Consensus Problems in Networked Dynamical Systems

Xinzhi Liu

Department of Applied Mathematics, University of Waterloo, Waterloo, Canada
xzliu@uwaterloo.ca

This talk discusses the consensus problem of networked dynamical systems with both fixed and switching topologies. Hybrid consensus protocols are proposed to take into consideration of continuous communications and intermittent information exchanges on a sequence of discrete times. Based on the proposed algorithms, the networked dynamical systems with the hybrid consensus protocols achieve consensus by employing results from matrix theory and algebraic graph theory. Our results show that the hybrid consensus protocols can solve the consensus problem if the union of continuous-time and discrete-time interaction digraphs contains a spanning tree frequently enough. Simulations are provided to demonstrate the effectiveness of the proposed consensus protocols.