



EMERGING TECHNOLOGIES FOR NEXT GENERATION TELECOMMUNICATION SYSTEMS

Editors
**Sharifah Hafizah Syed Ariffin
Omar Abdul Aziz**



UTM
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New technologies have emerged in recent years for communication engineering, which contributed in many ways to the connection of the borderless environment. This book presents the implementation and evaluation of these emerging technologies that includes front-end systems and backbone networks. Divided into 7 chapters, the first chapter presents preliminary introduction of the contents. Chapter 2 presents design analysis of antenna array using graphene-based material. Chapter 3 examines user association to cellular network's base station for the case of a hybrid microwave and millimetre wave operation. Chapter 4 discusses on overview of base stations handover for the scenario of high-speed train. Chapter 5 demonstrates a case study of internet-of-things (IoT) applications. Chapter 6 studies prospective technique to ensure a balance data traffic load management for fog network. Finally, chapter 7 reviews slicing management for network virtualisation.



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PREFACE

Emerging technologies in the communication system are important to enable advancement of devices and instruments in the market. Artificial intelligence is becoming more useful to communication systems as it learns the behaviour of the network, which improves decision making.

Wireless communication is impossible without an antenna. Modern antenna design has allowed latency reduction and improved power efficiency. Fifth-generation (5G) antenna with good characteristics can support new features such as larger bandwidth for heterogeneous usage by modern clients. Other innovations including massive multiple inputs multiple outputs (MIMO), millimetre-wave communications, full-duplex communications, energy harvesting, and wireless power transmission, will operate alongside newly deployed 5G networks. Incorporating these technologies alleviates the spectrum crunch issue and greatly increases network capacity.

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Sharifah Hafizah Syed Ariffin

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