

Automatic Classification for Pavement Cracks for Mobile Mapping Data

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Key words: Photogrammetry; Positioning

SUMMARY

Over recent years, the cracks classification of the actual pavement sections has been one of the most motivating subjects in highway transportation applications and research. Cracks classification is indispensable for maintenance priorities. There is no standard method for classification that indicates the capability of crack classification under different conditions such as different pavement textures, different illumination and shades. Also there are no standard specifications that can be used everywhere. The standard specifications are different from one country to another and sometimes from one state to another in the same country. Every road authority has its own method for the classification. The authors derived that the differentiation between crack types is considered as a challenge more than detecting cracks itself. The presence of noise and extrinsic objects will reduce the accuracy of the crack classification rate. The precise classification results need robust pre-defined crack extraction steps. Digital image processing techniques are already widely adapted as tools for crack classification. Previously several image processing algorithms are usually suffering from various shortcomings on cracks classification sides. In this study a novel methodology for classifying crack types will be presented. This algorithm will detect crack types automatically. Finally, it can overcome some drawbacks and shortcomings for previous crack classification algorithms particularly in the case of complex block cracks such as noise problem, lane marking problem, and lighting problem.

100% (percentage of correctness classification rate) could be obtainable for one case study of continuous mobile mapping images collected by Lehmann + Partner GmbH company-Germany. The developed algorithm delivers an average computation time of 3.8 min to complete crack classification.