Special Issue on Social Recommendation and Delivery Systems for Video and TV Content

George Lekakos · Teresa Chambel ·
Hendrik Knoche

Published online: 25 October 2013
© Springer-Verlag Berlin Heidelberg 2013

Interactive video and TV content has become available in many settings which include the web, mobile devices, and desktop applications, as well as smart TVs. Although the above multimedia developments (e.g., Web-based TV, IPTV, and broadcast TV) have followed parallel or even competing paths, there is a set of underlying common themes that regard the users, as creators, distributors, and viewers of content. In the past, broadcast developments have been in competition with video streaming approaches, and the TV as device has been in conflict with the PC. Nevertheless, the convergence of network and rendering platforms has made such distinctions somewhat superficial. In particular, there are significant research issues that regard the social and the personal preferences of the user. Thus, the recommendation and delivery of multimedia content requires attention to significant research issues, such as semantics, pragmatics, and user preferences. The main goals of this special issue is to assess current approaches, systems, and applications, to evaluate how they treat the main issues of recommending and delivering video and TV content, as well as to propose novel designs for future multimedia systems.

G. Lekakos (✉)
Department of Management Science and Technology, Athens
University of Economics and Business, Athens, Greece
e-mail: glekakos@aueb.gr

T. Chambel
Lasige, Department of Informatics, Faculty of Sciences,
University of Lisbon, Lisbon, Portugal
e-mail: tc@di.fc.ul.pt

H. Knoche
Department of Architecture, Design and Media Technology,
Aalborg University, Aalborg, Denmark
e-mail: hk@create.aau.dk

This special issue had both direct submissions to our call for papers as well as submissions of papers presented at the 9th European Interactive TV and Video conference (EuroITV'11), held in Lisbon, Portugal from June 29 to July 1 2011. These conference papers have been significantly extended from their conference originals through more in-depth literature reviews and further results and analysis. From this pool and after thorough peer reviewing, we have included six papers in this issue, two of which came from extended versions of EuroITV'11 conference papers and the other four from direct submissions.

In this special issue, Kyoko Ariyasu, Hiroshi Fujisawa and Shyunji Sunasaki present the design and field trial evaluation of their system that leverages Twitter messages to drive recommendation services. The algorithms rely on auxiliary programme information and the time series of Twitter messages along with their similarity as input. The system achieves correct topic extraction rates of 85 % for messages with matching entries in programme metadata, 65 % for messages with matches in the closed-caption data of a programme, and has a 66 % correct sentiment classification of messages.

Faustino Angel Sánchez, Marta Barrilero, Federico Alvarez, and Guillermo Cisneros describe their TV recommender systems, which models user interest in content from consumption data. The system uses hidden Markov models and Bayesian inference to compute user interest in real time and its recommendation, which were very satisfactory after a week of use and have been verified through questionnaires. It improves over previous research by the introduction of connected items and a notion of global interest, which takes into consideration the changes in users' taste tendencies.

Heung-Nam Kim, Mark Bloess and Abdulmotaleb El Saddik propose Folkommender, a recommender system

that makes recommendations to a group of users, instead of individual recommendations produced typically by the majority of recommendations approaches. The authors explore a graph-based ranking method, where each user is represented as a node in a graph. By performing random walks in the graph, a set of ranked items that the group would eventually like the most are identified. The empirical research results demonstrate that the proposed approach is at least equivalent with other group recommendation algorithms, and under certain conditions produces more accurate results.

Shinjee Pyo, EunHui Kim and Munchurl Kim present an automatic recommendation mechanism that allows for sequential TV content recommendation. The authors employ three sequential pattern mining (SPM) methods (offline, online, hybrid) to extract sequential patterns for watched TV program contents and propose a preference weighted normalized modified retrieval rank (PW-NMRR) metric for clustering similar users. They report empirical results that demonstrate that the offline SPM method outperforms the online SPM method, which is found more effective for short-sequence recommendations, while the hybrid method's performance is balanced between the performance of the online and offline ones.

Filipa Peleja, Pedro Dias, Flavio Martins, and João Magalhães propose a framework that computes new media recommendations by merging users' ratings and their unrated written comments about specific entertainment shows. Unlike existing recommendation methods that explore ratings and metadata, this approach also analyzes what users have to say about particular media programs. The authors argue that text comments are excellent indicators of user

satisfaction, and apply sentiment analysis algorithms to infer user preferences and media shows popularity. The implemented recommendation framework can be integrated on a Web TV system accessing a video-on-demand service, and was evaluated on two datasets from IMDb and Amazon. These recommendation results, with ratings and the inferred preferences, exhibited an improvement over the ratings-only based recommendations.

Eva Oliveira, Pedro Martins and Teresa Chambel present a reflection on the power of emotions in our lives, the emotional impact of movies, and how to address the emotional dimension in the classification and access to movies, by exploring and evaluating the design of the interactive web video application—iFelt. Emotion recognition relied on biometric sensors and users feedback, and different mechanisms were conceived to access, browse and visualize movies and movie scenes based on their emotional impact. A user study evaluated iFelt usability in its different features, and another one focused on users attitudes, awareness and preferences about the emotional impact of movies, identifying, validating and bringing out new perspectives to enrich and personalize video access.

To conclude the special issue, the guest editors would like to extend their gratitude to the *Multimedia Systems* Journal Editor-in-Chief Thomas Plagemann and the Associate Editor Andreas Mauthe who provided their valuable advice and guidance throughout the preparation of this special issue as well as Springer for the collaboration. We would like to thank the authors who have prepared and revised the papers in a timely manner, and the reviewers who have given their time and valuable advice to the authors.