Jan Lunze

Networked Control of Multi-Agent Systems

Consensus and synchronisation
Communication structure design
Self-organisation in networked systems
Event-triggered control

This is the first textbook about networked control that gives a thorough introduction to the graph-theoretical and systems-theoretical foundations and presents the solutions of various analysis and design problems. After starting with consensus and synchronisation as the classical problems of the field, it continues with the communication structure design of networked controllers and with self-organised and event-triggered control, which are novel problems for which solutions have been elaborated recently.

The **second edition** includes new material on the robustness of consensus systems and synchronised systems. The application studies are presented in a supplementary booklet.

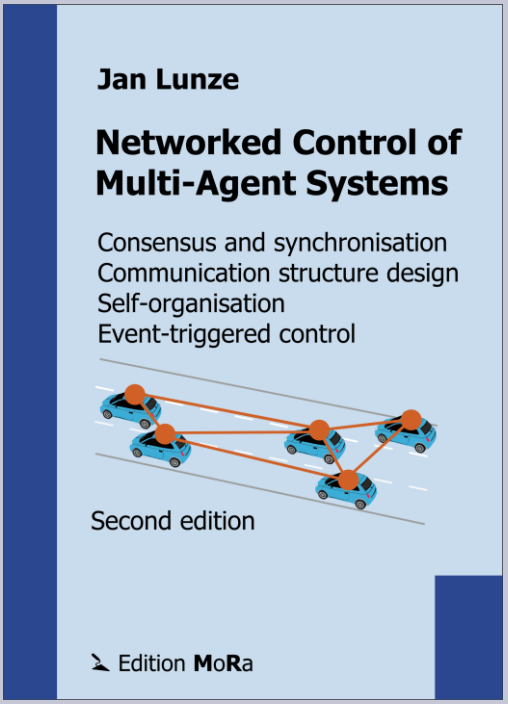
The book

- demonstrates networked control by 82 numerical examples and 12 application studies,
- includes 112 exercises, most of them with solutions,
- provides supplementary material on matrix algebra, probability theory and the analysis of graphs with MATLAB.

The **application studies** include

- Distributed algorithms for sensor networks
- Synchronisation phenomena in power networks
- Self-organising leader selection in a truck platoon
- μ-split braking of a vehicle
- Motion on demand: Self-service bike hiring
- Event-triggered control of a thermo-fluid process

Prof. Dr.-Ing. Jan Lunze is head of the Institute of Automation and Computer Control at Ruhr-University Bochum, Germany. He is the author of several textbooks on control theory, discrete-event systems and artificial intelligence. His experience with industrial applications has led to the numerous examples, exercises and application studies of this book that demonstrate dynamical phenomena in networked systems.



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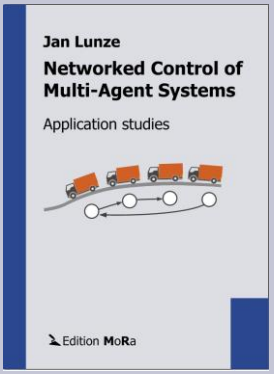

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