

Peng Shi
School of Electrical and Mechanical Engineering
University of Adelaide, Australia
[Peng.shi@adelaide.edu.au](mailto: Peng.shi@adelaide.edu.au)

Design on multi-agent systems: consensus and formation

Abstract – The key features of Multi-agent Systems (MAS) are communication, coordination, and collaboration, by which the agents can achieve a common (and possibly difficult) goal in a more effective and efficient way. Three main topics within the realm of MAS are consensus, flocking and formation control. Cooperating processes often require agents to reach a consensus, which is the fundamental problem in MAS. Flocking (or swarming) is a self-organizing behavior originated from small-size animals with lower intelligence, which enables the emergence of swarm intelligence to improve the whole system survivability and competitiveness. Formation control generally aims to drive the agents to achieve a desired formation, scalable and/or changeable. In this talk, modeling analysis and design of a variety of distributed schemes for consensus and formation control are introduced. Simulations and experimental examples are provided to demonstrate the potential of the proposed new design techniques.