

# Plenary Panel Session on Control Research and Education: Challenges and Opportunities

Time: 4:00–6:00pm, Thursday, 31 May 2007  
Venue: Guangdong Hall  
Chair: Professor Lihua Xie, Nanyang Technological University, Singapore  
Co-Chair: Professor Ben M. Chen, National University of Singapore

Panelists: Professor Xiren Cao, Hong Kong University of Science and Technology  
Professor Daizhan Cheng, Chinese Academy of Science  
Professor Lei Guo, Chinese Academy of Science  
Professor Frank Lewis, University of Texas at Arlington, USA  
Professor Iven Mareels, University of Melbourne, Australia  
Professor Mark Spong, University of Illinois at Urbana-Champaign, USA  
Professor Tzyh Jong Tarn, Washington University, USA

ICCA'07 proudly presents the Plenary Panel Session on Control Research and Education: Challenges and Opportunities. We are honored to be able to invite seven prominent professors in the field of control to be the panelists. The objective of the plenary panel session is to provide an opportunity for researchers, especially young researchers, to interact with world renowned experts in systems and control and to seek their advice on issues commonly encountered in research such as how to start a career as a researcher, how to select research topics, how to write a quality journal paper, how to respond to reviewers' comments, etc. Issues related to control engineering education will also be discussed at the panel session. During the session, panel members will share their vast experiences and visions with audience through effective face-to-face dialogues.

The panel consists of seven world class researchers and educators. They include:



**Professor Xiren Cao** received the M.S. and Ph.D. degrees from Harvard University, in 1981 and 1984, respectively, where he was a research fellow from 1984 to 1986. He then worked as consultant engineer/engineering manager at Digital Equipment Corporation, U.S.A, until October 1993. Then he joined the Hong Kong University of Science and Technology (HKUST), where he is currently chair professor, director of the Research Center for Networking. He held visiting positions at Harvard University, Tsinghua University, and AT&T Labs, etc.

Dr. Cao owns three patents in data- and tele-communications and published two books in the area of discrete event dynamic systems. He received the Outstanding Transactions Paper Award from the IEEE Control System Society in 1987 and the Outstanding Publication Award from the Institution of Management Science in 1990. He is a Fellow of IEEE, Chairman of IEEE Fellow Evaluation Committee of IEEE Control System Society, Editor-in-Chief of *Discrete Event Dynamic Systems: Theory and Applications*, Associate Editor at Large of *IEEE Transactions of Automatic Control*, and he is on Board of Governors of IEEE Control Systems Society and on the Technical Board of IFAC, He is/was associate editor of a number of international journals and chairman of a few technical committees of international professional societies. His current research areas include discrete event dynamic systems, stochastic learning and optimization, performance analysis of communication systems, and signal processing.



**Professor Daizhan Cheng** graduated from Tsinghua University in 1970, received M.S. from Graduate School, Chinese Academy of Sciences in 1981, Ph.D. from Washington University, St. Louis, in 1985. Since 1990, he is a professor with Institute of Systems Science, Academy of Mathematics and Systems Science, Chinese Academy of Sciences. His research interests include nonlinear control systems, switched systems, Hamiltonian systems and numerical realization for control design. He is the author/coauthor of 170 journal papers, 8 books and 80 conference papers. He was Associate Editor of *International Journal of Mathematical Systems, Estimation and Control* (1990–1993); *Automatica* (1999–2002); *Asian Journal of Control* (2001–2004). He is the Subject Editor of *International Journal of Robust and Nonlinear Control* (2005–), Deputy Editor-in-

Chief of *Control and Decision*, *Journal Control Theory and Applications*, Associate Editor of *Systems Science and Complexity*, *Control Theory and Applications*, *Systems Science and Mathematics*. He is currently the Chairman of Technical Committee on Control Theory (2003–), Chinese Association of Automation, Chairman of IEEE CSS Beijing Chapter, and IEEE Fellow.



**Professor Lei Guo** received the B.S. degree in mathematics from Shandong University in 1982, and the PhD degree in control theory from Chinese Academy of Sciences in 1987. He was a postdoctoral fellow at Australian National University (1987–1989). He has been a full Professor of the Institute of Systems Science at the Chinese Academy of Sciences (CAS) since 1992, and has been the President of Academy of Mathematics and Systems Science, CAS, since 2003.

