

Book Review

Multimedia Ontology: Representation and Applications, by **Santanu Chaudhury, Anupama Mallik and Hiranmay Ghosh**; CRC Press, Taylor & Francis Group, London, 2015, ISBN 9781482236347, Hardback, 300 pages, GBP 57.99.

The exponential growth of multimedia digital contents over worldwide web leads us to a virtual world, where citizens in a digital world are more engaged with multimedia contents than ever before. The use of mobile and handheld devices by the young and technology-savvy citizens is mostly responsible for the enormous growth of multimedia contents over Internet while social media platforms aid at disseminating user-generated multimedia contents to a billion netizens. Young generations are now more engaged with a virtual world created by vibrant social networks, than the real world. YouTube, Facebook, and WhatsApp are some of the most popular social media platforms, which are being used globally for real-time sharing of multimedia contents. On the other hand, the scholarly journals also have started embedding audio-video, graphical and photographic documentation of authors' experimentations or experiences. The research data supplied by the authors for a publishable research article may also contain graphical, photographic, or audio-visual contents. Such data are being published concurrently with the respective article and also being added to research data repositories. Many of multimedia contents are professionally curated for uploading to knowledge repositories or Multimedia knowledge systems while a majority of user-generated contents are self-archived in the institutional repositories or global data sharing platforms such as Figshare.com and DataDryad.org. The recreational and educational videos are globally shared using YouTube, Vimeo and other such platforms for global dissemination and also for reputation building of institutions or individuals. Security agencies also generate a huge volume of video data from the close-circuit television (CCTV) cameras across the world to secure public utilities and industrial establishments from threats and sabotages.

With this background, the book titled "Multimedia Ontology: Representation and Applications" makes us understand what is happening around an emerging field, i.e., ontology representation schemes for multimedia applications. The authors, affiliated to Indian Institute of Technology Delhi (IIT Delhi) and TCS Research, have a collective research experience of more than fifteen years in the specialized area of multimedia ontology representation backed with their experience in applications development in different projects.

The concepts of web semantics and ontology representation are now used much frequently in online multimedia knowledge systems and applications. Since

user-generated multimedia contents cater to diversified needs of users and creators, their knowledge representation is more challenging than a traditional representation of textual knowledge.

In the Foreword, Professor Ramesh Jain noted, "As our technology allowed us to capture visual and other sensory knowledge, suddenly traditional ontology started appearing limited. Extensions to ontology for capturing multimedia data and information appeared essential for the advancement of our knowledge ecosystem". He further observes that in this book the authors could "establish the requirement of an ontology representation scheme for multimedia applications. Such ontology should be able to represent a domain not only concerning the media properties of concepts and relations between them. In an emerging multimedia knowledge world, ontology should be able to deal with a unified description of conceptual and experimental worlds" (p. xiii).

The authors highlight the evolutionary aspects of the semantic web and multimedia wave in chapter one. The chapter then briefly describes the key concepts in the semantic web, and ontology representation. Chapter two gives a brief overview of semantic web technologies, RDF (resource description framework), and RDF Schema (RDFS) as promoted by World Wide Web Consortium (W3C). An RDFS is responsible for expressing detailed description of web contents following a set of classes with certain properties, elements, or descriptors. However, RDFS is aided with expressive resource description languages, such as web ontology language (OWL) and multimedia web ontology language (MOWL). The book provides a detailed analysis of MOWL with many real-life examples and their relational features and attributions. The authors also describe the MOWL constructs that were supported in their ongoing and completed projects. In chapter 4, an overview of most relevant standards for describing multimedia content is given such as MPEG-7 and MPEG-21 standards of the coveted Moving Picture Experts Group (MPEG). Chapter 5 illustrates MOWL language constructs based on RDFS. In different chapters of this book, the authors provide examples of multimedia ontology of Indian tangible and intangible cultural heritage assets, such as, a multimedia ontology of Indian architecture (p. 113), Islamic monuments with region discriminators (p. 117), Islamic architecture observation model (p. 117), common architectural styles characterizing classes of monuments (p. 114), and Indian classical dance (p. 136). The Chapter 10 titled 'Application of Multimedia Ontology in Heritage Preservation' is more enriching, as the authors describe here intellectual explorations of various themes of Indian cultural heritage.

The book covers a diverse set of multimedia contents such as audio, moving pictures and still photography. The technical experts working in cultural heritage preservation and multimedia documentation projects in museums or cultural institutions will be benefitted from the practical examples given in this book. Multimedia documentation techniques are now very popular among heritage management professionals, where they create a virtual experience of visiting cultural heritage sites. The virtual walkthroughs of many UNESCO world heritage sites and famous museums are made available by the respective museums or heritage management authorities for their virtual visitors. This book will help the creators of the online virtual walkthroughs and heritage information systems.

The book makes the reader understand generic to specific aspects of multimedia ontology representation and semantic web applications. This book is an essential read for the students, researchers, and information professionals having deep interests in the areas of ontology engineering, multimedia information retrieval, and the semantic web.

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