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**Realistic Deformation and Removal of Soft Tissues Modeling for the Simulation of Virtual Surgery**

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**Abstract**

Most of the simulation methods for soft tissue modeling involve tetrahedral meshes which is quite complex and takes much computation time. Instead, this work attempts to make use of delaunay triangulated mesh that consists of unique mathematical properties suited for simulating soft tissues. Although, triangulated mesh is not so complex yet effective in producing elements of good quality. It even reduces computation time compared to the tetrahedral mesh by providing more geometric flexibility. In virtual surgery, it is essential to model the layers of soft tissues of human skin to perform a simulation of deformation and removal of cells. Based on this the multilayered model of skin prototype is developed in a pre-process and used for interactive modeling. This work presents a simple method for performing real-time collision detection in a virtual surgery environment. Also shows the efficient computation of collisions between the scalpel and delaunay triangulated mesh using a local collision detection function. The framework incorporates qualitative results obtained towards the simulation of surgical deformation and removal of soft tissues using appropriate algorithms. It also uses real-time texture mapping to enhance the visual realism.

**Keywords:**

Collision detection, Deformation, Skin, Simulation, Soft tissue

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