عنوان مقاله:

Application of Medical Imaging and Image Processing in Creating 3D Models of Human Organs

محل انتشار:

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خلاصه مقاله:

Geometrical modeling of human organs is the first step in the biomechanical analysis. Due to the complex geometries of these biological organs, it is practically impossible to create handmade geometric models to truly represent the actual organs. This study is aimed to review practical and effective ways of creating accurate geometrical data needed for Finite Element and CFD analysis of human organs. Firstly, an overview of the approach and the potential advantages of this technique for creating a geometric model of the human body are discussed. Different imaging equipment and the application of image processing software to interpret the acquired data are studied next. Moreover, the technique of assigning non-homogenous mechanical properties to an organ based on the image intensity is described. To better assess the abovementioned procedure for creating 3D models of the human organs, the Finite Element model of the human head and neck are extracted from the CT scan images that can be utilized for future analyses e.g. injury prediction.

کلمات کلیدی:

3D Modeling, Human Organs, Medical Imaging, Finite Element Method, Image Processing