1. Record Nr. UNINA9910483677703321

Autore	Pang Zhong-Hua
Titolo	Networked Predictive Control of Systems with Communication Constraints and Cyber Attacks / / by Zhong-Hua Pang, Guo-Ping Liu, Donghua Zhou, Dehui Sun
Pubbl/distr/stampa	Singapore : , : Springer Singapore : , : Imprint : Springer, , 2019
ISBN	981-13-0520-X
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (XX, 219 p. 123 illus., 105 illus. in color.)
Disciplina	629.8
Soggetti	Control engineering Computer organization Electrical engineering Data protection Control and Systems Theory Computer Systems Organization and Communication Networks Communications Engineering, Networks Security
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Part I: Networked Predictive Control of Systems with Communication Constraints -- Preliminaries for NCSs -- Networked Predictive Control Based on Linear Input-Output Models -- Incremental Networked Predictive Control Based on Linear Input-Output Models -- Networked Predictive Control Based on Nonlinear Input-Output Models -- Networked Predictive Control Based on State-Space Models -- Networked Predictive Output Tracking Control Based on State-Space Models -- Part II: Networked Predictive Control of Systems with Cyber Attacks and Communication Constraints -- Preliminaries for Cyber Attacks -- Data Secure Transmission Scheme for Deception Attacks -- Secure Networked Predictive Control under Deception Attacks and Communication Constraints -- False Data Injection Attacks against Output Tracking Control Systems -- False Data Injection Attacks against Networked Predictive Output Tracking Control System s -- Secure Networked Predictive Control under DoS Attacks and

Communication Constraints.

Sommario/riassunto

This book presents the latest results on predictive control of networked systems, where communication constraints (e.g., network-induced delays and packet dropouts) and cyber attacks (e.g., deception attacks and denial-of-service attacks) are considered. For the former, it proposes several networked predictive control (NPC) methods based on input-output models and state-space models respectively. For the latter, it designs secure NPC schemes from the perspectives of information security and real-time control. Furthermore, it uses practical experiments to demonstrate the effectiveness and applicability of all the methods, bridging the gap between control theory and practical applications. The book is of interest to academic researchers, R&D engineers, and graduate students in control engineering, networked control systems and cyber-physical systems. .