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论文

森林三维真实感建模与可视化LOD技术研究

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摘要:

基于随机参数化L系统的形式化语言对树木进行三维构模.依据树木与视点的空间关系,动态划分了基于林分的层次细节(LOD).对不同的细节层次采用不同的模型进行处理以达到真实感绘制.通过调整L系统的迭代、分层存储树木模型、十字交叉画树等策略分别对各个层次进行渲染,并对层级细节的渲染效率进行了比较.实验证明,本方法能够很好地模拟三维森林虚拟系统,可以满足森林三维场景的真实感和实时可视化效果的要求.

关键词: 森林 L系统 三维可视化 层次细节

Study on realistic modeling of three-dimensional forest and visualization based on LOD technology

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Abstract:

Trees are one of the most important natural features in the forest virtual scene rendering. The three-dimensional visualization model is proposed based on formal language of parametric and random L-system. According to the viewpoint in the spatial position, the model dynamically classifies stand levels of details which are described by various processing for rendering. By adjusting L-system iteration, models of hierarchical storage of tree, and bill-board approach, these levels of details are rendered separately. Experimental results show that this approach is an effective way to simulate forest virtual scene and it meets three-dimensional reality and real-time visualization requirements.

Keywords: forest L-system three-dimensional visualization LOD

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