Contents

Part I Introduction and Stochastic Modeling				
1	Introduction	3		
2	Stochastic Modeling of Delay, Energy Consumptionand LifetimeYunbo Wang, Mehmet C. Vuran and Steve Goddard	11		
Pa	rt II Barrier and Spatiotemporal Coverage			
3	Barrier Coverage: Foundations and Design	59		
4	Spatiotemporal Coverage in Fusion-Based Sensor Networks Rui Tan and Guoliang Xing	117		
Pa	rt III Tracking, Estimation, and Counting			
5	Probabilistic Indoor Tracking of Mobile Wireless Nodes Relative to Landmarks Ioannis Ch. Paschalidis, Keyong Li, Dong Guo and Yingwei Lin	169		
6	Protocol Design for Real-Time Estimation Using Wireless Sensors	201		
7	Target Counting in Wireless Sensor Networks Dengyuan Wu, Bowu Zhang, Hongjuan Li and Xiuzhen Cheng	235		



xi

Part IV		Coverage and Localization in Three-Dimensional Wireless Sensor Networks			
8		rage and Connectivity in 3D Wireless Sensor Networks n Mansoor and Habib M. Ammari	273		
9	-	lization in Three-Dimensional Wireless Sensor Networks n Mansoor and Habib M. Ammari	325		
Pa	rt V	Topology Control and Routing in Three-Dimensional Wireless Sensor Networks			
10		e-Dimensional Wireless Sensor Networks: Geometric roaches for Topology and Routing Design	367		
11		ing in Three-Dimensional Wireless Sensor Networks Paule Yao and Habib M. Ammari	411		
Pa	rt VI	Underground and Underwater Sensor Networks			
12	Cons	Future of Wireless Underground Sensing Networksidering Physical Layer AspectsIo Rocha da Silva, Mahta Moghaddam and Mingyan Liu	451		
13	Auto	ommunication Framework for Networked nomous Underwater Vehicles hi Chen and Dario Pompili	485		
Pa	rt VII	Multimedia and Body Sensor Networks			
14	Mult	Complexity Video Streaming for Wireless imedia Sensor Networks Pudlewski and Tommaso Melodia	529		
15		V Sensor Networks for Activity and Gesture Recognition	567		

Contents

Part VIII Social Sensing

16	Analytic Challenges in Social Sensing	609
17	Behavior-Aware Mobile Social Networking	639
18	Emerging Applications of Wireless Sensing in Entertainment, Arts and Culture	665
Ed	itor Biography	695