

Foreword

In recent years, there has been a rapidly increasing demand for the development of advanced interactive multimedia applications such as video telephony, video games, and TV broadcasting, which have resulted in spectacular strides in the progress of wireless communication systems. However, these applications are always stringently constrained by current wireless system architectures due to the request for high data rate for video transmission. To better serve this need, 4G broadband mobile systems are being developed and are expected to increase the mobile data transmission rates and bring higher spectral efficiency, lower cost per transmitted bit, and increased flexibility of mobile terminals and networks. The new technology strives to eliminate the distinction between video over wireless and video over wireline networks. In the meantime, great opportunities are provided for proposing novel wireless video protocols and applications, and for developing advanced video coding and communications systems and algorithms for the next-generation video applications that can take maximum advantage of the 4G wireless systems. New video applications over 4G wireless systems is a challenge for multimedia and wireless communication researchers.

There are few problems of mobile and wireless network design and analysis that are as challenging as multimedia security and wireless technology in a virtual reality environment. In mobile ad hoc networks, specific intrusion detection systems are needed to safeguard them, since traditional intrusion prevention techniques are not sufficient in the protection of mobile ad hoc networks. Therefore, an intrusion detection system is another challenge and a fruitful area in which networking can play crucial roles in resolving problems and providing solutions to intrusion detection systems and authenticating the maps produced by the application of the intelligent techniques using watermarking and cryptology technologies.

In short, the book is an indispensable reference and very beneficial to both researchers and developers in the fields of multimedia and wireless technology; in addition, it will be of great use for many youngsters who are new to the field of multimedia in mobile and wireless networks. In addition, this book presents to the multimedia and wireless network communities the state of the art in multimedia transcoding in mobile and wireless networks and will inspire further research and development on new applications and new concepts in new trendsetting directions and in exploiting the multimedia in wireless technology.

Finally, I am pleased and honored to have been asked to write the foreword for this book. The authors, all active researchers in the area of multimedia in wireless networks, should be congratulated for providing this valuable reference book for the research community.

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Foreword

Mobile/cellular phones are now being used not only for verbal communications but also for other forms of communication involving multimedia data. The video phone (i.e., video mobile phone) is taking off. Being able to see a person on the other side of the phone line is, to some degree, exciting, which has moved us to a new era of telephone communication. People experience a sense of connection more than ever before. This becomes possible due only to the availability of multimedia features in communication technology, especially in wireless technology.

Watching news on a mobile phone is also becoming increasingly popular. Almost all major TV news networks now offer news on mobile devices. One of the major news networks has a slogan that says, "If you can't move with the news, the news will move with you." This statement truly reflects how the news moves with people through their mobile phones. Latest news, weather forecasts, financial reports, or even interactive road maps are a fingertip away, readily available anytime, anywhere on mobile phones. This kind of multimedia information on mobile devices provides society with a new level of information services.

In addition to communication and information services, there are other forms of mobile multimedia, including interactive and collaborative mobile games, interactive road maps, and mobile mashup, to name just a few. If collaborative games or network games were popular among games addicts in the past, it will not be too far in the future that people will play collaborative games on mobile phones. Interactive road maps are very useful since they offer a "one touch and you will be there" promise, as advertised by one of the major interactive road directory products. Mobile mashup collaborating with the new Web generation has lately been attracting researchers and developers as well as the general public.

All of these exciting mobile multimedia applications would have not been possible without extensive research in this field. Multimedia on the one hand is hungry for resources, while wireless and mobile devices on the other hand face many inherent constraints and limitations. Coupling these two certainly requires unique strategies in order to produce those demanding applications. Independent researches in wireless network and multimedia have to be brought together to identify how to address specific needs imposed by mobile multimedia applications.

This book contains some of the leading works in mobile multimedia. It addresses important issues for the success of adoption of mobile multimedia, including background knowledge in multimedia and wireless networking, current work in mobile multimedia, and some interesting applications. This book will certainly be useful for researchers and research students working in various aspects of mobile multimedia.

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The vital role of multimedia applications in various daily life activities is noticed and appreciated. These applications have been developed through various means such as mobile phones and wireless networks. These instruments became one of the nonluxurious tools that help human beings, particularly in the commercial, scientific, banking, and other sectors, to announce and promote their services using these tools and their associated technologies.

To understand the tremendous usage of these tools, we should first know their functionalities and capabilities. Among the major tasks of these applications are keeping the human being updated on the news all around them by sending news in many multimedia formats.

This book highlights the issues that are related to many applications that the mobile phone can address and handle, from a conventional one that handles conventional communication services to interactive mobile multimedia that handles various types of applications such as gaming, road maps, weather forecasting, and so forth.

This book also includes topics that discuss cellular/mobile phone applications theoretically and experimentally, and it contains valuable information for every researcher, developer, and academic person. The wide spectrum of topics shows the value of this book.

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