Asynchronous Control for Networked Systems [

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Engineering | Computer communication systems | System theory | Control engineering | Electrical engineering | Engineering | Control | Systems Theory, Control | Computer Communication Networks | Communications Engineering, Networks

Monografía

This book sheds light on networked control systems; it describes different techniques for asynchronous control, moving away from the periodic actions of classical control, replacing them with state-based decisions and reducing the frequency with which communication between subsystems is required. The text focuses specially on event-based control. Split into two parts, Asynchronous Control for Networked Systems begins by addressing the problems of single-loop networked control systems, laying out various solutions which include two alternative model-based control schemes (anticipatory and predictive) and the use of H2/H{u221E} robust control to deal with network delays and packet losses. Results on self-triggering and send-on-delta sampling are presented to reduce the need for feedback in the loop. In Part II, the authors present solutions for distributed estimation and control. They deal first with reliable networks and then extend their results to scenarios in which delays and packet losses may occur. The novel results presented in Asynchronous Control for Networked Systems are transmitted in a concise and clear style supported by simulation and experimental examples. Some applications are also provided. Academic researchers and graduate students investigating control theory, control engineering and computer communications systems can use this monograph to learn how asynchronous control helps tackle the problems of networked systems in centralized and distributed schemes. Control practitioners at work in power systems, vehicle coordination and traffic networks will also find this book helpful in improving the performance of their systems

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Contenido: Introduction -- Send-on-Delta PI control -- Self-Triggered Sampling Selection Based on Quadratic Programming -- Event-Triggered Anticipative Control over Packet-Based Networks -- H2/H{u221E} Control for Networked Control Systems with Asynchronous Communication -- Asynchronous Packetized Model Predictive Control -- Distributed Event-Based Control for Interconnected Linear Systems -- Distributed Event-Based Observers for LTI Systems -- Suboptimal Distributed Control and Estimation: Application to a Four Coupled Tanks System -- Distributed Event-Triggered Control for Non-Reliable Networks -- Distributed Estimation in Networked Systems -- Networked Mobile Robots: an Application Example of the Distributed Event-Based Control -- Conclusions

Detalles del sistema: Modo de acceso: World Wide Web

Fuente de adquisición directa: Springer (e-Books)

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