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ST7 - MultiModal Interfaces for Natural Human Computer Interaction: Theory and Applications

Call for Papers

The past decade, there has been significant evolution on the sensor technology and the information that could be obtained from them. Based on these sensors new sets of applications with novel interaction sources are constantly being developed. For example, the introduction of depth cameras (e.g. Kinect) has allowed the realization of gesture-based interaction. In the same vein, EEG sensors have brought into light the so-called Brain Computer Interfaces (BCI), while the eye-trackers have enabled the gaze-based interaction. With the wide availability of numerous sensors providing various types of signals, the question that arises naturally is if they can be combined in order to facilitate more natural interaction in Human Computer Interfaces (HCI). Natural Human-Computer Interfaces (NHCI) provide a more instinctive interaction between the end user and the interface compared to conventional interfaces (e.g. touch-gesture versus mouse & keyboard). While such interfaces provide novel and appealing forms of interaction for the general user, they can be particularly useful for the motor-impaired users (e.g. users with Parkinson disease, Neuromuscular Disorders, Spinal Cord Injuries, etc.).

This special track aims at presenting the most recent works and applications in the area of MultiModal human computer Interfaces (MMI). Leveraging on multidisciplinary expertise combining knowledge from sensor-based data analysis and control, as well as the experience and design domains, new technologies are required to offer interactions, which are closer to the communication patterns of human beings and allow for a more "natural" communication with systems. In this direction, MMI seeks contributions in three wide categories; i) algorithms and ideas on combining input from multiple sensors (e.g. EEG/EMG/EOG sensor, eye-tracker, depth/regular camera, heart rate sensor, accelerometer, gyroscope, proximity sensor, light sensor, microphone, etc.) or different modalities from one sensor (e.g. P300 and ErrPs in the case of BCI) towards novel human computer interfaces, ii) discussions on important aspects for designing and realizing such an interface (e.g. user requirements and computer use habits, persuasive designs for adopting novel interfaces, psychological aspects of the end users, etc.) and iii) practical applications of MMIs in the form of demonstrations, showing how they can be applied in real world scenarios.

Research topics of interest for this special track include, but are not limited to:

- Combining multiple sensors for natural human-computer interfaces (NHCI)
- Combining multiple modalities from one sensor for NHCI
- Eye-movements and mental commands for impaired persons
- User requirements and user involvement for NHCI
- Design and development of novel interfaces for NHCI
- Assistive technology showing potential for supporting people with disabilities
- Health monitoring from heterogeneous data streams
- Impact of NHCI to the users' social interaction (user studies and evaluation)

- Persuasive designs for NHCI
- Applications and games using multiple sensors/modalities
- Motor-impaired friendly interfaces (algorithms and applications)
- Demonstrations of the NHCIs.
- Concepts and techniques to evaluate capabilities and needs of individual for NHCI

Paper submission guidelines

Please follow the general conference paper submission guidelines that can be found here: http://www.cbms2017.org/content/call-for-papers

Important dates

Paper submission due (general and special tracks)	January 30, 2017
Notification of acceptance for papers	March 20, 2017
Final camera-ready paper due	April 13, 2017
Early registration deadline	April 23, 2017
IEEE CBMS 2917 conference days	June 22-24, 2017

Special Track Chairs

- Spiros Nikolopoulos, Centre for Research and Technology Hellas, GR
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