Abstract

Point clouds data acquired from airborne LiDAR point cloud data sources have great ability to provide vital structural information about geospatial objects. Identification, segmentation and visualization of airborne LiDAR point cloud data is interesting but considerably challenging problem. Processing LiDAR point cloud data can reveal several interesting properties of the geospatial objects. However the complexity of segmentation and visualization varies across different structures of geospatial objects viz. building structures, tree crowns, canopies etc. It is relatively complex compared to manmade objects. This paper explores and establishes the usefulness of variant of region growing algorithm for segmentation and 3-D visualization of sparse forest obtained from airborne LiDAR data stored as point clouds. The role of point normal and curvature in progressive region growing process is highlighted. The algorithm implicitly segments the ground from non-ground objects on the forest surface and enables improved visualization in 3-D space. The proposed approach achieves accuracy as high as 95.67% in segmentation of forest region and exhibits significant visual performance when compared to standard visualization platform.
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**Index Terms**

Computer Science  
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**Keywords**

LiDAR, 3-D Visualization, Region Growing, Segmentation, Forest Visualization.