CrossMark

**GUEST EDITORIAL**

# Guest Editorial: Interactive Media: Technology and Experience

**Britta Meixner** [1] · **Rene Kaiser** [2] · **Joscha Jäger** [3] ·
**Wei Tsang Ooi** [4] · **Harald Kosch** [5]

The shifting balance between lean-back passive TV/Web-based media experience and lean-forward interactivity has led to new forms of collaborative content creation. This allows controlling media with a companion screen and more advanced forms of audiovisual content interaction. Based on such developments, new media formats and consumption paradigms that allow for new types of interactivity have emerged.

This special issue focuses on interactive media experiences and presents articles on recent advances regarding interaction with audiovisual content, both recorded and live. The issue brings together articles from the area of interactive media around topics of interest like enabling technologies, experiences, user interaction, and content. It shows best practices in all these areas as well as future challenges. The special issue received 31 submissions showing its widely-gained attention. After two rounds of revision, a total of 9 manuscripts were accepted. The manuscripts address the following issues in the field:

- "Interactive Web-based Hypermedia Coordination" (10.1007/s11042-016-3790-7) by Augusto Celentano. This article discusses the interactive coordination of hypermedia documents' components in the WWW environment, proposing a design space based on discrete events transmission between linked media based on an extension of the "spine" concept introduced by the IEEE 1599 standard for music description. Guidelines for the implementation in the standards HTML5/CSS/JavaScript environment are discussed.

✉ Britta Meixner
meixner.britta@gmail.com

1   Centrum Wiskunde & Informatica (CWI), Amsterdam, The Netherlands

2   Know-Center, Graz, Austria

3   Merz Akademie Stuttgart, Stuttgart, Germany

4   National University of Singapore, Singapore, Singapore

5   University of Passau, Passau, Germany

- "Interactive Video Search Tools: A Detailed Analysis of the Video Browser Showdown 2015" (10.1007/s11042-016-3661-2) by Claudiu Cobârzan, Klaus Schöffmann, Werner Bailer, Wolfgang Hürst, Adam Blažek, Jakub Lokoč, Stefanos Vrochidis, Kai Uwe Barthel, and Luca Rossetto. Current research tries to identify the best combinations of image, audio, and text features that combined with innovative UI design maximize interactive video retrieval tools performance. The 2015 edition of the Video Browser Showdown including its setup and the participating tools is described. The performance of those tools is presented and analyzed, interesting highlights are marked.

- "Co-Present and Remote Audience Experiences: Intensity and Cohesion" (10.1007/s11042-016-3879-z) by Erik Geelhoed, Kuldip Singh-Barmi, Ian Biscoe, Pablo Cesar, Jack Jansen, Chen Wang, and Rene Kaiser. This article presents the results of modelling audience response to new types of networked theatre plays introducing two types of metrics: Intensity relates to how intensively co-present and remote aspects of a performance are rated. Cohesion relates to how a performance as a whole (copresent and remote aspects) affects an audience. Furthermore, an innovative way of bundling relevant emerging technologies is needed to give a voice to the, as yet silent, remote audience.

- "Personalized Presentation Annotations Using Optical HMDs"(10.1007/s11042-016-4064-0) by Wyko Rijnsburger and Sven Kratz. It is difficult to adjust the content of traditional slide presentations to the knowledge level, interest, and role of individuals. This article presents a prototype eliminating non-pertinent information from slides by presenting annotations for individual attendees on optical head-mounted displays. Results show that annotations with a limited amount of information can significantly increase the amount of knowledge gained from attending a group presentation leading to a more clear and joyful experience.

- "Video Processing for Panoramic Streaming Using HVEC and its Scalable Extensions" (10.1007/s11042-016-4097-4) by Yago Sanchez de la Fuente, Robert Skupin, and Thomas Schierl. Special transport schemes for panoramic video delivery allow users to navigate interactively within high-resolution videos using Regions-of-Interest (RoI). The solution proposed within this article is built upon tile-based panoramic streaming and provides a low-complexity compressed domain video processing technique for using H.265/HEVC and its scalable extensions. The proposed technique overcomes the scalability issue of previous solutions not using tiles and battery consumption issues while reducing peak streaming bitrate during changes of the RoI.

- "Social Experiences within the Home Using Second Screen TV Applications" (10.1007/s11042-016-3646-1) by Jeroen Vanattenhoven and David Geerts. This article presents studies about social interaction between collocated viewers using second screen devices while watching TV, using applications that were designed for a specific TV program. Based on the findings of the user studies guidelines are formulated for the design of social second screen applications.

- "Extending Multimedia Languages to Support Multimodal User Interactions" (10.1007/s11042-016-3846-8) by Álan Livio Vasconcelos Guedes, Roberto Gerson de Albuquerque Azevedo, and Simone Diniz Junqueira Barbosa. Aiming to assist the development of multimedia applications with multimodal user interfaces, the integration of concepts from those two communities in a unique high-level programming framework is proposed. The framework is instantiated and evaluated in the NCL (Nested Context Language) multimedia language.

