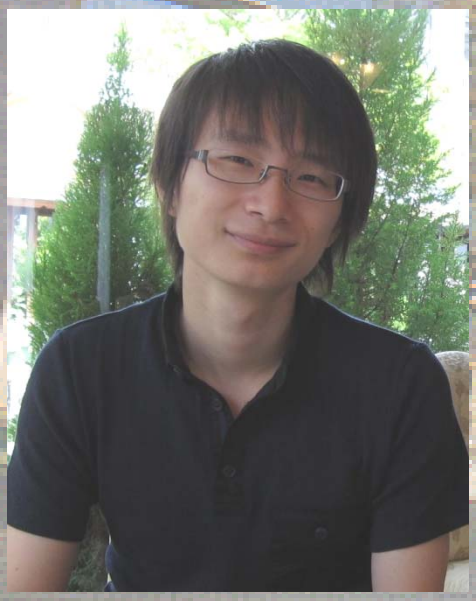
1st NL Seminar 2010

Distributed Average Consensus in Networked Multi-Agent Systems



Kai Cai

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Date and Place : 2010/11/19（Fri.）
11：00 - 12：00（14-414）

Abstract:

Distributed average consensus problems of networked multi-agent systems are of current research vitality. Such problems arise naturally in load balancing of a processor group, information fusion of a sensor network, and motion coordination of a robot team. This talk will first cover some basics and well-known results in the literature, and then describe a recently proposed algorithm which tackles the averaging problem for arbitrary directed graphs. The primary feature of the algorithm is to augment “surplus” variables that locally record individual state updates, thereby achieving average consensus even though the state sum of the agents is not preserved. Under this algorithm, a more general necessary and sufficient graphical condition is derived to ensure reaching the average; in particular, the condition does not require balanced network topologies. Further extensions of the surplus-based algorithm will be discussed, taking into account a variety of network constraints.

About the Speaker:

Kai Cai received the B. Eng. degree in Electrical Engineering from Zhejiang University (China) in 2006, and the M.A.Sc. degree in Electrical and Computer Engineering from the University of Toronto (Canada) in 2008. He is currently pursuing the Ph.D. degree at Tokyo Institute of Technology (Japan).

Cai’s research interests include distributed control of multi-agent systems and control architectures. In 2010 he received Best Student Paper Award of IEEE MSC and Young Author’s Award of SICE.

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