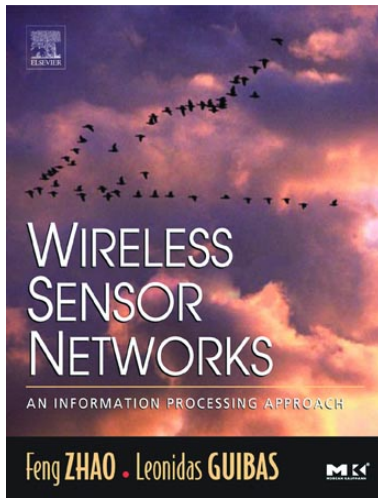


Wireless Sensor Networks: An Information Processing Approach

By Feng Zhao, *Microsoft Research, Redmond, WA* and
Leonidas Guibas, *Stanford University, Stanford, CA*

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“Wireless sensor and actuator nets, also known as motes and smart dust, are an emerging computer class based on a new platform, networking structure, and interface that enable novel, low cost, high volume, applications. This text and reference is a critical link to create this new class by covering the field of study for both practitioners and researchers.”

—Gordon Bell, Senior Researcher, Microsoft Corporation

“This book provides both an insightful overview of the emerging field of wireless sensor networks, and an in depth treatment of algorithmic signal and information processing issues. An excellent text for both professionals and students!”

—Deborah Estrin, Center for Embedded Networked Sensing, UCLA

Designing, implementing, and operating a wireless sensor network involves a wide range of disciplines and many application-specific constraints. To make sense of and take advantage of these systems, a holistic approach is needed—and this is precisely what *Wireless Sensor Networks* delivers.

Inside, two eminent researchers review the diverse technologies and techniques that interact in today’s wireless sensor networks. At every step, they are guided by the high-level information-processing tasks that determine how these networks are architected and administered. Zhao and Guibas begin with the canonical problem of localizing and tracking moving objects, then systematically examine the many fundamental sensor network issues that spring from it, including network discovery, service establishment, data routing and aggregation, query processing, programming models, and system organization. The understanding gained as a result—how different layers support the needs of different applications, and how a wireless sensor network should be built to optimize performance and economy—is sure to endure as individual component technologies come and go.

Features

- Written for practitioners, researchers, and students and relevant to all application areas, including environmental monitoring, industrial sensing and diagnostics, automotive and transportation, security and surveillance, military and battlefield uses, and large-scale infrastructural maintenance.
- Skillfully integrates the many disciplines at work in wireless sensor network design: signal processing and estimation, communication theory and protocols, distributed algorithms and databases, probabilistic reasoning, energy-aware computing, design methodologies, evaluation metrics, and more.
- Demonstrates how querying, data routing, and network self-organization can support high-level information-processing tasks.

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