- "WanderCouch - A Smart TV Approach Towards Experiencing Music Festivals Live from the Living Room" (10.1007/s11042-016-3888-y) by Maarten Wijnants, Gustavo Rovelo, Peter Quax, and Wim Lamotte. This article reports on user expectations of immersively experiencing music festivals. Out of these expectations, an approach for remote festival engagement blending professional and user-generated content is distilled. The approach is implemented into a Smart TV application called WanderCouch and evaluated in a simulated live setting.
- "Academic Methods for Usability Evaluation of Serious Games: A Systematic Review" (10.1007/s11042-016-3845-9) by Rosa Yáñez-Gómez, Daniel Cascado-Caballero, and José-Luis Sevillano. In the last years, there has been an increasing interest in the design of video games. Usability as a key factor becomes even more important in "serious games", where the users' special characteristics should be considered, and the game efficacy depends on the users' adherence and engagement. This systematic review illustrates the general status of current academic usability evaluations of these games. It describes the main trends in the selection of methodologies and how they are applied.

We would like to thank all the reviewers who read the submitted manuscripts and provided constructive feedback to the authors. They played a tremendous role in shaping this special issue. We hope the selected articles in this special issue will inspire great research in the readers, to push the state-of-the-art in interactive media technology, and in improving the interactive media experience.



**Britta Meixner** is an ERCIM Fellow at Centrum Wiskunde & Informatica (CWI) in Amsterdam. She received her Ph.D. degree from the University of Passau, Germany, in 2014. The title of her thesis is "Annotated Interactive Non-linear Video - Software Suite, Download and Cache Management." Her research interests are hypermedia and video streaming. She is an award winner of the 2015 Award "Women + Media Technology," granted by Germany's public broadcasters ARD and ZDF (ARD/ZDF Förderpreis "Frauen + Medientechnologie" 2015). She is a reviewer for Springer Multimedia Tools and Applications (MTAP) Journal, the ACM TOMM Journal, and other journals. She is an Associate Chair at ACM TVX (2015–2017), an Area Chair at ACM Multimedia 2017, and served as a PC member for several other conferences. She was a co-organizer of the "International Workshop on Interactive Content Consumption (WSICC)" at ACM TVX (2014–2016).

**Rene Kaiser** is researcher at the Know-Center research center, Graz, Austria. His background is software engineering which he studied at FH Hagenberg. Currently he is pursuing a Ph.D. at Graz University of Technology. Rene's main research expertise and interest is in interactive personalized access to multimedia content. He investigated real-time content adaptation and automatic execution of cinematic behaviour, as well as the concept of 'Virtual Director' technology. He worked on several application domains, among them workplace learning, videoconferencing and telepresence, non-linear video production, live event broadcast and mediated theatre performances. Rene regularly contributes to the scientific community, recently by co-organizing the AltMM workshop at ACM MM'16 as well as the WSICC workshop series at ACM TVX.



**Joscha Jäger** is a creative technologist and researcher, working for more than 7 years in the realm of web-native hypervideo formats, time-based interaction concepts and video search interfaces. He has a strong focus on film as information architecture, collaborative editing systems for non-linear film, and user-driven annotation systems. In the last years, he was involved in several large scale research efforts towards the preservation and digital accessibility of audiovisual archives, as well as future film production and distribution cycles based on linked open data and semantic web technologies.

He co-organized the "Workshop on Interactive Content Consumption" (WSICC) at ACM TVX from 2014–2016, served as a mentor at the "Popathon" HackJams for web-native storytelling and is continuously developing the "FrameTrail" Open Hypervideo Environment.

**Wei Tsang Ooi** is an associate professor in the Department of Computer Science, National University of Singapore. His core research interest lies in the area of systems support for interactive multimedia applications, and has recently worked on zoomable video streaming, 3D graphics streaming, and networked virtual environment. Wei Tsang and his co-authors were recipients of the ACM Multimedia 2008 Best Paper Award, the ACM TOMCCAP Nicolas D. Georganas Best Paper Award 2011, and the ACM Multimedia 2013 Best Technical Demonstration Award. He has recently served as the technical program co-chair for the Pacific-Rim Conference on Multimedia (PCM) 2014 and the technical program chair for ACM MMSys 2014. Wei Tsang also served as the General Chair for ACM MMSys 2015 and the Author's Advocate for ACM Multimedia 2015. He is one of the guest editors for ACM Transaction of Multimedia Computing, Communications and Applications: Special Issue on 3D Mobile Multimedia (2008) and ACM/Springer Multimedia Systems Journal: Special Issue on Network and Systems Support for Games (2014).



**Harald Kosch** is a full professor at the University of Passau. He has a computer science engineer diploma (1993) and a PhD in computer science of the École Normale Supérieure de Lyon (1997). From 1997 to 2006, he hold a position of an assistant and later associate professor at the University of Klagenfurt. Since 2006, he leads the Chair of Distributed Information Systems at the University of Passau, where he is responsible for research and teaching in distributed database and information systems and Web databases. His current research activities include multimedia meta-data and databases, multimedia semantics, middleware and Internet applications, linked data and open data.