Dr. Guo was elected Fellow of the IEEE in 1998, Member of the Chinese Academy of Sciences in 2001, and Fellow of the Academy of Sciences for the Developing World (TWAS) in 2002. He has received a number of prizes and honors including the National Natural Science Prize of China (1987, 1997) and the IFAC World Congress Young Author Prize (1993). He currently serves as a Council Member of IFAC, a member of the IFAC Award Committee, a member of the Chinese National Award Committee on Science and Technology, a Vice-President of the Chinese Association of Automation, the Chinese Mathematical Society, and the Chinese Society for Industry and Applied Mathematics. He is also the Editor-in-Chief of the *Journal of Systems Science and Complexity*, and is on the editorial boards of numerous international and domestic journals.

He has worked on problems in adaptive control, system identification, stochastic systems, non-stationary time-series analysis and adaptive signal processing. His current research interests include the maximum capability and limitations of feedback, multi-agent systems, complex adaptive systems, global controllability of nonlinear systems, and quantum control systems.



**Professor Frank L. Lewis** was born in Würzburg, Germany, subsequently studying in Chile and Gordonstoun School in Scotland. He obtained the Bachelor's Degree in Physics/Electrical Engineering and the Master's of Electrical Engineering Degree at Rice University in 1971. He spent six years in the U.S. Navy, serving as Navigator aboard the frigate USS Trippe (FF-1075), and Executive Officer and Acting Commanding Officer aboard USS Salinan (ATF-161). In 1977 he received the Master's of Science in Aeronautical Engineering from the University of West Florida. In 1981 he obtained the PhD degree at Georgia Institute of Technology in Atlanta, where he was employed as a professor from 1981 to 1990 and is currently an Adjunct

Professor. He is a Professor of Electrical Engineering at The University of Texas at Arlington, where he was awarded the Moncrief-O'Donnell Endowed Chair in 1990 at the Automation & Robotics Research Institute. Fellow of the IEEE, Fellow of the U.K. Royal Institute of Measurement & Control, Member of the New York Academy of Sciences. Registered Professional Engineer in the State of Texas and Chartered Engineer, U.K. Engineering Council. Charter Member (2004) of the UTA Academy of Distinguished Scholars and Senior Research Fellow of the Automation & Robotics Research Institute. Has served as Visiting Professor at Democritus University in Greece, Hong Kong University of Science and Technology, Chinese University of Hong Kong, National University of Singapore. Elected Guest Consulting Professor at both Shanghai Jiao Tong University and South China University of Technology.

Current interests include intelligent control, neural and fuzzy systems, wireless sensor networks, nonlinear systems, robotics, condition-based maintenance, micro-electro-mechanical systems (MEMS) control, and manufacturing process control. Author of 5 U.S. patents, 174 journal papers, 32 chapters and encyclopedia articles, 286 refereed conference papers, and 11 books including *Optimal Control*, *Optimal Estimation*, *Applied Optimal Control and Estimation*, *Aircraft Control and Simulation*, *Control of Robot Manipulators*, *Neural Network Control*, *High-Level Feedback Control with Neural Networks* and the IEEE reprint volume *Robot Control*. Served/serves on many Editorial Boards including *International Journal of Control*, *Neural Computing and Applications*, *Optimal Control & Methods*, and *International Journal Intelligent Control Systems*. Served as Editor for the flagship journal *Automatica*. Recipient of NSF Research Initiation Grant and continuously funded by NSF since 1982. Since 1991 he has received \$6 million in funding from NSF, ARO and other government agencies, including significant DoD SBIR and industry funding. His SBIR program was instrumental in ARRI's receipt of the US SBA Tibbets Award in 1996. Received Fulbright Research Award, American Society of Engineering Education F.E. Terman Award, three Sigma Xi Research Awards, UTA Halliburton Engineering Research Award, UTA Distinguished Research Award, ARRI Patent Awards, various Best Paper Awards, IEEE Control Systems Society Best Chapter Award (as Founding Chairman of DFW Chapter), and National Sigma Xi Award for Outstanding Chapter (as President of UTA Chapter). Received Outstanding Service Award from the Dallas IEEE Section and selected as Engineer of the year by Ft. Worth IEEE Section. Listed in Ft. Worth Business Press Top 200 Leaders in Manufacturing. Appointed to NAE Committee on Space Station in 1995 and IEEE Control Systems Society Board of Governors in 1996. Selected in 1998 as an IEEE Control Systems Society Distinguished Lecturer. Founding Member of the Board of Governors of the Mediterranean Control Association.



