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FILTERING OF LIDAR POINT CLOUD USING A STRIP BASED ALGORITHM IN RESIDENTIAL MOUNTAINOUS AREAS

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Abstract. Several algorithms have been developed to automatically detect the bare earth in LIDAR point clouds referred to as filtering. Previous experimental study on filtering algorithms determined that in flat and uncomplicated landscapes, algorithms tend to do well. Significant differences in accuracies of filtering appear in landscapes containing steep slopes and discontinuities. A solution for this problem is the segmentation of ALS point clouds. In this paper a new segmentation has been developed. The algorithm starts with first slicing a point cloud into contiguous and parallel profiles in different directions. Then the points in each profile are segmented into polylines based on distance and elevation proximity. The segmentation in each profile yields polylines. The polylines are then linked together through their common points to obtain surface segments. At the final stage, the data is partitioned into some windows in which the strips are exploited to analysis the points with regard to the height differences through them. In this case the whole data could be fully segmented into ground and non-ground measurements, sequentially via the strips which make the algorithm fast to implement.

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