

MESHING CHALLENGES IN SUBJECT-SPECIFIC BIOMEDICAL MODELLING

Igor Sazonov* and Perumal Nithiarsu**

***Swansea University, Swansea, Sigleton Park, U.K., i.sazonov@swansea.ac.uk**

****Swansea University, Swansea, Sigleton Park, U.K., p.nithiarsu@swansea.ac.uk**

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PROPOSAL

One of the important stages of numerical modelling of biomechanical problems is the discretization of the domain of interest, i.e. mesh/grid generation. The accuracy of numerical integration heavily depends on the mesh resolution, mesh quality and how good is the mesh in representing the object boundaries, obtained from 3D scans.

Object boundaries for standard engineering applications are described analytically or piece-wise analytically. This simplifies the surface mesh generation and cosmetics. However, this is not necessarily the case for patient-specific applications.

The output from a segmentation process of medical scans may be a binary representation of the object, a level set function, a cloud of points or a set of contours. Thus, the object boundaries are not well-defined and need some more sophisticated approaches for mesh generation.

This mini-symposium is devoted to the discussion of recent advances in mesh generation for subject-specific objects and related topics, for example, skeletonisation. The technical topics include, but are not limited to:

- surface mesh generation of subject-specific objects;
- volumetric mesh generation, capturing flow patterns and resolving the boundary layer;
- mesh with moving boundaries, appropriate for FSI;
- skeletonisation of subject-specific objects.