**Professor Iven Mareels** was born in Aalst Belgium 11 August 1959. He obtained the Bachelor of Electromechanical Engineering from Gent University, Belgium in 1982 and the PhD in Systems Engineering from the Australian National University, Canberra, Australia in 1987. He is presently Professor and Associate Dean of The Faculty of Engineering, The University of Melbourne. He holds the Chair of Electrical and Electronic Engineering, in the Department of Electrical and Electronic Engineering. A position he took up in 1996. He leads the ICT for Life-Sciences Program in the National ICT Australia, Research Institute.

Previously he was a Reader at the Australian National University (1990–1996), a lecturer at the University of Newcastle (1988–1990) and the University of Gent (1986–1988).

He is Fellow of the Academy of Technological Sciences and Engineering, Australia, a Fellow of the Institute of Electrical and Electronics Engineers (USA), a member of the Society for Industrial and Applied Mathematics, a Fellow of the Institute of Engineers Australia. Until December 2005, he was a member of the Board of Governors of the Control Systems Society IEEE. In service to Engineers Australia, he chairs the National Committee for Automation, Control and Instrumentation, Australia;

and is a member of the Electrical Engineering and Information Technology colleges. He is a Member of the Board of Directors of the Bionic Ear Institute, Melbourne, Australia. He is registered with the Institute of Engineers Australia as a professional engineer. He has extensive experience in consulting for both industry and government.

Since 1996, he is a co-editor in chief, together with Prof. A. Antoulas for the international Journal *Systems & Control Letters*.

Iven Mareels received the Vice-Chancellor's Award for Excellence in Teaching in 1994 from the Australian National University. He has received a number of awards for his research publications. Most recently he was recognized as Distinguished Lecturer by the IEEE Control Systems Society 2005. He has published widely and holds a number of patents.



**Professor Mark Spong** is currently Donald B. Willett Distinguished Professor of Engineering, Professor of Electrical and Computer Engineering, and Research Professor in the Coordinated Science Laboratory at the University of Illinois at Urbana-Champaign. He is also Director of the Center for Autonomous Engineering Systems and Robotics (CAESAR) within Information Trust Institute (ITI) at Illinois. Dr. Spong's main research interests are in robotics, mechatronics, and nonlinear control theory. He has published more than 200 technical articles in control and robotics and is co-author of three books.

Dr. Spong is Past President of the IEEE Control Systems Society, a Fellow of the IEEE and has served as both Editor-in-Chief and Associate Editor of the *IEEE Transactions on Control System Technology*, and as Associate Editor of the *IEEE Transactions on Robotics and Automation*, the *IEEE Control Systems Magazine*, and the *IEEE Transactions on Automatic Control*. He served as Vice President for Publication Activities from 2000-2002 and is member of the Board of Governors of the IEEE Control Systems Society.

His recent awards include the Senior U.S. Scientist Research Award from the Alexander von Humboldt Foundation, the Distinguished Member Award from the IEEE Control Systems Society, the John R. Ragazzini and O. Hugo Schuck Awards from the American Automatic Control Council, and the IEEE Third Millennium Medal.



**Professor Tzyh Jong Tarn** is currently a Professor in the Department of Systems Science and Mathematics and the Director of the Center for Robotics and Automation at Washington University

An active member of the IEEE Robotics and Automation Society, Dr. Tarn served as the President of the IEEE Robotics and Automation Society, the Director of the IEEE Division X (Systems and Control), 1995-1996, and a member of the IEEE Board of Directors, 1995-1996.

He is the first recipient of the Nakamura Prize (in recognition and appreciation of his contribution to the advancement of the technology on intelligent robots and systems over a decade) at the 10th Anniversary of IROS in Grenoble, France, 1997, the recipient of the prestigious Joseph F. Engelberger Award of the Robotic Industries Association in 1999 for contributing to the advancement of the science of robotics, the Auto Soft Lifetime Achievement Award in 2000 in recognition of his pioneering and outstanding contributions to the fields of Robotics and Automation, and the Pioneer in Robotics and Automation Award in 2003 from the IEEE Robotics and Automation Society for his technical contribution in developing and implementing nonlinear feedback control concepts for robotics and automation. He was featured in the Special Report on Engineering of the 1998 Best Graduate School issue of US

News and World Report and his recent research accomplishments were reported recently in the “Washington Times”, Washington D.C., the “Financial Times”, London, “Le Monde”, Paris, and the “Chicago Sun-Times”, Chicago, etc. Dr. Tarn is a Fellow of IEEE.