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### FINDING CUBOID-BASED BUILDING MODELS IN POINT CLOUDS

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Abstract. In this paper, we present an automatic approach for the derivation of 3D building models of level-of-detail 1 (LOD 1) from point clouds obtained from (dense) image matching or, for comparison only, from LIDAR. Our approach makes use of the predominance of vertical structures and orthogonal intersections in architectural scenes. After robustly determining the scene's vertical direction based on the 3D points we use it as constraint for a RANSAC-based search for vertical planes in the point cloud. The planes are further analyzed to segment reliable outlines for rectangular surface within these planes, which are connected to construct cuboid-based building models. We demonstrate that our approach is robust and effective over a range of real-world input data sets with varying point density, amount of noise, and outliers.

[Conference Paper](#) (PDF, 1628 KB)

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