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Lecture by

Yan-Wu Wang

Huazhong University of Science and Technology

Cooperative Control of Interconnected Two-time-scale Systems

Many systems in real applications exhibit the two-time-scale property involving both slow and fast processes, for example the biological systems, chemical reactions, and power systems. Their dynamics are mathematically described as two-time-scale systems (TTSSs). Feedback design for such TTSSs is often subject to high dimensionality and is numerical ill-conditioned. Consequently, it is interesting, yet challenging, to consider the problem of cooperative control of interconnected TTSSs. In this talk, we will present several design strategies to address some typical problems encountered in real applications, including the unknown control direction problem, the discrete-time communication problem and disturbance rejection problem.

About the author



Yan-Wu Wang received the B.S. degree in automatic control, the M.S. degree and the Ph.D. degree in control theory and control engineering from Huazhong University of Science and Technology (HUST), Wuhan, China, in 1997, 2000, and 2003, respectively. She has been a Professor with the School of Artificial Intelligence and Automation, HUST, since 2009. Her research interests include hybrid systems, cooperative control, and multi-agent systems with applications in smart grid. Currently she serves in the editor boards of several journals, including IEEE Transactions on Smart Grid, IEEE Power Engineering Letters, Journal of Control and Decision, ISA Transactions, Journal of the Franklin Institute, and Neurocomputing. Dr. Wang was a recipient of several awards, including the first prize of Natural Science Award of Hubei Province in 2014, the first prize of Natural Science Award of the Ministry of Education of China in 2005, and the Excellent PhD Dissertation of Hubei Province in 2004, China. In 2008, she was awarded the title of "New Century Excellent Talents" by the Ministry of Education of China.