CONDITIONAL RANDOM FIELDS FOR URBAN SCENE CLASSIFICATION WITH FULL WAVEFORM LIDAR DATA

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ABSTRACT:

We propose a context-based classification method for point clouds acquired by full waveform airborne laser scanners. As these devices provide a higher point density and additional information like echo width or type of return, an accurate distinction of several object classes is possible. However, especially in dense urban areas correct labelling is a challenging task. Therefore, we incorporate context knowledge by using Conditional Random Fields. Typical object structures are learned in a training step and improve the results of the point-based classification process. We validate our approach with two real-world datasets and by a comparison to Support Vector Machines and Markov Random Fields.

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