Advertising provides financial support for a large portion of today’s Internet ecosystem. Compared to traditional means of advertising, such as a banner outside a store or textual advertisements in newspapers, multimedia advertising has some unique advantages: it is more attractive and more salient than plain text, it is able to instantly grab users’ attention and it carries more information that can also be comprehended more quickly than when reading a text advertisement. Rapid convergence of multimedia, Internet and mobile devices has opened new opportunities for manufacturers and advertisers to more effectively and efficiently reach potential customers. While largely limiting itself to radio and TV channels currently, multimedia advertising is about to break through on the web using various concepts of online multimedia advertising.

This book aims at bringing together recent insights from the research on online multimedia advertising that addresses the theoretical fundamentals, solution concepts, and the issues related to the development of modern multimedia advertising schemes. As the first book in this field, we are also aiming at stimulating the developments of this emerging and promising direction. The book is organized into five sections and contains fifteen chapters.

Section 1 introduces conventional text- and banner-based advertising techniques. In the first chapter, Wang et al. discuss the click-through rate estimation for rare events in online advertising. In the second chapter, Grigoras et al. propose a reinforcement learning method for online optimization of banner format and delivery, where contextual ads are delivered using rich media banners to display motion and exploit sensory information. Finally, Siddiqui introduces in the third chapter some basic concepts of online advertising and proposes a new framework for contextual online advertising, which attempts to utilize local context and sentiment for identifying relevant ads.

Section 2 describes techniques for image advertising. The first chapter, by Li and Hua, presents a contextual in-image advertising system in which the product information selected via multimodal relevance is embedded non-intrusively within each individual image. Then, Wang et al. present in the second chapter an intelligent image advertising system called Argo. Argo learns a user’s profile from his/her shared photos and suggests relevant ads accordingly. The third chapter in this section, by Ibrahim, discusses concepts of “pursuit” and “play” in the multimedia advertising. It is concluded that the role of play and pursuit situate consumers in the online environments as both agents and consumers in creating value for marketers.

Section 3 focuses on video advertising which has become a hot research topic and a key strategy for monetizing media contents. In the first chapter, Ning et al. propose an intelligent overlay video advertising system which is characterized by content and human attention awareness. The second chapter, by Chang and Wu, provides an explorative study on the virtual product placement in a sports video, which is another angle on video advertising. The third chapter, by Zigmond et al., focuses on how the results on
quality analysis of online advertising can be applied to the TV domain. In the fourth chapter, Duan et al. present an online video service that can link relevant advertisements with traditional TV programs. The last chapter, by Mei and Li, describes an in-stream video advertising system which can insert commercial video clips non-intrusively into a source video program. The advertisements are selected by multimodal content relevance, while the optimal ad locations are automatically detected by video content analysis.

Section 4 addresses the user-related issues in online advertising. The first chapter, by Yan et al., provides a survey on behavior targeting, where the inferred information on a user’s behavior serves to understand his or her needs and deliver advertisements accordingly. Then, Tsatsou et al. discuss in the second chapter the distributed technologies for personalized advertisement delivery. The third chapter, by Wang, introduces the fundamentals of understanding the users in an online advertising eco-system. Classical methods, among which those relying on demographic and geographic information, as well as behavioral targeting and online commercial intent detection, are discussed.

Section 5 focuses on recent technologies for mobile multimedia advertising. Tselios et al. provide an overview on targeted advertisement in an IP multimedia subsystem. A new entity called personalization and advertisement insertion logic is introduced, which enables a mobile network operator to exploit contextual data stored in its network for personalized advertisement selection.

The book is well suited for both graduate students and senior researchers working in the field of multimedia and/or online advertising, but also for practitioners, such as those working in the field of search engine development, video/image content providers, developers of video/image sharing portals and IPTV providers.

Our interactions with many exceptional colleagues made significant impact on the development of this book. We would like to thank all the authors for their contributions. We would also thank the editorial advisory board members, Kiyoharu Aizawa, Alberto Del Bimbo, Shih-Fu Chang, Chang Wen Chen, Tat-Seng Chua, Shipeng Li, Ying Li, and Ming-Ting Sun, for their encouragements and advices on publishing this book. We are also thankful to a number of reviewers who provided insightful and valuable comments to improve the quality and readability of this book. These reviewers are Chia-Hu Chang, Ying Cui, Lingyu Duan, Winston Hsu, Zhigang Hua, Yannet Interian, Shuqiang Jiang, Yuan Liu, Qiaozhu Mei, Huazhong Ning, Dou Shen, Jialie Shen, Ja-Hwung Su, Yongqing Sun, Christos Tselios, Bin Wang, Jingdong Wang, Jinqiao Wang, Xin-Jing Wang, Xuerui Wang, Xiao Wu, Jun Yan, Bruce Zhang, and Dan Zigmond.

Finally, we are deeply indebted to our wives, Shu Miao, Yali Liu, and Tatjana Ulicevic, and our children, Ziyan Hua, Yuting Mei, Miran and Anja Hanjalic for their patience and understanding while we were busy with creating this book.

We wish you a pleasant reading.

Xian-Sheng Hua
Microsoft Research Asia, China

Tao Mei
Microsoft Research Asia, China

Alan Hanjalic
Delft University of Technology, The Netherlands