

Guest Editorial An Introduction to the Special Section on Haptic Audio-Visual Environments and Games

THE 2013 IEEE International Symposium on Haptic Audio-Visual Environments and Games (HAVE 2013) took place at Istanbul Şehir University, Turkey, from October 26th to 27th, 2013.

HAVE 2013 marked the 12th edition of this annual workshop series, and it received more than 35 papers from 13 different countries and regions. Nineteen papers for HAVE 2013 were accepted for presentation at the conference, resulting in six sequential technical sessions. These papers covered many important topics on haptic, audio, and visual virtual environments, and related applications, including haptic sensors, human haptics, haptic-surgical/medical systems, haptic compression and prediction, multimodal perception and psychophysics, haptic game interfaces, tele-haptics and tele-operation, augmented and virtualized reality, collaborative virtual environments, human-computer interaction in virtual environments, multisensor data fusion, object modeling, and soft computing techniques.

While all accepted HAVE 2013 papers that had been registered and presented at the conference were eligible to submit an extended version to this special section, only those manuscripts with genuine and substantial technical extension beyond the scope of the proceedings papers were considered. At the end, two papers were accepted to this special section after a rigorous review procedure as any other regular submission.

In the paper “*Point Cloud-based Model-mediated Teleoperation with Dynamic and Perception-based Model Updating*”

by X. Xu *et al.*, a time-of-flight camera is used to capture a high resolution point cloud model of the object surface. The point cloud model and the physical properties of the object (stiffness and surface friction coefficient) are estimated at the slave side in real-time and transmitted to the master side while taking into consideration known limitations of human haptic perception. It was demonstrated that the proposed methods help in avoiding perceptually irrelevant transmissions, and thus the packet rate in the communication channel was substantially reduced.

The paper “*Navigation and Manipulation Planning using a Visuo-haptic Sensor on a Mobile Platform*” by N. Alt and E. Steinbach tackles the problems associated with the interaction with objects in unstructured environments that require both haptic and visual sensors to acquire sufficient scene knowledge for tasks such as navigation and manipulation. A novel lowcost visuo-haptic sensor with encouraging results is presented for the exploration of obstacles in household and office environments.

We highly expect that readers will be interested in the research results in these papers. We are very thankful to all the authors and reviewers, whose work is the key to the success of HAVE 2013 and this special section. In conclusion, our special thanks go to Prof. A. Ferrero, the Editor-in-Chief, and R. Wehmeier and C. Ingelin, the Transaction Administrators of the IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT.



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He held regular and visiting positions in Canada, Spain, Saudi Arabia, UAE, Germany, and China. He is currently a Distinguished University Professor and the University Research Chair of the School of Electrical Engineering and Computer Science with the University of Ottawa, Ottawa, ON, Canada. He is an internationally recognized scholar who has made strong contributions to the knowledge and understanding of multimedia computing, communications, and applications. He has authored or co-authored four books and over 450 publications.

Dr. El Saddik has chaired over 40 conferences and workshops, and has received research grants and contracts totalling over \$18M. He has supervised over 100 researchers. He received several international awards, including the ACM Distinguished Scientist Award, the Fellow of the Engineering Institute of Canada Award, the Fellow of the Canadian Academy of Engineers Award, and the IEEE Canada Computer Medal.