Title: Output Consensus of Heterogeneous Linear Multi-agent Systems by Event-triggered Control

Speaker:
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Abstract:
In this talk distributed even-triggered control algorithms will be presented for output consensus of heterogeneous multi-agent systems with linear dynamics, with the objective to reduce the number of controller updates and communication exchanges. It is shown that the output consensus problem can be solved by the proposed event-triggered control algorithms if a necessary and sufficient condition is satisfied. Then a self-triggered control scheme is also developed, where continuous monitoring of measurement errors can be avoided. The feasibility of both proposed control schemes is discussed by excluding both singular triggering and Zeno behavior. It is also shown that agents are able to achieve output consensus with significant reduction of the number of triggering events, controller updates and communication transmission. As a result, energy can be saved and the lifespan of the agents can be prolonged. A numerical example is given to illustrate the effectiveness of the proposed control schemes.

Biography of the speaker:
Gang Feng received the B.Eng and M.Eng. Degrees in Automatic Control from Nanjing Aeronautical Institute, China in 1982 and in 1984 respectively, and the Ph.D. degree in Electrical Engineering from the University of Melbourne, Australia in 1992.

Professor Feng was a Lecturer in Royal Melbourne Institute of Technology, 1991 and a Senior Lecturer/Lecturer, University of New South Wales, 1992-1999. He has been with City
University of Hong Kong since 2000 where he is now a Chair Professor of Mechatronic Engineering. He was also a ChangJiang Chair Professor at Nanjing University of Science and Technology, awarded by Ministry of Education. He has received Alexander von Humboldt Fellowship, the IEEE Transactions on Fuzzy Systems Outstanding Paper Award, the Best Paper Award of IEEE International Conference on Neural Networks and Signal Processing and the Best Theoretical Paper Award in the Second World Congress on Intelligent Control and Automation. He is an author of one research monograph entitled “Analysis and Synthesis of Fuzzy Control Systems: A Model Based Approach”, and over 200 SCI indexed papers including over 100 in IEEE Transactions. His research interests include intelligent systems and control, networked control systems, and multi-agent systems and control.


**Organizer:** Dr. G. Chesi