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EDITORIAL

Editorial

Nadia Magnenat-Thalmann

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This special issue consists of eight papers that were selected among those presented at the 3DAH 2010. 3D Anatomical Human (3DAH) is a Marie Curie Research Training Network project within EU's [Sixth Framework Programme]. The second summer school of 3DAH took place in Chania, Crete, Greece on days 23 and 24 of May, 2010.

The aim of this summer school is to establish a scientific forum for exchanging and disseminating novel ideas from a wide range of disciplines. Many themes were covered by this summer school, such as medical and biomechanical visualization, segmentation and semantic modeling, haptics and motion analysis, anatomical modeling and simulation. The eight papers collected in this special issue cover a wide area of themes.

The first paper, by Jérôme Schmid et al., presents a GPU framework based on explicit discrete deformable models, implemented over the NVidia CUDA architecture, aimed for the segmentation of volumetric images. The framework supports the segmentation in parallel of different volumetric structures as well as interaction during the segmentation process and real-time visualization of the intermediate results.

The second paper, by Jian Chang et al., presents a hybrid model called the beads-on-string model to handle the deformation and collision of the rectum in a virtual surgery simulation system.

The third paper, by Nicolas Pronost et al., presents a visualization framework for exploring and analyzing datasets from biomechanical and neuromuscular simulations. Their approach allows convenient definitions of relationships between numerical datasets and 3D objects.

A combined magnetic resonance (MR) imaging method is proposed in the fourth paper, by Bailiang Chen et al. With this method, they investigate individual's knee functionality quantitatively under weight-bearing condition.

The fifth paper, by Karl-Ingo Friese and Franz-Erich Wolter, presents the concept, design and implementation of new software to visualize and segment 3-dimensional medical data. The objective is to create a platform that would allow trying out new approaches and ideas while staying independent from hardware and operating system.

The sixth paper, by François Chung et al., compares the performance of statistical models in the context of lower limb bones segmentation using MR images when only a small number of datasets is available for training, and it is found that local and simple methods perform the best.

Subject-specific knee joint model is the subject of the seventh paper, by Caroline Öhman et al., where an experiment design is described to validate a multibody finite element model.

Finally, the eighth paper, by Anders Sandholm et al., introduces a new knee joint based on both equations and geometry, which is compared to a common clinical planar knee joint.

N. Magnenat-Thalmann (✉)
MIRALab, University of Geneva, Geneva, Switzerland
e-mail: thalmann@miralab.ch