

Point Clouds classification of LiDAR data for 3D Modelling in Gadjah Mada Universitys Area

Anita Priyani¹, Alfiatun Nur K²

¹Geodetic Enggining, Gadjah Mada University, anita.priyani@mail.ugm.id

²Cartography and Remote Sensing, Gadjah Mada University, uvoria09@gmail.com

Abstract:

Urban modeling from aerial LiDAR scans has been an important topic in LiDAR data exploration. The laser penetration capabilities through an object to reach the ground affect the difference of elevation accuracy. The objects reflectivity also affects the ability of lasers to return laser beam of target point of an object. Reflectivity of the object is different for different land cover. To address these challenges, we present a classification method to classify input points into trees, buildings, and ground. The another objective of this research is to present an automatic system to reconstruct 3D models for urban areas from aerial LiDAR scans.

Material used in this study are Digital Surface Model (DSM), Digital Elevation Model (DEM), and orthofoto which is the result of LAS files. The Laser scanner type is Lite Mapper, which have laser wavelenght at 1.550 nm and pulse lenght 3,5 nm. Research area is in Gadjah Mada University. The large of the area is about 2,25 km². The implementation of the researh include the following steps: first, we clasify point cloud data with four parameters, such as maximum building size, terrain angle, itteration angle, and itteration distance. Than, the result of classification had been reinterpretedating to get land cover information. Exporting clasification result is needed to made model building, vegetation and ground that can be extract to 3D model with Microstation Terra software. Last, we make fussion image from orthofoto and 3D Model to get the best visualitation of image.

Accuracy assestment is process with calculate differences of elevation in 3D model and the real elevation in each land cover class.

Keyword: LiDAR, Point Clouds, Classification, 3D Modelling