

Preface

This book presents a systematic study of game-theoretic approaches for dynamic spectrum redistribution. The objective of this book is to provide readers with a comprehensive understanding of fundamental design methodologies for efficient spectrum allocation with strategic participants. The book can be used as a graduate-level seminar textbook and as a reference for academic and industrial researchers and students working in this field.

In this book, Chap. 1 begins with an introduction of the problem of game-theoretic spectrum redistribution. A short tutorial of solution concepts in game theory is presented in Chap. 2. Chapter 3 covers state of the art in the literature. Chapter 4 provides two complementary game-theoretic approaches for channel allocation in a clique. In Chap. 5, the focus shifts to game-theoretic approaches in multi-hop wireless networks, where spectrum can be spatially reused. Finally, Chap. 6 summarizes the contents of this book and points out open problems.

The only prerequisite knowledge for this book is a basic understanding of game theory. For those who are not familiar with game theory, please refer to Chap. 2 for a short tutorial. A comprehensive introduction of game theory can be found in [46]. Background in wireless communication is recommended but not required, as the necessary underlying principles are covered in the game/auction models.

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