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Nota di contenuto	Contents; Preface; Acknowledgments; Notations and symbols; List of acronyms; 1. Introduction; 1.1 Introduction; 1.2 Control architectures; 1.3 Related design problems and issues; 1.4 Information flow; 1.5 Performance evaluation; 1.6 Advantages of distributed control systems; 1.7 Outline of the book; 1.8 Notes; 2. Distributed model predictive control; 2.1 Overview; 2.2 Dissipativity-based approach; 2.3 Constrained model predictive control; 2.4 A cooperative game approach; 2.5 Feasible cooperation model predictive control; 2.6 Application to power plant control 2.7 Application to quadruple-tank process2.8 Application to automatic generation control; 2.9 Notes; 3. Distributed linear quadratic control; 3.1 Introduction; 3.2 Identical decoupled dynamical systems; 3.3 Distributed semistable LQR control; 3.4 Distributed control of nonnegative systems; 3.5 Distributed control of power load frequency; 3.6 Notes; 4. Distributed observer-based control; 4.1 Observer-based control; 4.2 Approximate distributed feedback control; 4.3 Application to chemical reactors; 4.4 Notes; 5. Distributed consensus control; 5.1 Consensus of multiagent systems 5.2 Consensus control for time-delay systems5.3 Robust consensus of multiagent systems; 5.4 Notes; 6. Distributed estimation; 6.1 Introduction; 6.2 Problem formulation; 6.3 Convergence of the

centralized estimation error; 6.4 Minimum variance estimation design; 6.5 Asynchronous multirate multismart sensors; 6.6 Distributed nonlinear estimation; 6.7 Notes; 7. Distributed Kalman filtering; 7.1 Introduction; 7.2 Self-tuning Kalman filtering; 7.3 Kalman filtering with intermittent communications; 7.4 Notes; 8. Experimental setups; 8.1 Introduction; 8.2 Overview of related work
8.3 Simulation environments8.4 Simulation examples; 8.5 Experimental setup; 8.6 Multiagent modeling approach; 8.7 Networked control system evaluation; 8.8 CAN and Switched Ethernet networks; 8.9 Design consideration; 8.10 Networked and distributed control architectures; 8.11 Notes; 9. Appendix; 9.1 Notations; 9.2 Elements of graph theory; 9.3 Minimum mean square estimate; 9.4 Stability notions; 9.5 Basic inequalities; 9.6 Linear matrix inequalities; 9.7 Some formulas on matrix inverses; References; Index

Sommario/riassunto

Distributed Control and Filtering for Industrial Systems provides an introduction to the control and filtering algorithms devised for distributed environments, with a particular emphasis on industrial applications.