Mesh Modification System for

Three Dimensional Unstructured Mesh Using VR Technology

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This paper presents an interactive mesh modification system for three dimensional unstructured mesh using Virtual Reality technology. The present system is developed by the VR programming languages, OpenGL and CAVE library. Users can check the details of three dimensional mesh structures and can modify the shape of mesh idealization in VR space interactively by using the controller. For the mesh modification methods, node relocation method and mesh refinement methods are implemented. The system is available for the linear and 2-nd order tetrahedron elements. Users can change the nodal position of the bad quality element in case of the node relocation method, and can refine the bad quality element in case of the mesh refinement method interactively. The present system is applied to the mesh modification for the simulation of 3D solid analysis and is shown to be a useful tool to assist the high quality computing.

Keywords: Virtual Reality, CAVE, Mesh modification, Finite Element Simulation