



Intensive Course

Decentralized Control and Optimization of Large-scale Dynamic Systems

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Large-scale dynamic systems include models for a wide variety of natural and man-made applications, including groups of vehicles, power system networks, networks for sensors and actuators, and fluid mechanical systems. Controlling this type of systems is one of the most important and challenging aspects of modern system theory and practice. In order to handle computational complexity of large-scale problems, decentralized methods are often the only feasible solution. By decomposing systems into smaller subsystems (either disjoint or overlapping), the large-scale systems can be treated as a network of interconnected subsystems. Control laws are implemented locally, which reduces the communication overhead between subsystems.

Topics to be considered: Decentralized overlapping control and optimization; fast computation of reachable sets of dynamic systems; differential games; control of a formation of unmanned aerial vehicles; multiple vehicle coordination; two aircraft collision avoidance problem.

 Seminar I:
 Decentralized overlapping control of formations of vehicles 16. December, 13:00~14:30, SE III

 Seminar II:
 Decentralized optimization of multi agent systems 18. December, 10:00~11:30, SE I

 Seminar III:
 Fast approximations of reachable sets with application to collision avoidance problem 18. December, 14:00~15:30, B202

Everybody interested is warmly welcome!