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Semantic labelling of urban point cloud data

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Abstract. Three dimensional urban reconstruction is gaining popularity with the paradigm shift from 2D maps to 3D maps. LiDAR remote sensing is emerging as the main source of 3D spatial data because of its very dense and discrete point cloud. The enormous amount of data collected over natural terrain calls for automatic methods for labelling the point cloud. Semantically labelling the urban point cloud into various features is essential for urban planning and development. In this study, we propose a new object oriented methodology for semantic labelling of urban point cloud data. In addition to the geometrical information from LiDAR, we have used the spectral information for labelling of the point cloud. The coloured point cloud was segmented using colour based region growing algorithm to produce 3D segments. Spectral and geometrical features were extracted from the segments created. The extracted features were classified using different classifier system into five urban classes. The proposed methodology has been tested on LiDAR captured over urban datasets. The results indicate the potential of object based classification for automated 3D point cloud labelling.

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