

Proposal Model for Separating Objects From the Earth's Surface Applied On Airborne Laser data in Urban Areas*

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Abstract

The technology of the Airborne Light Detection and Ranging (LIDAR) is becoming a primary method for generating high-resolution spatial data in 3D space. Airborne LIDAR systems usually generate a dense cloud of point measurements from reflective objects scanned by the laser beneath the flight path, but without any classification of measured features such as buildings, bare earth surface known as DTM (Digital Terrain Model), and any other objects above the earth surface. This proposed model offers new algorithm that automatically classify Airborne LIDAR data, and divides the study area into several adjacent fragments. The polynomial surface passing through most of the initial points for each fragment is calculated using Polynomial equation, Many procedures were developed in the proposed method for calculating also the parameters for this model by applying "Least Squares" method.

Several examples of different laser clouds were examined, final results of the classification provided adequately accurate output in urban zones where the topography slope is little, and these results were relatively acceptable in comparison with the results presented by other researchers.

Keywords:

LIDAR, Least Squares Adjustment, Polynomials, Filtering Objects In Urban Zones

For the paper in Arabic see pages (109-123).

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