Editorial

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This special issue of the *International Journal of Intelligent Information and Database Systems* (*IJIIDS*) comprises some selected and specific peer-reviewed research papers on multimedia and internet applications. Technological development over recent years made it possible to envisage multimedia information systems that until recently belonged to the realm of science-fiction. This is magnified by the availability of vast amount of multimedia data on internet. The multimedia and internet systems become now an important part of our everyday life and will shape our future.

The prerequisite for developing such systems is a thorough research work in the area. It is our intention to present to the readers of this special issue several new investigations, solutions and applications submitted by different scientific communities. We believe that this selection of papers will provide a useful reference for understanding recent advances in multimedia and network information systems. The multimedia and internet applications are the domains of information science that evolve particularly fast. Already many methods have been proposed and they have been verified by a number of experiments resulting in a variety of solutions. Unfortunately, they are far from being efficient. Therefore, the theoretical and practical investigations leading to the profound understanding of the nature and properties of multimedia processing in internet systems are so important.

The papers attempt to show some current trends in multimedia evolution and to indicate factors affecting their future progress. The future of multimedia systems undoubtedly relies on the development of hardware technologies such as mobile and network technologies. Nevertheless, it must be accompanied by the parallel development of software for multimedia indexing and retrieval, multimedia interfaces, data visualisation, natural language processing, etc. in a network environment. This is both required and desirable.

The first paper entitled 'Hand gesture recognition supported by fuzzy rules and Kalman filters' describes the gesture recognition methodology which bases on representing hand movement trajectory by motion vectors analysed using fuzzy rule-based inference. The authors, Michał Lech and Bożena Kostek, present also the system based on camera and multimedia projector enabling a user to control computer applications by dynamic hand gestures.

The aim of the second paper submitted by František Babič, Jozef Wagner, and Ján Paralič entitled 'The use of event logs for collaborative practices reflection' is to present an original solution for reflection on collaborative practices within learning or

working processes mediated by a virtual environment. The user generated activities are stored in event logs. The timeline-based visualisation has been designed, implemented and evaluated. It is as an attractive and effective solution for students, teachers, researchers and professionals. The explanation of historical data is a core element of the complex evaluation in order to identify positive or negative aspects of used practices.

The third paper entitled 'Microphone arrays application in three-dimensional sound source localisation' by Eugeniusz Kornatowski describes the problem of using of spatial microphone arrays for sound source location. Several questions concerning modelling of planar (2-D) and spatial (3-D) directional characteristics of microphone arrays are raised and discussed. A unique 'soundfield' microphone with four transducers enables 3-D sound acquisition in so called A-format. The conducted experiments prove that a simple calculation algorithm is sufficient for a real time operation. The application of the soundfield microphone significantly simplifies mechanical design of the system.

The fourth paper prepared by Kazimierz Choroś 'Video structure analysis for content-based indexing and categorisation of TV sports news' discusses different possible strategies of video indexing. Next, the juxtaposition is presented of two indexing processes, i.e. of text and video indexing based on the content analysis of their structure units. The new indexing procedures implemented in the AVI indexing system – the automatic video indexer – are also reported and it is shown how the knowledge of the structure of video shots and scenes lead to the significant reduction of the number of frames analysed in a given process.

The fifth paper written by Ondřej Krejcar, Dalibor Janckulik, Leona Motalova and Petr Czekaj and entitled 'Biomedical user adaptive system for smart environments' is focused on several aspects of user interface design, user interface adaptivity and visualisation for smart environments, smart devices and smart interactions which are jointly described as ubiquitous computing (UbiCom). In the area of biomedical systems the security of proposed solutions is of primary importance.

The topic of the sixth paper 'A mixed graph model for community detection' by Anita Keszler and Tamás Szirányi is finding of communities in a social network using information on a variety of persons habits such as shopping habits or free time activities. The presented model is based on applying parallely a standard and a bipartite graph. Compared to previous methods, the introduced algorithm has the advantage of noise-tolerance and is suitable independently of the size of the clusters in the graph.

The last paper entitled 'Fast algorithm for assessing semantic similarity of texts' by Andrzej Siemiński presents and evaluates an efficient algorithm for measuring semantic similarity of texts. The proposed algorithm tries to reduce the computational complexity of the problem by merging an computationally efficient statistical approach to text analysis with a semantic component. The semantic properties of text words are extracted from the WordNet lexical data base.