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AUTOMATIC PROCESSING OF MOBILE LASER SCANNER POINT CLOUDS FOR BUILDING FAÇADE DETECTION

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Abstract. Currently, data captured by Mobile Laser Scanners (MLS) is becoming a leading source for the modelling of building façade geometry. Automatic processing of MLS point clouds for feature extraction on building facades is a demanding work. Point cloud segmentation and recognition are the most important steps in this context. In this paper, a new approach for automatic and fast processing of MLS data for the detection of building patches while restricting to segment other features is introduced. After filtering of the point clouds, the building façade extraction takes place. An initial building point cluster detection and roughness based point separation within the cluster itself are the preliminary stages of this process. Thereafter points are segmented into planar patches based on the Random Sample Consensus (RANSAC) technique, as most facades are dominated by planar faces. An intelligent seed point selection method is introduced, and growing rules are applied in order to extract the most significant planar features which represent the building facades. Each segmented plane is afterwards processed to recognize the façade features. A rule based partitioning tree, constructed from the 2D geometric knowledge of building features is used for facade feature recognition. The approach has been tested with several urban data sets, and results demonstrate that the method can be applied in an efficient modelling process.

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