[6th] International Conference on Computational and Mathematical Biomedical Engineering – CMBE2019
10–12 June 2019, Japan
P. Nithiarasu, M. Ohta and M. Oshima (Eds.)

Segmentation and Registration for Biomedical Applications

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MINI-SYMPOSIUM PROPOSAL

Keywords: *Biomedical image analysis, image segmentation, image registration*

Image segmentation and registration often are critical components in computational biomedical applications in order to obtain necessary structural and functional information for computational purposes. They are long standing problems in image processing and computer vision communities. All subsequent interpretation and computation are generally depended on the quality of segmentation and registration. Robust and efficient segmentation and registration for real world clinical and biological applications still remains a big challenge. For instance, the rapid development in image acquisition techniques and its ever-increasing accessibility to advanced imaging produce large quantity of data that requires quantified analysis. Image processing methods that are efficient and adaptable are particularly desirable in many biomedical computational tasks. Segmentation and registration becomes more and more interlinked problems, and advances in these areas are increasingly important, for example, in subject specific medicine.

This mini-symposium focuses on major trends and recent advances in segmentation and registration techniques applied to biomedical problems. Contributions in both theoretical advances and applied research in segmentation and registration are welcomed. The technical topics include, but are not limited to:
- Deep learning techniques
- Graph cuts
- Variational techniques
- Energy minimisation
- Texture analysis
- Rigid and non-rigid registration
- Group-wise registration
- Non-linear transformation function - Multi-modal fusion
- Shape representation
- Shape learning
- Deformable models
- Real-time methods
- Interactive techniques
- Domain adaptable techniques.

Organisers:
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