

The Comparison of Cloth Simulation and Progressive TIN Densification Filters to Support Semantic Segmentation of Airborne LiDAR Data

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Abstract: Building footprints are noteworthy in supporting the development of smart cities. The challenges of building footprints extraction in Indonesia are its characteristic such as irregular shapes and spreads. Airborne LiDAR's point clouds can be used for building footprints extraction especially on the automation framework for efficiency. Semantic segmentation is an alternative stage for point clouds classification. Some segmentation problems arise and use more time when some objects are mixed e.g. buildings covered by the vegetation. This research was conducted to explore filtering methods in order to ease semantic segmentation process. We assume that ground – non ground separation is needed to run segmentation efficiently. Both Cloth Simulation Filter (CSF) and Progressive TIN Densification Filter (PTDF) were compared for ground – non ground separation for some scenes (regular and irregular built – up area) in Indonesia. Then, the segmentation experiments were carried out for non ground points only. CSF and PTDF have their own unique results for each scenes. The conclusion is an appropriate filtering method for certain object condition needs to be determined first to accelerate point clouds segmentation especially for building footprints extraction.

Keywords: CSF, PTDF, filtering, segmentation, LiDAR