

Towards Intelligentness of Unmanned Systems

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Abstract

In this talk, we aim to report some recent advancements in unmanned systems research, which are developed by the Unmanned Systems Research Group at National University of Singapore. Emphases are placed on mission management, motion planning and perception technologies that are capable of autonomously guiding, navigating and controlling unmanned systems in cluttered and GPS-denied environments, such as hostile buildings, sewer tunnels, radiation contaminated areas and inside forests, to intelligently provide solutions to real life problems. Topics under studied include multi-sensor data fusion, real-time simultaneous localization and mapping, dynamic path planning in unknown environments, and intelligent mission planning and management.

About the speaker...



Ben M. Chen, born in Fuqing, Fujian, China, in 1963, received his B.S. in computer science from Xiamen University, China, in 1983, M.S. in electrical engineering from Gonzaga University, USA, in 1988, PhD in electrical & computer engineering from Washington State University, USA, in 1991. He is currently a Professor and Provost's Chair in the Department of Electrical and Computer Engineering, National University of Singapore. He is also serving as the Area Director of Control, Intelligent Systems and Robotics. His current research interests are in unmanned systems, control applications, and financial market modeling.

Dr. Chen is an IEEE Fellow. He has published more than 400 journal and conference articles, and 10 research monographs including *Robust and H-infinity Control* (Springer, New York, 2000), *Hard Disk Drive Servo Systems* (Springer, 1st Edition, 2002; 2nd Edition, New York, 2006), *Linear Systems Theory* (Birkhäuser, Boston, 2004), *Unmanned Rotorcraft Systems* (Springer, New York, 2011), and *Stock Market Modeling and Forecasting* (Springer, New York, 2013). He had served on the editorial boards of several international journals including *IEEE Transactions on Automatic Control*, *Systems & Control Letters*, and *Automatica*. He currently serves as an Editor-in-Chief of *Unmanned Systems* and a Deputy Editor-in-Chief of *Control Theory & Technology*. He has been invited to deliver keynote and plenary speeches at international conferences and events held in USA, China, Canada, United Kingdom, France, Japan, Australia, India and Malaysia.

Dr. Chen has received quite a few research awards nationally and internationally. His research team has actively participated in international UAV competitions, held in USA, China, Germany and France, and claimed quite a number of championship awards in the contests.