn from real experiments. These senior projects are designed around theoretical and experiment framework of position control of flexible link. In this talk, we will present two design approaches which are applied to flexible link system: (1) Loop shaping design of robust control and (2) Convex optimization design of robust iterative learning control. The common objective for the flexible link is to track the desired reference angle under the parameter variation such as the change of load mass. We conduct computer simulation of the robust control algorithm with a flexible link model and then implement on a real flexible link system. The experiment results are quite close to the simulation results. As a result, these hand-on projects extend students' learning curve and deepen their understanding. Moreover, these robust control projects would be a means to attract interest of new generation of students to continue research in control engineering.





• **Summary of Prof. Shimemura's Talk - Learning a Historical Background Helps the Students to Deepen an Understanding**

The undergraduate students in the first course of control engineering face a lot of concepts, definitions and methods one after another. Most of them are in an abstract form using the mathematical words. Sometime they have not yet enough level of mathematics to understand them rigorously. Some students may feel the study of control engineering only dry and dull. What are needed to save the students from this unhappy situation? In this talk a teaching practice is introduced, which leads them to relive the process of development by a prominent ancestor in the history. By this method they experience a way of abstraction starting from a simple fact to a higher level of concept, or a way of generalization starting from a simple structure to a high level of formulation. This method of inductive teaching has been proven to be effective from the long experience of teaching an undergraduate control engineering course.

• **Summary of Prof. Khalid's Talk - Teaching Control in Undergraduate Programs: Dilemmas and Issues**

Often, the subjects of control systems have been a major problem among undergraduate programs in many universities. Undergraduates seem to shy away from taking control systems as their major due to the subject being too mathematical, abstract and difficult to relate theory to real world applications. Students would rather major in other areas where they can visualize their applications in the real world. Three major undergraduate programs: electrical, mechanical and chemical engineering do offer the subject of control systems in the upper years of their programs. However, we do find many students struggle to understand the theory of control and many have difficulty to relate the mathematical theories to practice. Perhaps one major problem is due to the lack of good laboratory equipment and guidance to show these principles in class as many of the real systems are too large and bulky to be shown in real-time. Further, the laboratories cannot cater for too many students especially undergraduates to be brought in to observe the relation of theory into practice. These dilemmas and issues to make the subject more acceptable to undergraduates are discussed.

• **Summary of Prof. Jung's Talk - Mechatronics Approach to Tackle Engineering Problems**

The terminology, Mechatronics, has been about 40 years old now. Mechatronics was initiated from industrial fields by the necessity of developing a new area that fuses major Engineering technologies such as mechanics, electronics, and computer. In the industrial fields, experience-based learning or hands-on technologies can be one of the most useful techniques for integrating and understanding complex systems. As technologies develop further, industries have to deal with more complicated engineering problems that can be solved by the integration of various technologies. This trend leads to develop a Mechatronics approach to solve Engineering problems in not only industries but also Universities. In this talk, I would like to share some experiences in Mechatronics research and education. Firstly, Mechatronics curriculum and activities in our department are introduced for a general view on Mechatronics as a new academia. Secondly, the question about "What is the Mechatronics approach to tackle Engineering problems." Thirdly, practical experiences are provided to deliver how the Mechatronics approach was used to solve engineering problems. Finally, various practical systems are presented and demonstrated to prove the above questions.

ASCC 2013

Dear Colleague,

This is to inform you that the 9th Asian Control Conference (ASCC 2013) will be held in Istanbul, Turkey during June 23-26, 2013. Being on two continents, Istanbul is a unique city in the world, and was the capital of three great empires, Roman, Byzantine and Ottoman and two religions, Christian and Islamic, for more than 2,000 years.

ASCC is a major international conference sponsored by Asian Control Association. It will be a wonderful opportunity for automatic control researchers and engineers from academia and industries to exchange their research results and new findings. The history of ASCC dates back to 1994 when the first ASCC was held in Tokyo. The subsequent conferences were then held in Seoul (1997), Shanghai (2000), Singapore (2002), Melbourne (2004), Bali (2006), Hong Kong (2009), and Kaohsiung (2011).

