

Contents

Editorial Message i

Research

Solving Problems with Visual Analytics: Challenges and Applications-
Daniel A. Keim, Leishi Zhang, Miloš Krstajic, Svenja Simon 1

Towards a Characterization of Interactivity in Visual Analytics-
Kamran Sedig, Paul Parsons, Alex Babanski 12

Analyzing Alternative Scenarios of Evolution in Heritage Architecture: Modelling
and Visualization Challenges-
Iwona Dudek, Jean-Yves Blaise 29

Incremental and Scalable Computation of Dynamic Topography Information Landscapes-
Kamran Ali Ahmad Syed, Mark Kröll, Vedran Sabol, Stefan Gindl, Arno Scharl 49

Book Review 66

Conference Notification 67

- The First International Conference on Future Generation Communication Technologies (FGCT 2012)
- The Eighth International Conference on Digital Information Management (ICDIM 2013)

Special Issue on the Theory and Application of Visual Analytics

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Introduction

The Journal of Multimedia Processing and Technologies (JMPT) aims to provide a multidisciplinary forum to present and discuss theory and research, development, architectures, networking, system support tools and applications as well as case studies of multimedia and hypermedia. The journal also features experimental and survey articles. It seeks to fill the gap that exists between several fields and communities such as image processing, video processing, audio analysis, information retrieval and understanding, data management and mining, security, and education. The special issue on Theory and Application of Visual Analytics will collect theoretical advances and practical applications of Visual Analytics for semantic and multimedia systems. Visual Analytics is the science of analytical reasoning supported by interactive visual techniques. It is a multi-disciplinary field of research integrating techniques from visualisation and computer graphics, statistics and mathematics, data management and knowledge representation, data analysis and machine learning and cognitive and perceptual sciences. Real-world applications in areas like multimedia retrieval, media analysis or investigation of semantic graphs require efficient access and analysis of massive, heterogeneous, dynamic knowledge repositories which frequently contain ambiguous or conflicting evidence. Visual Analytics advocates a promising combination of automatic analysis and human visual pattern recognition abilities and domain knowledge to address this challenge.

Due to the success of the TAVA'11 Special Track at the I-Know Conference Series¹, we have been able to gather high quality publications in the field. From the submitted papers, four contributions on the theory and application of visual analytics have been selected for this special issue after an intensive peer reviewing process.

In particular, the contribution of Keim et. al. 2012 presents the challenges of visual analytics and exemplifies them with several application examples, which illustrate the existing potential of current visual analysis techniques but also point out their limitations. Following Keim et. al. 2012, Sedig et. al. 2012 defines the quality of interaction among components of visual analytics systems as interactivity. They draw on research from the areas of cognitive and perceptual psychology, human-information interaction, visualisation sciences, and interaction design to examine some of the current challenges faced in discussing and characterizing interactivity.

Dudek & Blaise 2012 presents methods to support reasoning tasks in heritage architecture. Thereby, graphics are enabling analysts to visualise and share their understanding of how, from a given set of information, alternative scenarios or evolution can be inferred. The paper comments on the nature of the cognitive processes in historical sciences, on factors that need to be weighed when interpreting sets of information, and on the characteristics of the parameter time when depicting architectural changes.

Finally, Syed et. al. 2012 presents a scalable, incremental approach for generating information landscapes in Web intelligence applications. The paper introduces a processing pipeline that includes crawling, filtering and pre-processing of the Web content, and then projecting, labelling and rendering the aggregated information.

We hope you enjoy this special issue and want to thank all supporters, especially our Reviewing Board, namely

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