**Paper No: PU-SOE-CSE-24**

[**Soft Tissues Deformation and Removal Simulation Modelling for Virtual Surgery**](https://www.inderscience.com/info/inarticle.php?artid=104830)

K. Jayasudhaa; **Mohan K Gb**.

a. VTU-RRC Belgaum, Presidency University, Bangalore, Karnataka, 560064, India

b. Presidency University, Bangalore, Karnataka, 560064, India

**Abstract**

Major advances in the area of virtual reality have paved the way to an important application called surgical simulators. These are safe methods to carry out surgical planning and training. Surgical simulators are expected to replace conventional surgery training methods in the near future. Achieving soft tissue deformations in real time is a challenging task in virtual surgery. The most commonly used methods for deformation simulation are finite element method and mass spring method. The proposed method makes use of Delaunay triangulated mesh model to depict multiple layers of skin. This paper presents simple method of 3D soft tissue deformation and removal simulation using visualisation toolkit. The presented framework is able to simulate: collision detection, deformation and removal of soft tissues for real time computation. Multilayered model of human skin using Delaunay triangulated approach is developed as a pre-process step. The same interactive model is considered for deformation and removal simulation approach. Necessary meshing algorithms are used based on Delaunay criteria to obtain qualitative results.

**Keywords:**

Collision detection; Deformation; skin; Soft tissue; scalpel.

**Publication Details:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Journal Name** | **Vol.** | **Month & Year**  | **Page No.** | **Publisher** | **Scimago Ranking** |
| International Journal of Intelligence and Sustainable Computing | 1 | Jan. 2020 | 83-100 | Inderscience | Scopus Index |