Automated Building Extraction from Dense LIDAR Data

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SUMMARY

Airborne Laser Scanning (ALS) is one of the promising technology for automated generating building models as it provides three dimensional coordinates of the scanned area. Furthermore, the availability of advanced software tools enables the automatic extraction of particular geographic objects located on the ground surface. The motivation of the conducted study was twofold, firstly – open and free access to dense LIDAR data (12 points per 1 sq. meter) stored in LAS binary format from national geoportal, maintained by the Surveyor General, and secondly – ongoing modernization of Polish cadaster. Hence this study aims to investigate possibility of automatically extraction building's data from LAS data for the modernization of buildings in the cadastre. The experiment was carried out in a housing estate in northern Warsaw, a typical residential area, dominated by detached buildings and green infrastructure. ENVI LIDAR tools were used for building extraction and planar rooftop surfaces delineation. Buildings, trees and other objects (e.g., cars) were separated based on geometric criteria, such as size, height and shape characteristics. The experimental result showed that the proposed methodology achieved good results and was robust after adjusting the model parameters to the specifics of the analysed area. Dense LAS data, offer fast and cost-effective ways of extracting buildings for cadastral purposes.

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