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Series editor

Janusz Kacprzyk, Polish Academy of Sciences, Warsaw, Poland
e-mail: kacprzyk@ibspan.waw.pl

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Multimedia and Network Information Systems

Proceedings of the 11th International
Conference MISSI 2018

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and Technology
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and Management
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and Technology
Wrocław, Poland

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and Management
Wrocław University of Science
and Technology
Wrocław, Poland

Andrzej Siemiński
Faculty of Computer Science
and Management
Wrocław University of Science
and Technology
Wrocław, Poland

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Preface

The volume consists of the Proceedings of the 11th International Conference on Multimedia & Network Information Systems (MISSI 2018) held during September 12–14, 2018, in Wrocław, Poland. The Conference was organized by the Wrocław University of Science and Technology. The Conference ran under the patronage of the Committee of Informatics of the Polish Academy of Sciences, Wrocław Scientific Society, Forum of IT Companies, and Polish Information Processing Society.

The MISSI Conferences have already obtained the status of a well-recognized and respected biennial event. They span now over the period of more than 20 years. Many participants are frequent guests of the Conference. They have the opportunity to see how the research area evolves, new topics are raised, and some old are much advanced as it is exemplified by tasks like speech, face, or handwriting recognition. Not long ago they were hot research topics, and now they are embedded in commercial products.

The 11th edition marks a new opening for the Conference. For the first time, it included the 6th International Workshop on Computational Intelligence for Multimedia Understanding, and additionally four special sessions were organized.

The keynote lectures were given by three outstanding scientists, and the summaries of their lectures are included in the Proceedings. The organizers succeeded once more in gathering a great number of scientists from all across Europe and well beyond.

From all submissions, the Editorial Board has selected 58 papers with the highest quality for oral presentation and publication in the Proceedings. Most of the papers focus on applying different AI methods to multimedia or natural language processing. Many papers have the distinct practical trait. They describe and evaluate some experimental systems. There is no shortage of papers of a theoretical nature.

The volume consists of eight chapters:

- 1) Multimedia Systems
- 2) Web Systems and Network Technologies

- 3) Natural Language Processing and Information Retrieval
- 4) Computational Intelligence for Multimedia Understanding
- 5) Accessing Multilingual Information and Opinions
- 6) Intelligent Audio Processing
- 7) Innovations in Web Technologies
- 8) Video Game Development Methods and Technologies.

The first chapter includes papers on the broad topic of multimedia systems. It is presented at various levels of processing. The papers on low-level processing address topics like linear compression of blurry photographs or estimation of noise in digital images. At the other end of the spectrum, we have got a paper that proposes a concept of visual knowledge representation. In between, there are papers on such up-to-date areas as video summarization, using the virtual assistant as a communication channel for road traffic situation, and analyzing the accuracy of the methods of fuzzy clustering of images. A group of papers deals with human-related issues: sign language recognition and tracking human upper limb motion.

The second chapter offers a large number of papers that explore the data available on the Internet and the novel technologies used to process them. It goes without saying they apply recent techniques originating from big data and artificial intelligence.

A picture may be worth a thousand words, but a natural language is unbeatable when it goes about precise conveying of information. The Internet spans the whole world and is therefore inherently multilingual. The papers collected in the third chapter discuss various aspects of natural language processing such as word sense disambiguation, measuring the efficiency of machine translation, or stylometry.

The next chapter is devoted to the computational intelligence for multimedia understanding. This is a diverse area of study, and it has papers, e.g., on deep learning approach to human osteosarcoma cell detection and classification, a hybrid CNN approach for single image depth estimation, or detection of suspicious accounts on Twitter using Word2Vec and sentiment analysis.

The accessing multilingual information and opinions chapter concentrates upon the different aspects of summarization problem. It does not stop at the more traditional work such as speech-to-cross-lingual text summarization but goes well beyond that and evaluates, e.g., multimedia content summarization algorithms.

The intelligent audio processing chapter is very much technically oriented. It presents among others advanced techniques for spectral and cepstral feature extraction techniques for phoneme modeling or the selection of features for multimodal vocalic segment classification.

The papers from the innovations in Web technologies part have a distinctive human touch. They propose a multimedia platform for the Mexican cultural heritage, dealing with the visualization of big data from Polish digital libraries or recognition of the pathology of the human movement with the use of mobile technology and machine learning.

The video game section is not only about gaming per se as it contains such topics as accident prevention during immersion in virtual reality or wide field of view projection using rasterization.

Our special thanks go to the Program Chairs, Special Session Chair, Organizing Chairs, Publicity Chairs for their work for the Conference. We sincerely thank all the members of the International Program Committee for their valuable efforts in the review process, which helped us to guarantee the highest quality of the selected papers for the MISSI Conference. We cordially thank the organizers and chairs of special sessions who contributed to the success of the Conference.

We would like to express our thanks to the keynote speakers: Alberto del Bimbo from University of Florence in Italy, Bogusław Cyganek from AGH University of Science and Technology in Poland, and Andrzej Czyżewski from Gdańsk University of Technology in Poland for their world-class plenary speeches.

We wish to thank the members of the Organizing Committee for their excellent work and for their considerable effort.

We cordially thank all the authors for their valuable contributions and the other participants of this Conference. The Conference would not have been possible without their support.

The pace of progress in the field of Multimedia and Internet Information Systems ever increases and so does the need for an up-to-date account of the current work in the area. The editors of the volume will be pleased if the Proceedings will provide in the researches with the results of current work done at other universities. At the same time, we hope that they would be a source of an inspiration for a new generation of scientific works and it will prompt them to devote their time and effort to uphold the progress of research on the area.

These were our goals. If we achieve them, it will be the best reward for our efforts.

Kazimierz Choroś
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