Imaging of Biological Flows: trends and challenges

Thematic Session within VipIMAGE2011

III ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing

Olhão, Algarve, Portugal, 12-14 October 2011

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Description

Biological flows is an interdisciplinary subject that demands an integration of several research fields such as biotechnology, engineering, medicine, chemistry, informatics and optics. Over the years, flow visualization techniques based on image processing and analysis have been applied in an effort to make the invisible visible with the help of experimental and computational technology. Hence, flow visualization techniques have become an indispensable tool to understand the flow behavior of several kinds of biological fluids (e.g. DNA solutions, blood and other physiological fluids) in living systems and biomedical devices. Doppler ultrasound, computer tomography (CT) and magnetic resonance imaging (MRI) are the most commonly used medical instruments to investigate physiological flow both in vivo and in vitro. However, due to limited spatial resolution and signal noise, it is difficult to obtain quantitative flow information. In recent years, as a result of advances in computers, optics, fluorescent probes and image analysis, several new visualization techniques have been developed. One example of success is the micro-scale particle image velocimetry (PIV) technique, which can be used to quantify the velocity field of biological flows. 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 visualization technologies and its application to biological flow research and industry. We hope to bring together researchers who are interested in the general field of flow visualization, especially in its applications to biomedical areas.

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

- Biomedical Signal, Image Processing and Analysis for Biological Flows
- Visual Computing and Visualization Techniques for Biological Flows
- Diagnostic Imaging based on Biological Flow Analysis
- Cellular and Molecular Imaging
- Computational bioengineering and Biofluid Mechanics
- Cardiovascular Fluid Dynamics Analysis from Images
- Hematology, Biorheology, Hemorheology Imaging
- Biomedical devices, BioMEMS, Lab-on-chip and Microfluidics for Biological Flows Analysis

Publications

The **book of proceedings will be published by Taylor & Francis Group**. The organizers will encourage the submission of extended versions of the accepted papers to related International Journals; in particular for special issues dedicated to the conference.

A **book with 20 invited extended works** from the most important ones presented in conference will be **published by SPRINGER**.

Important dates

- **Submission of extended abstracts: March 15, 2011**
- Authors Notification: April 15, 2011
- Lectures and Final Papers: June 15, 2011

Organizers

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