

Advanced Techniques for Image-based Numerical Simulation in Biomedical Applications

Thematic Session within VipIMAGE 2017

VI ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing

Porto, Portugal, 18-20 October 2017

www.fe.up.pt/vipimage

web.fe.up.pt/~vipimage/nav/conference/sessions.htm

Description

Nowadays, 3D and 4D imaging is a powerful tool in the medical and biological field, providing accurate geometrical and topological information, for patient dedicated analysis. Furthermore, in-situ 4D image acquisition provides access to the 3D internal structures during solicitations, and that is also important. Accuracy of these systems implies also the existence, analysis and manipulation of very large data sets, which may concern billions of voxels or points.

The main goal of the proposed Mini-Symposium is to bring together researchers that are concerned by the development of numerical techniques for direct simulation or analysis based on images and associated in-situ observations, with a final objective of drawing the perspectives of development in the upcoming future.

Research fields may cover the initial data processing (acquisition, analysis, segmentation, registration), its reconstruction in the wanted numerical format (mesh or grid generation and adaptation), or numerical simulation applications of tissue and bone remodeling in response to mechanical simulations, tumour development and growth, real-time computer assisted surgery, blood flow and wall interaction.

Topics of interest include (but are not restricted to):

- Mathematical morphology, image segmentation and image processing for 3D and 4D medical image analysis
- Reconstruction of images in a wanted numerical format (mesh, grid, ...) for image-based simulations
- Machine learning from and for medical images
- Model order reduction and real time simulation
- Direct numerical simulations in biological systems for computer-aided diagnosis

Publications

The **proceedings book** will be **published by Springer** under the book series "[Lecture Notes in Computational Vision and Biomechanics](#)" and **indexed by Elsevier Scopus**.

A **special issue** of the **Taylor & Francis international journal** "[Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization](#)", indexed in ISI Thomson Reuters, Elsevier Scopus and dblp, **will be published**. All authors of works presented in VipIMAGE 2017 will be invited to submit an extended

version to the special issue.

Important dates

- **Submission of extended abstracts: April 21, 2017 (FINAL deadline)**
- Authors Notification: May 10, 2017
- Final Papers (not compulsive): June 15, 2017

Organizers

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