Preface

With the rapid development of wireless networks, more and more radio spectrum resources will be needed. Cognitive radio (CR) is an exciting emerging technology to improve spectrum efficiency, by which the licensed spectrum resources can be shared dynamically by cognitive users. The accurate and effective spectrum sensing technologies are key to realizing the cognitive radio, which are still research hot-spots in the wireless sphere.

The aim of this book is to provide some useful methods to improve the spectrum sensing performance in a systematic way, and point out an effective method for the application of cognitive radio technology in wireless communications. After giving a state-of-the-art survey, we propose some new cooperative spectrum sensing (CSS) methods, with an attempt to achieve better performance. For each CSS, the main idea and their corresponding algorithm design are elaborated in detail.

This book covers the fundamental concepts and the core technologies of CSS, especially its latest developments. Each chapter is presented in a self-sufficient and independent way so that the reader can select the chapters interesting to them. The methodologies are described in detail so that the readers can repeat the corresponding experiments easily.

For researchers, it would be a good book to understand the classifications of CSS, inspiring new ideas about the novel CSS technology for CR, and a quick way to learn new ideas from the current status of CSS. For engineers, it would be a good guidebook to develop practical applications for CSS.

Chapter 1 provides a broad view of CR. Chapter 2 shows the CSS technologies and current researches. Chapter 3 focuses on the CSS based on hard combination, mainly devoted to the relationship of each performance parameter. Chapters 4–6 are devoted to algorithms to solve the actual existing problems, mainly focusing on the current research fruits of the authors. We provide the basic frameworks and the experimental results, which may help the readers find some new ideas. Chapter 7 introduces the application of CR and provides a basic realization method for mobile communications.

This work was supported in part by the National Natural Science Foundation of China (No. 61272262), National Science Foundation for Young Scientists of Shanxi Province, China (Grant No. 2014021021-2) and Doctor Startup Foundation of TYUST, China (No. 20122032).

We are grateful to the Springer in-house editors for the editorial assistance and excellent cooperative collaboration to produce this important scientific work. We hope that the reader will share our excitement to present this book and will find it useful.

Taiyuan, Shanxi
November 2015

http://www.springer.com/978-3-319-31094-7

Cognitive Wireless Networks Using the CSS Technology

Li, M.; Wang, A.; Pan, J.-S.

2016, XII, 160 p. 69 illus., 31 illus. in color., Hardcover
ISBN: 978-3-319-31094-7