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Finite Element Modelling and Analysis of Human Knee Joint

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Abstract : Computer modeling and simulation of human movement is playing an important role in sports and rehabilitation. Accurate modeling and analysis of human knee join is more complex because of complicated structure whose geometry is not easily to represent by a solid model. As part of this project, from the number of CT scan images of human knee join surface reconstruction is carried out using 3D slicer software, an open source software. From this surface reconstruction model, using mesh lab (another open source software) triangular meshes are created on reconstructed surface. This final triangular mesh model is imported to Solid Works, 3D mechanical CAD modeling software. Finally this CAD model is imported to ABAQUS, finite element analysis software for analyzing the knee joints. The results obtained are encouraging and provides an accurate way of modeling and analysis of biological parts without human intervention.

Keywords : solid works, CATIA, Pro-e, CAD
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