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# Semi-automatic extraction of sectional view from point clouds – The case of Ottmarsheim's abbey-church

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Abstract. Today, elevations or sectional views of buildings are often produced from terrestrial laser scanning. However, due to the amount of data to process and because usually 2D maps are required by customers, the 3D point cloud is often degraded into 2D slices. In a sectional view, not only the portions of the objet which are intersected by the cutting plane but also edges and contours of other parts of the object which are visible behind the cutting plane are represented. To avoid the tedious manual drawing, the aim of this work is to propose a semi-automatic approach for creating sectional views by point cloud processing. The extraction of sectional views requires in a first step the segmentation of the point cloud into planar and non-planar entities. Since in cultural heritage buildings, arches, vaults, columns can be found, the position and the direction of the sectional view must be taken into account before contours extraction. Indeed, the edges of surfaces of revolution depend on the chosen view. The developed extraction approach is detailed based on point clouds acquired inside and outside churches. The resulting sectional view has been evaluated in a qualitative and quantitative way by comparing it with a reference sectional view made by hand. A mean deviation of 3 cm between both sections proves that the proposed approach is promising. Regarding the processing time, despite a few manual corrections, it has saved 40% of the time required for manual drawing.

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