Real time landscape modelling and visualization

With the rapid development of information and communication technology and widely spreading of internet, digital landscape becomes a high topic recently. This paper presents a landscape modeling- and visualizationssystem. The first part of this paper focuses on the real time 3D-model- lingsprocess out of large point-clouds. Diverse experiments have been done on the reconstruction of various famous regions of Bavaria with tourist features. And the second part concentrates on the interactive online visualizationssystem for massive meshes. To enable an efficient interactive online visualization of these large meshes, we convert them firstly with a multi-resolution hierarchy, and then display them progressively. As a preprocessing for the inter-active rendering, we generate a hierarchical tree of bounding spheres from triangle meshes and write it to disk. It will be used for view frustum culling, backface culling and level-of-detail control. We use a recursive algorithm for display. And the traverse-depth in the tree is decided by the projected size of the current node on the screen. By an interactive rendering, once the user stops moving the mouse, the scene will be redrawn with successively smaller thresholds until a size of one pixel is reached.


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