

3D Building and Reconstruction by using OpenGL

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Abstract

3D objects reconstruction is frequently used in various fields such as product design, engineering, medical and artistic applications. In this paper, we proposed the automatic 3D building and reconstruction system of a real object. Delaunay Triangulation method is applied for generating the 3D triangles and faces with the extracted 3D vertices of an object obtained from raw data files. Delaunay based algorithm is modified in a way and surface reconstruction is done to produce the reconstructed 3D object. The proposed system was developed by using OpenGL(Open Graphic Library), which is the most widely adopted 2D and 3D graphics API in the industry, bringing thousands of applications to a wide variety of computer platforms. OpenGL exposes all the features of the latest graphics hardware. Modified Delaunay Triangulation gave faster processing time in generating triangles by removing duplicate points, non Delaunay triangles and clockwise triangles. Incremental process of modified DT is also flexible for multiple point cloud system.