

Book Summary: 700 Characters

This book explains the fundamental principles and protocols of key existing and emerging wireless networking technologies. The book begins with an overview of the basic theories of wireless signals followed by detailed coverage of the evolution and latest developments of popular wireless networks, including WiFi, Bluetooth, LoRa, and 5G. The concluding chapters deal with emerging paradigms in wireless networking such as Artificial Intelligence assisted wireless networking, wireless sensing, and aerial wireless networking with drones and unmanned aerial vehicles (UAVs). The book contains many in-text worked-out examples, illustrative figures, end-of-chapter multiple choice questions, and is an ideal textbook for students and a valuable reference for anyone working in this rapidly evolving field.

Book Summary: 250-300 Words

There has been phenomenal uptake of wireless and mobile networking technologies over the last decades. Many significant developments have taken place during this time making the wireless technology more affordable, effective, and reliable. This book explains the fundamental principles and protocols of key existing and emerging wireless networking technologies. The book begins with a review of the fundamentals of wireless communications. It covers the basic theories and terminologies of coding and modulation, which maps digital information to the underlying signal, as well as the models to capture the dynamics of wireless signal propagation in the environment. The book provides in-depth coverage of the WiFi evolution covering both the mainstream WiFi, which operates in 2.4/5GHz with new versions targeting 6GHz, as well as some of the niche WiFi standards that operate outside the mainstream bands such as 802.11af in 700MHz TV bands, 802.11ah in 900MHz to connect Internet of Things (IoT), and 802.11ad/ay in 60GHz to support multi-gigabit applications. The book covers the fundamental concepts of cellular networks, examines the advancements brought forth by each generation, and discusses new applications and the underpinning wireless technologies promised by 5G. It also covers a recently developed long-range low-power wireless networking technology called LoRa, which is the fastest growing technology to connect millions of IoT sensors and devices throughout the world. The concluding chapters examine emerging wireless paradigms such as Artificial Intelligence for wireless networking, sensing with wireless signals, and mobile networking with flying base stations carried by drones and unmanned aerial vehicles (UAVs). With many worked-out examples, illustrative figures, multiple choice questions, the book is an ideal textbook for students and a valuable reference for anyone working in this rapidly evolving field.