

# Preface

In recent years, disruptive developments in computing technology, such as large-scale and mobile computing, has accelerated the growth in volume, velocity, and variety of multimedia data while enabling tantalizing analytical processing potential. During the last decade, multimedia data mining research extended its scope to cover more data modalities and shifted its focus from analysis of data of one modality to multi-modal data, from content-base search to concept-base search, and from corporate data to social networked communities data. Ubiquity of advanced computing devices such as smart phones, tablets, e-book readers, networked gaming platforms, which serve both as data producers and ideal personalized delivery tools, brought a wealth of new data types including geographical aware data, and personal behavioral, preference and sentiment data. Developments in networked sensor technology allow enriched behavioral personal data that include physiological and environmental data that can be implemented to build deep, intrinsic, and robust models.

This book reflects on the major focus shifts in multimedia data mining research and applications toward networked social communities, mobile devices, and sensors. Vast amount of multimedia are produced, shared, and accessed everyday in various social platforms. These multimedia objects (images, videos, texts, tags, sensor readings, etc.) represent rich, multifaceted recordings of human behavior in the networked society, which lead to a range of important social applications, such as consumer behavior forecasting for business to optimize advertising and product recommendations, local knowledge discovery to enrich customer experience (e.g., for tourism or shopping), detection of emergent news events and trends, etc. In addition to techniques for mining single media items, all these applications require new methods for discovering robust features and stable relationships among the content of different media modalities and users, in a dynamic, social context rich, and likely noisy environment.

Mobile devices with multimedia sensors, such as cameras and geographic location sensors (GPS), have further integrated multimedia into people's daily lives. New features, algorithms, and applications for mining multimedia data collected with mobile devices enable the accessibility and usefulness of multimodal data in

peoples' daily lives. Examples of such applications include personal assistants, augmented reality systems, social recommendations, entertainment, etc.

In addition to the research topic mentioned above, this book also includes chapters devoted to privacy issues in multimedia social environments, large-scale biometric data processing, content and concept-based multimedia search, advanced algorithms for multimedia data representation, processing, and visualization.

This book is mostly based on extended and updated papers presented at the Multimedia Data Mining Workshops held in conjunction with Association of Computing Machinery (ACM) Special Interest Group Knowledge Discovery and Data Mining (SIGKDD) Conferences in 2010–2013. The book also includes several invited chapters. The editors recognize that this book cannot cover the entire spectrum of research and applications in multimedia data mining but provides several snapshots of some interesting and evolving trends in this field.

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