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Autor: Yüksel, Serdar, Basar, Tamer

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The first book that covers information structures, stabilization and performance analysis in networked control systems
Reports original research results, including the concept of random-time stochastic drift and recent developments in optimal quantizer design for centralized and decentralized systems
Provides fresh approaches to optimization of observation channels, and develops new notions of information structures
Figures, tables, references, glossary, and indexes enhance the presentation and accessibility of content
Networked control systems are increasingly ubiquitous today, with applications ranging from vehicle communication and adaptive power grids to space exploration and economics. The optimal design of such systems presents major challenges, requiring tools from various disciplines within applied mathematics such as decentralized control, stochastic control, information theory, and quantization.

A thorough, self-contained book, Stochastic Networked Control Systems: Stabilization and Optimization under Information Constraints aims to connect these diverse disciplines with precision and rigor, while conveying design guidelines to controller architects. Unique in the literature, it lays a comprehensive theoretical foundation for the study of networked control systems, and introduces an array of concrete tools for work in the field. Salient features include:

· Characterization, comparison and optimal design of information structures in static and dynamic teams. Operational, structural and topological properties of information structures in optimal decision making, with a systematic program for generating optimal encoding and control policies. The notion of signaling, and its utilization in stabilization and optimization of decentralized control systems.

· Presentation of mathematical methods for stochastic stability of networked control systems using random-time, state-dependent drift conditions and martingale methods.