

An Introduction to the Special Issue on Advances on Interactive Multimedia Systems

Z. Bojkovic¹, F. Neri²

¹ University of Belgrade, Belgrade, SERBIA,

² Editor in Chief of WSEAS Transactions on Systems,

Department of Computer Science, University of Naples "Federico II", Naples, ITALY

z.bojkovic@yahoo.com, nerifil@gmail.com

This Special Issue intends to collect high-quality papers providing theoretical and/or practical matters dealing with advances on interactive multimedia systems (IMS). The perspective of today's information society calls for a multiplicity of devices including IP-enabled home appliances, personal computers, sensors, etc., all of which are globally connected. IMS have become important for information exchange and the core communication environment for business relations as well as for social interactions. Every day millions of people all over the world use interactive systems for a plethora of daily activities including searching, information access and exchange, multimedia communication enjoyment, buying and selling goods, keeping in touch with friends, etc. Current multimedia communication systems and architectural concepts must evolve to cope with complex connecting requirements. This is vital to the development of present day multimedia technologies as a natural step to all progression in general research about IMS. The fact that interactive multimedia is currently one of the fastest growing sectors in broadband networking, quality of service (QoS) standards and audio/video processing techniques must be taken into account. An IMS require real-time processing of data and media streams with the support of user interactions at any time. In this respect, the aim of the Special Issue is to highlight technological challenges in order to offer high-quality and low-delay multimedia services, together with designing a good user interface for smart interactive systems and the incorporation of automatic perception of human activities like presence, speech, interaction.

The papers included have given a view point of advances on IMS by balancing the article selection between research and industrial community in order to include the high quality papers from both arenas. The contributions cover hot topics in the field and constitute one step among many others to recent progress in IMS.

We start this Special Issue with the article entitled "Recognition of Assamese Spoken Words using a

Hybrid Neural Framework and Clustering Aided Apriori Knowledge". Artificial Neural Network based model is proposed for recognition of discrete Assamese speech, using a self Organizing Map-based phoneme count determination technique. It acts as a self sustaining, fully automated mechanism for spoken word recognition with 3, 4 and 15-phoneme variation.

The second paper "Multimedia Signal Session in a Web Environment" includes the fields of health, IT, design, IMS and communications. The development provides new opportunities for interaction in telemedicine, particularly in the area of training and obtaining a surgical opinion in a Web environment. The presented system is technically feasible with high potential of medical staff training, which will result in a better patient care requiring surgery.

The paper "New online RKPCA-RN Kernel method Applied to Tennessee Eastman Process" proposes a new method for online identification of a nonlinear system using a linear combination of Kernel functions applied to the used training set observations. Through several experiments the accuracy and good scaling properties of the proposed method have been demonstrated. The proposed method may be helpful in designing an adaptive control strategy of nonlinear systems.

A unified approach in analysis of designs and reference software implementation of three generation for MPEG/ITU video coding standards is demonstrated in the paper "MPEG Video deployment in interactive multimedia systems: HEVC vs. AVC codec performance study". Bit reduction and coding gain based on peak-signal-to-noise ratio measure and complexity as well as encoding/decoding time of high efficient video coding (HEVC) vs. advance video coding (AVC) high profile (HP) are tested using the low-delay encoding constraints.

Next, in the paper "Methods and Tools for Structural Information Visualization", it is emphasized that Higes, Visual Graph and ALVIS systems are aimed at supporting of structural information visualization on the base hierarchical

graph modes. These systems are suited for visual processing and can be used in many areas where the visualization of structural information is needed.

An algorithm framework for cross-layer QoS adaptation in multiservice heterogeneous environments is proposed based on Service-Oriented Architecture (SOA) principles in the paper "A Novel Algorithm for SOA-based Cross-Layer QoS Support in Multiservice Heterogeneous Environments". The proposed algorithm takes into account the diversity of user/application requirements networking technologies, terminal and provider capabilities. A proposal of framework for cross-layer QoS adaptation in order to support characteristics of various heterogeneous networking technologies, and to discover and select the proper network services that support QoS requirements for different applications, is presented, too.

Finally, in the paper "Fuzzy Authentication Algorithm with Applications to Error Localization and Correction of Images", the proposed image

authentication methods have the ability to authenticate images even in the presence of small noise. They are in the position to localize errors as well as to correct them using the corresponding error correcting codes.

Before we leave you to enjoy this Special Issue, we would like to thank all the authors, who invested a lot of work and effort providing their really valuable contributions as the results of their research work. These papers make a significant contribution to the problem of interactive multimedia systems. Of course, much work remains to achieve high quality technologies at low cost. Special thanks go to reviewers who dedicated their precious time in providing numerous comments and suggestions, criticism and constant and enthusiastic support. In closing, we hope that the contributions included should provide not only knowledge, but inspiration to researchers and developers of interactive multimedia systems.