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POLE-LIKE OBJECTS RECOGNITION FROM MOBILE LASER SCANNING DATA USING SMOOTHING AND PRINCIPAL COMPONENT ANALYSIS

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Abstract. With the spread of the Mobile Laser Scanning (MLS) system, the demands for the management of road and facilities using MLS point clouds have increased. Especially, pole-like objects such as streetlights, utility poles, street signs and etc. are in high demand as facilities to be managed. We propose a method for recognizing pole-like objects from MLS point clouds. Our method is based on Laplacian smoothing using the k-nearest neighbors graph, Principal Component Analysis for recognizing points on pole-like objects, and thresholding for the degree of pole-like objects. Our method can robustly recognize pole-like objects with various radii and tilt angles from MLS point clouds. For correctly segmented objects, accuracy of pole-like object recognition is on average 97.4%.

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