

Introduction to the Special Section of Best Papers of ACM Multimedia 2011

ACM Multimedia (ACM MM) is the worldwide premier multimedia conference and a key event to share scientific achievements and industry innovations. In 2011, the conference was held in Scottsdale, AZ, USA, and a large number of high-quality papers were published and presented. As a novelty to this year's conference, the traditional four-track format was changed to a ten-area format in order to solicit papers from a wider range of timely multimedia-related topics. The areas defined for 2011 were as follows.

- Multi-Modal Integration and Understanding in The Imperfect World
- Media Analysis and Search
- Scalability in Media Processing, Analysis, and Applications
- Multimedia Systems and Middleware
- Media Transport and Sharing
- Multimedia Security
- Media Authoring and Production
- Location-based and Mobile Multimedia
- Human, Social, and Educational Aspects of Multimedia
- Arts and Contemporary Digital Culture.

Traditionally, the authors of the papers nominated to the best paper award have been invited to extend their papers and submit their work to a TOMCCAP special issue. The 2011 conference included many excellent papers, and for this special issue, we have selected two of them for publication. These papers have gone through TOMCCAP's rigorous peer review process.

The first article is from the Multimedia Systems and Middleware area. It is entitled "CZLoD: A Psychophysical Approach for 3D Tele-Immersive Video" and is authored by Wanmin Wu, Ahsan Arefin, Gregorij Kurillo, Pooja Agarwal, Klara Nahrstedt and Ruzena Bajcsy. The work aims to reduce the bandwidth and computational demand of polygonal-based color-plus-depth video streaming and rendering systems. Through an extensive psychophysical experiment, the authors showed that there exist perceptually noticeable and perceptually unacceptable thresholds when a color-plus-depth video degrades in its level-of-details. These thresholds serve as the knees in the trade-off curve between the video quality and the resource usage and guide the design of the quality adaptation scheme in a 3D tele-immersive system. The findings from this article show that huge resource savings can be achieved (their experiments show 70% reduction in bandwidth and 150% increase in frame rate) for "free" by simply reducing the quality of the color-plus-depth video to a level that is hardly noticeable by users.

The second article is from the Location-Based and Mobile Multimedia area. The article is entitled "Active Query Sensing: Suggesting the Best Query View for Mobile Visual Search" and is authored by Rongrong Ji, Felix X. Yu, Tongtao Zhang and Shih-Fu Chang. The article addresses the problem of how

to select and suggest additional views in mobile location search. This mechanism is named *active query sensing* and is composed of two components. The first offline component performs saliency analysis of each view of a geographical location by analyzing the distribution of self-retrieval scores. Intuitively, the more images returned from the same location for a query, the more precise the location recognition could be. The second component is an online process to suggest the best second view by using the first query as a probe to narrow down the search space to form a small set of candidate locations. The first query is aligned with each candidate location and the optimal view change is estimated. The best view change is estimated by majority voting from all candidate locations. This step is further formulated as a procedure of maximizing the information gain in terms of selecting the best second query view. The article shows that active query sensing can significantly reduce the failure rate of mobile location search and might be useful on a wide range of interactive mobile media applications.

Both articles received excellent reviews, both for ACM MM and TOMCCAP. Therefore, while waiting for the ACM MM 2012 conference, we hope you enjoy the extended versions of the selected articles published in this special issue of TOMCCAP.

Daniel Gatica-Perez, Idiap Research Institute and Ecole Polytechnique Fédérale de Lausanne
Gang Hua, Stevens Institute of Technology
Wei Tsang Ooi, National University of Singapore
Pål Halvorsen, Simula Research Laboratory
Guest Editors