The Proceedings of ASCC 2013 will be indexed by ISI Conference Proceedings Citation Index -Science, EI Compendex and included in the IEEE Xplore. Selected papers will be recommended for possible publication in Asian Journal of Control in extended form.

Plenary speakers: The plenary speakers of the conference are Tamer Basar (University of Illinois at Urbana-Champaign), Lei Guo (Chinese Academy of Sciences) and Iven Mareels (University of Melbourne).

ASCC awards: The award that will be presented at the conference are Shimemura Young Author Prize, Best Paper Prize, and Best Application Paper Prize.

The organizing committee of ASCC 2013 extends a cordial invitation to you to come to Istanbul to meet renowned scholars and practitioners not only from the region but also from many different parts of the world, at a place that is reputed to be one of the most attractive cities of the world. The details of the conference can be found at www.ascc.boun.edu.tr. Please note that the deadline for the submission of papers is 15 November 2012. We also invite you to organize a Special Session. In this case you will have a longer preparation time. Please contact us.

We look forward to seeing you in Istanbul.

Best regards,
Organization Committee



Asian Control Conference is a major international conference series sponsored by Asian Control Association. Its 9th edition (ASCC 2013) will be held in Istanbul, Turkey, during June 23-26, 2013. It is technically co-sponsored by both IEEE Control System Society and IEEE Industrial Electronics Society and therefore will be a unique opportunity for automatic control researchers and engineers from academia and industries to exchange their research results and new findings. For further information and paper submission, please visit the website www.ascc.boun.edu.tr

Istanbul is a unique city in the world being on two continents and was the capital of three great empires, Roman, Byzantine and Ottoman and two religions, Christian and Islamic, for more than 2,000 years, and thus is full of historic and cultural monumental buildings and masterpieces of Roman, Byzantine and Ottoman art. Istanbul is well-connected to the rest of the world by daily direct flights from all continents. A number of daily and pre and post conference tours will be offered, including tours to Cappadocia and Ephesus.

Topics of interest include, but are not limited to:

System Theory	Nonlinear Control	Adaptive Control and Tuning
Multivariable Control	Predictive Control	Fuzzy Neural Systems
Energy Technology	Mechatronics	Complex Systems and Networks
Process and Chemical Systems	Real-Time Systems	Aerospace
Identification and Estimation	Linear Control	Robust Control
Optimal Control and Optimization	Intelligent and Learning Control	Fault Detection
Discrete Event Systems	Signal Processing	Robotics and Motion Control
Manufacturing Systems	Power Systems	System Biology
Environmental and Bioengineering	Human-Machine Systems	Transportation Systems
AI and Expert Systems	Computational Intelligence	Pattern Recognition

Call for Contributed Papers: Prospective authors are invited to submit regular papers (full paper length: up to 6 proceedings pages). All accepted papers will be presented in oral or interactive formats as assigned by the conference. All submissions will be reviewed and those accepted will be included in the conference proceedings. The proceedings of ASCC 2013 will be included in IEEE Xplore®. It will also be indexed by EI compendex. Selected papers of ASCC 2013 will be recommended for possible publication in Asian Journal of Control in extended form.

Call for Invited Sessions: Invited Sessions should consist of 6 papers (same format as for Regular Papers) and present a unifying theme from different viewpoints. Those who would like to organize such a session are requested to contact one of the chairs.

Call for Workshop: Proposals for preconference workshops addressing emerging topics in control and automation are solicited and should be submitted to Prof. Haitao Zhang (zht@mail.hust.edu.cn).

ASCC 2013 Awards: The following are the ASCC will be presented: Shimemura Young Author Prize, Best Paper Prize, and Best Application Paper Prize.

Important Days:

Proposals for Invited Sessions:	15 December 2012
Submission of Regular Papers:	15 November 2012
Submission of Invited Session Papers:	15 January 2013
Proposals for Workshops/Tutorials:	30 November 2012
Notification of Acceptance:	15 February 2013
Final Paper Submission Deadline:	15 March 2013



ASCC 2013 Organizational Structure

Sponsored by:

Asian Control Association

Technically Co-sponsored by:

IEEE Control Systems Society
IEEE Industrial Electronics Society
Chinese Association of Automation
Chinese Automatic Control Society
Institute of Control, Robotics and Systems, Korea
The Society of Instrument and Control Engineers, Japan

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Ji-Feng Zhang, Chin. Acad. Sci.

