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## Investigating Performance Of Airborne Lidar Data Filtering With Triangular Irregular Network (TIN) Algorithm

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**Abstract.** Digital Elevation Model (DEM) is an important topographic product and essential demand for many applications.

Traditional methods for creating DEM are very costly and time consuming because of land surveying. In time, Photogrammetry has become one of the major methods to generate DEM. Recently, airborne Light Detection and Ranging (LIDAR) system has become a powerful way to produce a DEM due to advantage of collecting three-dimensional information very effectively over a large area by means of precision and time.

Airborne LIDAR system collects information not only from land surface but also from every object between plane and terrain that can reflect the laser beam. So filtering out nonground points from raw point clouds is the major step of DEM generation. There are many filtering algorithm due to several factors that affect the filtering procedures. The performances of these filters change based on the topographic features of area. One of these algorithm is called Triangular Irregular Network (TIN).

In this study the TIN algorithm is used to filter Lidar point cloud that are collected from two different sites. While one of these sites is a rural area, the other site is an urban area; therefore these sites have different topographic features. In addition, the reference DEMs are available for these sites. In order to test the performance of TIN algorithm, the Lidar point clouds are filtered and used to generate DEM for the sites. Finally, the generated DEM are compared with the reference DEM for each site. The comparison results show that the TIN filtering algorithm perform more effectively in urban area than rural area in terms of correlations with reference DEMs.

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