Parameterization of Reconstructed Organ Models

Thematic Session within VipIMAGE 2019

VII ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing

Porto, Portugal, 16-18 October 2019

www.fe.up.pt/vipimage

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

Description

Reconstruction of organ models based on conversion of visualization data has greatly facilitated the simulation of multi-physics phenomenon. Moreover, this has also led to advances in the patient-specific diagnosis, prognosis and treatment procedures. On the other hand, there is a great amount of new research in applying principles of machine learning, deep learning and big data into the field of biomedical engineering. Certainly, these techniques withhold a great potential to leverage the construction of computer-aided design (CAD) geometries as well as finite element analysis (FEA) meshes from data obtained via various visualization technologies. However, the models reconstructed by customary segmentation methods are just dumb solids; they are fixed and do not allow the tuning of associated morphometrical model parameters. Thus, the utilization of machine learning techniques in model construction will heavily rely on the planning and preparation of parametric organ model templates. This thematic session will provide an opportunity to the bioengineering and biomedical community to exchange knowledge and information on the latest advances and challenges in parametric CAD modeling of organs and patient-specific conversion of visualization data. We hope to bring together researchers who are interested in the general field of parametric CAD modeling, especially in its applications to biomedical areas.

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

- Parametric Models of the Spine
- Parametric Models of the Lower Extremity
- Organ Specific Parametric Modeling
- Conversion of CAD Templates into Patient-Specific Models
- Utilization of Machine Learning in Model Conversion
- Automatic Meshing Procedures for CAD Model Templates
- Finite Element Analysis of Parametric Organ Models
- Sensitivity of Organ Parameters in the Biomechanical Response

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 Clarivate Analytics Emerging Sources, Elsevier Scopus and dblp, **will be published**. All authors of works presented in VipIMAGE 2019 will be invited to submit an extended version to the special issue.

Important dates

• **Submission of extended abstracts**: **May 31, 2019** (final deadline)

• Final Papers (non-mandatory): July 15, 2019

Organizers

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