

Formation Control Design for Multi-agent Systems

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Multi-agent Systems (MAS) are systems with characteristics of cooperation and decentralization. As the agents often work under complex circumstances, limitations of the hardware that include limited passive sensing and active communication capabilities are likely to be present. As a result of the localization conditions above, the agents need to cooperate in a distributed manner to achieve a common goal. Formation control, which is one of the most popular topics within the realm of multi-agent systems, generally aims to drive multiple agents to achieve a desired scalable formation or time-varying formation changing. In this talk, depending on the agents' sensing and interaction capabilities, the analysis and design of a variety of distributed formation control and some applications are introduced. Under complex circumstances, issues on collision avoidance and system robustness for MAS are also addressed. Simulation and Lab experimental results are given to demonstrate the effectiveness of some design schemes proposed in our group.