Compression of engineering data represented by hexahedrals

S. Krivograd

Abstract:
In this talk the new lossless compression method for compression of hexahedral meshes used in engineering is presented. The new method is divided into two main steps: topology compression followed by entropy compression. The topology compression is also divided into two steps: in first step the boundary of the mesh, represented with quadrilaterals, is compressed. In second step the hexahedrals are compressed with help of the already compressed boundary and five commands, where one is mainly used. The topology compression algorithm was compared with up-to now known best method and turn out to give better results with bigger meshes. As we are compressing the engineering FEM meshes geometric and application-specific data must also be losslessly compressed. As general purpose compression methods are usually used for compression of FEM meshes we compared our method with the popular *PkZip* and we achieved considerably better results.

Patching algorithm for surface reconstruction

B. Pivec

Abstract:
A new and simple algorithm for surface reconstruction will be presented. The algorithm is conceived on assumption that surface of any given object can be divided into small parts. These parts are called patches. If we want to obtain patches we need to divide points into cells. Cell represents a close surroundings of a given point. Usually points are divided using octree yet in this case the surroundings are more suitable. With surroundings we can perform reconstruction locally and construction of final surface is done automatically. The algorithm consists of two steps. In the first step the construction of cells and division of points is made. In the second step the plane triangulation is performed. The result of both steps is reconstructed surface.