

講演会のご案内

Evolutionary network dynamics: From human collective decision-making to COVID-19 epidemics

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ABSTRACT: Network dynamics evolving over time have been a central research topic in the past decades, covering a range of topics in sensor, robotic and social networks. With the surging recent interest in autonomous systems, new tools, especially those from evolutionary game theory, have been developed to study how decisions evolve over time in large populations of autonomous agents. When such decision-making processes take place in human social networks, complex patterns of the co-evolutionary dynamics of the coupled decision-making and behavioral adaptation become very challenging to model, analyze and control. In this talk, I report our recent progress on using a game theoretic approach to studying such co-evolutionary dynamics. I will discuss the activity driven network (ADN) models and show how the obtained results can be applied to the prediction and intervention of epidemic dynamics that are particularly relevant in view of the ongoing COVID-19 pandemic.



BIOGRAPHY OF MING CAO

Ming Cao has since 2016 been a professor of networks and robotics with the Engineering and Technology Institute (ENTEG) at the University of Groningen, the Netherlands, where he started as an assistant professor in 2008. He received the Bachelor degree in 1999 and the Master degree in 2002 from Tsinghua University, Beijing, China, and the Ph.D. degree in 2007 from Yale University, New Haven, CT, USA, all in Electrical Engineering. From September 2007 to August 2008, he was a Postdoctoral Research Associate with the Department of Mechanical and Aerospace Engineering at Princeton University, Princeton, NJ, USA. He worked as a research intern during the summer of 2006 with the Mathematical Sciences Department at the IBM T. J. Watson Research Center, NY, USA. He is the 2017 and inaugural recipient of the Manfred Thoma medal from the International Federation of Automatic Control (IFAC) and the 2016 recipient of the European Control Award sponsored by the European Control Association (EUCA). He is an IEEE fellow (class 2022). He is a Senior Editor for Systems and Control Letters, an Associate Editor for IEEE Transactions on Automatic Control, and was an associate editor for IEEE Transactions on Circuits and Systems and IEEE Circuits and Systems Magazine. He is a member of the IFAC Conference Board and a vice chair of the IFAC Technical Committee on Large-Scale Complex Systems. His research interests include autonomous agents and multi-agent systems, complex networks and decision-making processes.