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Guest editorial

The special issue on "Multimedia/Multimodal Human-Computer Interaction in Knowledge-based Environments" aims at presenting some novel ways and relevant challenging issues of how users interact with computers in knowledge-based environments, in which various multimedia modalities are used. As computer users are spreading and include people of all ages, backgrounds, professions, education levels, aims, profiles, preferences and personalities, human-computer interaction has to undertake the difficult task of personalization, adaptivity, virtuality, and multimodality. The special issue focuses on both theoretical issues as well as applications of intelligent user interfaces within the area of human-computer interaction including methodologies, design environments, user interface development life cycle, empirical studies, multimedia/multimodal signal processing and evaluation.

We have received a large number of submissions to the special issue. Each submitted paper was reviewed by at least two independent reviewers for novelty and clarity of the research reported in it. Additionally, as guest co-editors, we looked over all the manuscripts. For inclusion in the special issue, we have selected ten papers from those submitted.

The first four papers address issues in *adaptive and personalized multimedia/multimodal learning environments*. Specifically, the first paper, authored by Tourtoglou and Virvou, is on "An Intelligent Recommender System for Trainers and Trainees in a Collaborative Learning Environment for UML." The second paper, authored by Tsolis et al., is on "OWLearn: An Open Source e-Learning Platform Supporting Adaptivity and Personalization." The third paper, authored by Schworm and Stiller, is titled: "Does Personalization Matter? The Role of Social Cues in Instructional Explanations." The fourth paper, authored by Stigmar, Kornefors and Pagden, is on "The Modified Role of University Teachers in ICT-supported Flexible Learning."

The next three papers are devoted to *multimedia/multimodal virtual environments*. Specifically, the fifth paper, authored by Anastassakis and Panayiotopoulos, is on "A Unified Model for Representing Objects with Physical Properties, Semantics, and Functionality in Virtual Environments." The sixth paper, authored by Kostaras and Xenos, is on "Usability Evaluation of Augmented Reality Systems." The seventh paper, authored by Bliss, Liebman and Brill, is on "Alert Characteristics and Identification of Avatars on a Virtual Battlefield."

The next three papers present novel *multimedia/multimodal signal processing methodologies*, which may prove efficient in current and future knowledge-based modes of human-computer interaction. Specifically, the eighth paper, authored by Lech, Kostek and Czyzewski, is on "Virtual Whiteboard – a Gesture-controlled, Pen-free Tool Emulating School Whiteboard ." The ninth paper, authored by Kaszuba and Kostek, is on "A New Approach for Automatic Assessment of a Neurological Condition Employing Hand Gesture Classification." Finally, the tenth paper, authored by Kupryjanow and Czyzewski, presents an "Improved Method for Real-Time Speech Stretching."

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