

一种大场景有序点云的快速、准确分割方法

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摘要: 针对复杂大场景的点云分割问题, 提出了一种快速、准确的分割方法. 采用基于扫描线的分割算法, 利用点云的有序性和地面几何特征提取地面点, 在坡路等复杂地面情况下也能正确分割地面; 基于扫描系统的性能确定初始阈值, 实现了对非地面点的逐点快速分割; 提出了基于体量的自适应算法对过分割的点云进行合并. 实验结果表明, 在复杂场景下, 该分割方法的准确率在 90% 以上, 并且运算复杂度低, 逐点处理速度为平均每个点用时 14.5 μ s, 可在点云数据采集过程中进行实时处理.

关键词: 点云分割; 激光扫描; 大场景; 聚类

A Fast and Accurate Segmentation Method for

Ordered Point Cloud of Large-Scale Scenes

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Abstract: A fast and accurate segmentation method for point cloud of large-scale scenes is proposed. A scan-line-based ground filter algorithm is designed based on the ordering of point cloud and the geometrical characteristic of the ground, complex ground conditions such as slopes can be handled. Non-ground points are fast segmented point-by-point based on the initial threshold which takes the performance of the scanning system into consideration. Then over-segmented points are merged through the volume-based adaptive algorithm. The accuracy rate of the proposed method is over 90% and the point-by-point processing speed is 14.5 μ s per point, real-time processing can be achieved.

Key words: point cloud segmentation; laser scanning; large-scale scene; cluster

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