

Preface

Laptop computers have become smaller and smaller, whilst smart mobile phones have been made bigger and bigger, becoming an essential part of people's daily activities. These sensor-rich devices deal with all kinds of media data, including texts, images, videos, audio, and geo-data, among others. Collectively, they form an ecosystem for multimedia acquisition, processing, communication, and presentation, which provides a lot of opportunities for new multimedia applications.

However, when developing new mobile multimedia applications, an inevitable issue is the limited capacity a smart phone can provide in terms of computing, storage, and battery life. Thanks to the great data transmission capacity and the rapid development of cloud computing technologies, it is natural to think about migrating majority of the media processing and storage to the cloud. It is this marriage of the mobile and cloud ecosystems which has provided us with such tremendous opportunities for new multimedia applications.

In 2010, observing this trend, we organized a workshop on mobile cloud media computing in conjunction with ACM Multimedia 2010. We have also led the organization of workshops on mobile vision in conjunction with CVPR and ICCV, and special issues on similar topics in International Journal of Computer Vision, and IEEE Trans. on Circuits and Systems for Video Technologies. These experiences are what motivated us to edit this book, which is intended to capture a snapshot of the state-of-the-art of this emerging field of research.

Although we intended to cover a broader set of topics, we are inevitably constrained by the limited time and availability of contributing authors. In the end, we have only covered a subset of the topics, revealing just the tip of iceberg of this active research area. In particular, this book includes work on mobile computational photography, mobile augmented reality, mobile visual search and recognition, cloud visual computing and mobile applications, and mobile multi-sensor fusion, with a wide variety of applications covering mobile assistance for the visually impaired and mobile experience sharing.

This area of research and development is fast evolving, especially considering that mobile and cloud computing and services have now become the first priority of

many leading technology companies such as Microsoft, Amazon, Apple, Google, Facebook, IBM, Alibaba, Baidu, and Tencent. Therefore, it is likely that there have been many more new technologies, applications, and services developed and built upon during the publication of this book. Nevertheless, we would like the reader to use this book as a source of inspiration for new research and development, instead of just using it as a reference to the “state-of-the-art.”

Last but not least, we would like to thank our families for their support in the process of putting this book together. Gang Hua especially would like to dedicate this book to his wife, Yan Gao, and daughter, Kayla Hua. The book would not have been possible without their support. We hope you enjoy this book, and of course, we welcome your feedback/suggestions/comments!

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