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EDITORIAL

Preface to the special section on Cyberworlds 2015

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Cyberworlds are information worlds or communities created in cyberspace by collaborating participants either intentionally or spontaneously. As information worlds, they accumulate information regardless whether or not anyone is in. Cyberworlds can be based on sharing text, image and video information, as well as they can be immersive multi-user networked shared virtual worlds. Cyberworlds have been created and applied in such areas as e-business, e-commerce, e-manufacturing, e-learning and cultural heritage. They augment and sometimes replace the real life and become a significant component of real economy. The examples of such cyberworlds with millions of participants are communities created in different social networking services, virtual shared worlds and multiplayer online games. Problems of cyberworlds were discussed at the 2015th International Conference on Cyberworlds which was held in Gotland (Sweden) on 7–9 October 2015. The five full papers were selected to be published in extended journal form in this special issue of The Visual Computer journal.

The first two papers were given the Cyberworlds 2015 the Best Paper Awards.

In the first paper, "Interactive 3D Content Modeling for Digital Earth", Faramarz F. Samavati and Adam Runions present an interactive system for the creation and editing of 3D content for Digital Earth systems, such as Digital Elevation Models, vegetation, bodies of water and man-made structures. The proposed system employs a set of interactive tools to integrate commonly available data sources, such as orthophotos and Digital Elevation Models. The authors suggest that their system can be used to enhance the quality of Digital Earth data by enabling the straightforward creation of new 3D landscapes and urban elements.

In the second paper "Real-time haptic interaction with RGBD video streams", Shahzad Rasool and Alexei Sourin present a method for real-time haptic interaction with videos containing depth data—the videos which can be captured with RGBD cameras like Microsoft Kinect. The authors propose a method for computing in real-time haptic forces based on the depth information captured by the sensor. The usefulness of the approach is illustrated by a tangible video application example.

In the third paper "Where are you going? Using human locomotion models for target estimation", Markus Zank and Andreas Kunz solve problems of exploring virtual environments that are larger than the available physical tracking space used for real walking. The authors propose a new approach for the prediction of a person's locomotion target using various models of human locomotion together with a set of possible targets to create a set of expected paths. These paths are then compared to the real path the user has already traveled in order to calculate the probability of a certain target being the one the user is heading for.

In the fourth paper "Semantics-driven Annotation of Patient-Specific 3D Data: A Step to Assist Diagnosis and Treatment of Rheumatoid Arthritis" Imon Banerjee, Asan Agibetov, Chiara Eva Catalano, Giuseppe Patané and Michela Spagnuolo consider problems of computer-assisted diagnosis and surgery training on digital models. The authors propose a framework which demonstrates how the ontology-driven annotation of Patient-Specific 3D Data and their anatomically relevant features can assist clinicians to document more effectively pathologies and their evolution. Rheumatoid arthritis is considered as a test bench with the results compared against a medical ground-truth.

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Finally, in the fifth paper "Retrieval of Clothing Images based on Relevance Feedback with Focus on Collar Designs", Honglin Li, Masahiro Toyoura Kazumi Shimizu, Wei Yang and Xiaoyang Mao are considering the content-based image retrieval methods which are developed to help people find what they desire based on preferred images instead of linguistic information. This paper focuses on capturing the image features representing details of the collar designs, which is important for users to choose clothing. The authors present several new methods for the collar design feature extraction and a prototype of clothing image retrieval system.

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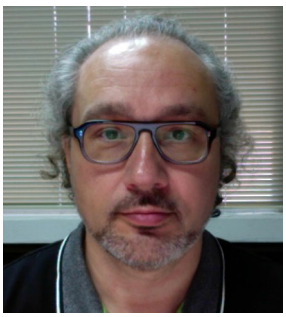

Alexei Sourin was born in Moscow and received his M.Eng. and Ph.D. degrees in Computer Graphics from the Moscow Engineering Physics Institute (National Research Nuclear University MEPhI, Russia) in 1983 and 1988, respectively. For 10 years he was a research scientist at MEPhI where he worked on different scientific visualization projects. Since 1993 he held various faculty positions at Nanyang Technological University (NTU) in Singapore. Currently he is a tenured Associate Professor with the School of Computer Engineering at NTU. He holds a concurrent appointment of the Deputy Director of Fraunhofer IDM@NTU—The Fraunhofer Project Centre for Interactive Digital Media at Nanyang Technological University. His research interests are in functionally based shape modeling, shared virtual environments, haptic interaction and web visualization. Dr. Sourin is a Chair of the IFIP WG5.10 Computer Graphics and Virtual Worlds, Senior Member of IEEE and a member of ACM SIGGRAPH. He is an editor of several international journals. He was on the program committees of over 120 international conferences and has chaired 12 conferences as well. He is a coordinator of the International Conferences on Cyberworlds. Visit http://www3.ntu.edu.sg/home/assourin for more information about the author.