

Contents

Part I Cognitive Radio and Radio Spectrum

1	Introduction to Cognitive Radio	3
	Berna Sayrac	
2	Spectrum Usage Models for the Analysis, Design and Simulation of Cognitive Radio Networks.	27
	Miguel López-Benítez and Fernando Casadevall	
3	Bandwidth-Efficient Cooperative Spectrum Sensing	75
	X. Zhou, G. Y. Li, D. Li, D. Wang and A. C. K. Soong	
4	Emergency Networking in Licensed Spectrum Using Cognitive Radios: Challenges and Insights.	101
	H. Viswanathan and D. Pompili	
5	Signature Detection for Context Awareness in Cognitive Radio Networks	119
	E. Mera Avila, D. Muñoz Rodriguez and C. Vargas Rosales	
6	Generalized Eigenvalue Based Spectrum Sensing.	139
	Muhammad Zeeshan Shakir and Mohamed-Slim Alouini	

Part II Cognitive Radio for Wireless and Cellular Networks

7	From Self-Organizing to Cognitive Networks: How Can the Cellular Network Operator Make Use of the Cognitive Paradigm?	179
	Berna Sayrac	

8	Signal Separation for Cognitive Wireless Communications.	221
	Mustafa Cenk Ertürk and Hüseyin Arslan	
9	Towards Cognitive Networking: Automatic Wireless Network Recognition Based on MAC Feature Detection	239
	Maria-Gabriella Di Benedetto and Stefano Boldrini	
10	Spectrum Allocation in Cognitive Radio Networks Using Evolutionary Algorithms	259
	Abdelbaset S. Hamza, Haitham S. Hamza and Mona M. El-Ghoneimy	
11	Radio Resource Allocation for Cognitive Radio Based Ad hoc Wireless Networks	287
	Hrishikesh Venkataraman, Atul Purohit, Ritika Pareek and Gabriel-Miro Muntean	
12	Next Generation Cognitive Cellular Networks, LTE, WiMAX and Wireless Broadband Access	307
	D. Tsolkas, D. Xenakis, N. Passas and L. Merakos	
13	Cognitive Capabilities for Femtocell Networks: Cognitive Femtocells.	331
	Suzan Bayhan, Gürkan Gür and Fatih Alagoz	
14	Interference Modeling, Shaping and Avoidance in Cognitive Wireless Networks.	357
	Alireza Babaei, Prathima Agrawal and Bijan Jabbari	
15	System Design and FPGA Implementation for Cognitive Radio Wireless Devices.	383
	Georgina Kalogeridou, Nicolas Sklavos and Paris Kitsos	
	Brief Bio of the Editors	405
	Index	407

Cognitive Radio and its Application for Next Generation
Cellular and Wireless Networks

Venkataraman, H.; Muntean, G.-M. (Eds.)

2012, XII, 412 p., Hardcover

ISBN: 978-94-007-1826-5