Plenary Speakers:

Tamer Basar, University of Illinois, USA
Lei Guo, Chinese Academy of Sciences, China
Iven Mareels, University of Melbourne, Australia

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Okay Kaynak, Bogazici University, Turkey

Program Chairs

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Onder Efe, Univ. Turkish Aero. Asso., Turkey
Xinghuo Yu, RMIT Univ. And Southeast Univ.

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Erdal Kayacan, Katholieke Univ. Leuven, Belgium

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Award Chairs

Changyun Wen, NTU, Singapore
Daniel W. C. Ho, City Univ. Hong Kong
Zhisheng Duan, Peking University, China

Tutorials/Workshop Co-Chairs

Levent Guvenc, Okan University, Turkey
Peng Shi, University of Glamorgan, UK
Haitao Zhang, Huazhong Univ. Sci. Technol.

Industrial Forum and Exhibits Chair

Shuzi Sam Ge, NUS, Singapore
Wenwu Yu, Southeast University, China

Web Master

Baykal Saroglu, Bogazici Uni., Turkey



In Memory of Professor Marzuki Khalid

ACA mourns the loss of one of our best friends and Vice President of ACA, Professor Marzuki Khalid, who passed away on 27 August, 2012.

A lot of us still remembered that Marzuki hosted the SC Meeting this March in JB, Malaysia, and accompanied us during the entire meeting. In fact, we knew that Marzuki's health went downhill in the latter half of last year, but we were so glad to see that his health turned better later and he became vivid while organizing the SC Meeting and even throughout the meeting. We were so touched by the enthusiasm and vigor he has exhibited despite that his physical shape is kind of weak when we were all in JB with his company.

Marzuki loved his work serving ACA, and he actually involved in ACA affairs back in the early years. It is really our loss not to have him working with us anymore. However, I am sure that his spirit will always be with us no matter what.

At this mournful moment, let's pray for him and may he rest in the heaven's peaceful land.

Li-Chen Fu
President of ACA



Prof. Marzuki, aged 53, suffered from lung cancer and passed away peacefully at his home in Taman Setiawangsa at around 7.44pm on 27 August, 2012.

He was an outstanding alumnus of UTM with a remarkable academic standing. He was conferred Best Student Award from University Teknologi Malaysia in 1980, and was awarded "International Exchange Award for Outstanding Research Accomplishment" from Graduate School of Engineering at University of

Tokushima, Japan when he did his PhD there.

Another significant accomplishment of Marzuki was "Institution of Engineers Malaysia Young Engineer Award for 1994" for outstanding research and consultancy achievements. In September 1996, he was awarded the prestigious National Young Scientist Award from Malaysian Ministry of Science, Technology and Environment. He was also the recipient of Best Paper Prize by Institution of Engineers Malaysia in 1997.

Prof. Marzuki was also appointed Director of Malaysia-Japan University Center by Ministry of Higher Education on 15th November 2005. He was also Director for the Centre of Artificial Intelligence and Robotics (CAIRO), Centre of Excellence in UTM.

His interest in the field of artificial intelligence, control systems and image processing gained him recognition from the industry. He was thus appointed technical consultants for various industries in Malaysia, involving a number of research and developmental work with companies such as Tenaga Nasional Berhad Research, Texas Instruments (M) Sdn. Bhd., Bridgestone-Armstrong (M) Sdn. Bhd., Telekom Malaysia R&D, ELID MSC Sdn. Bhd., etc.

Most significantly, Marzuki, who held 4 national patents and 2 international patents in China and Europe, will be remembered for his contribution in automation techniques in Malaysian industries which include the application of artificial intelligent methods such as fuzzy logic, neural networks and genetic algorithms through a spin-off company he jointly set up in UTM. His company was also involved in the design of computer-based laboratory products already sold in many countries.