

Sudip K. Mazumder

Wireless Networking Based Control

Due to advantages of encompassing mobility, reconfigurability, easy commissioning and spatio-temporal sensing, wireless networking is gaining significant momentum in several areas of application. And while the initial focus in wireless networking has been on communication and sensing, a new field has emerged that uses the same communication channel for enabling network control, which leads to several interesting issues and possibilities not typically covered in traditional wire-based network control.

Wireless Network Based Control discusses those interesting issues and possibilities, both the theory and application relevant to them, focusing on the core theme of control using wireless network and control of the information exchanged over the wireless network. It covers many topics including, but not limited to, the following: Robust stabilization of wireless network control systems in the presence of delays, packet drop out, fading; state estimation over wireless network under random measurement delay; cyber-physical control over wireless sensor and actuator networks; estimation of a dynamical system over a wireless fading channel using Kalman filter; control over wireless multi-hop networks based on time-delay and finite spectrum assignment; position localization in wireless sensor networks; cross-layer optimized based protocols for control over wireless sensor networks; rendezvous problems and consensus protocols for application in control of distributed mobile wireless networks; redeployment control of mobile sensors for enhancing wireless network quality and channel capacity; and coordinated control over low-frequency-radio-based ad-hoc underwater wireless communication network.

Timely and unique, this collection of work from top researchers is a seminal text in this rapidly-growing field.

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