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Descrizione fisica	1 online resource (532 p.)
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Soggetti	Automatic control Electrical engineering Power electronics Control and Systems Theory Communications Engineering, Networks Power Electronics, Electrical Machines and Networks
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Introduction -- Role of Delays -- Nonstationary Packet Dropouts -- Control over Lossy Communication Channels -- Systems under Communication Constraints -- Estimation via Network Environment -- Event-Based Stabilization -- Stochastic Systems -- Applications -- Appendix: Mathematical Background.
Sommario/riassunto	This book provides a rigorous framework in which to study problems in the analysis, stability and design of networked control systems. Four dominant sources of difficulty are considered: packet dropouts, communication bandwidth constraints, parametric uncertainty, and time delays. Past methods and results are reviewed from a contemporary perspective, present trends are examined, and future possibilities proposed. Emphasis is placed on robust and reliable design methods. New control strategies for improving the efficiency of

sensor data processing and reducing associated time delay are presented. The coverage provided features: · an overall assessment of recent and current fault-tolerant control algorithms; · treatment of several issues arising at the junction of control and communications; · key concepts followed by their proofs and efficient computational methods for their implementation; and · simulation examples (including TrueTime simulations) to provide hands-on experience. In addition to the theoretical coverage, the author describes a number of applications that demonstrate the real-world relevance of this material, and these include: · a servo system; · a triple inverted pendulum; · power system control; · wireless control of a cart with inverted pendulum and wireless servo application with emphasis on controller area networks; and · switched ethernet and wireless area networks. Researchers and graduate students working in networked and distributed control will find this text a useful guide in avoiding and ameliorating common and serious problems with these systems. The increasing prevalence of networks in many fields of engineering will make Control and Estimation Methods over Communication Networks of interest to practitioners with backgrounds in communications, process engineering, robotics, power, automotive and other areas.