Machine learning algorithms application to road defects classification

This research paper indicated a new approach to automated identification and analysis of road defects based on machine research algorithms. The road defects are analyzed based on shape and texture feature analysis—the presented paper implemented on MATLAB with the Random Forest algorithm and boosting algorithm.

The boosting algorithm is being used to develop the classification models, and both sets have data showing the accuracy of the proposed system. These algorithms are required to identify road damages by following the Random Forest algorithm accurately.

It is also recommended using the graph cutting method and Marcov algorithm that enhances image segmentation efficiency. The pictures in the first two sets are often accurately classified by the classification algorithms of machine learning.

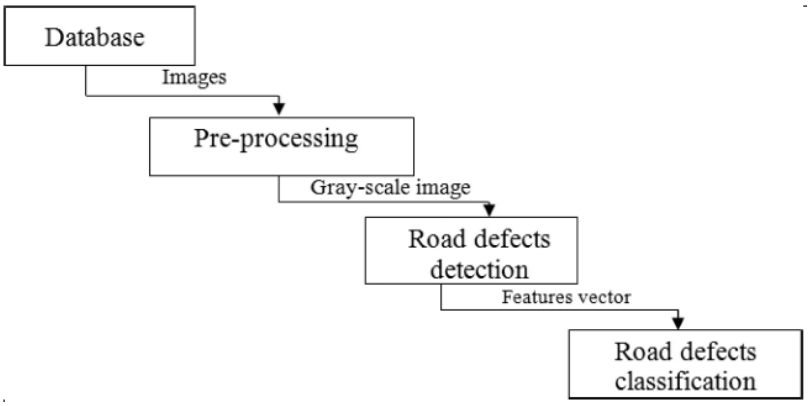

Figure 1. Steps of automatic road defects pavement detection and classification

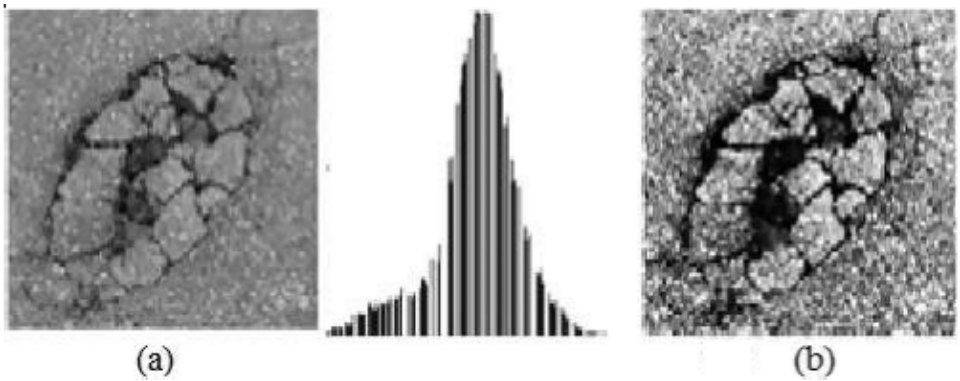

Figure 2. Results of image preprocessing

The author used the boosting algorithm, Marcov algorithm, graph cutting method, and Random Forest algorithm, but it was sensitive to noise during implementation and difficult to adjust. For real goal project, it seemed problematic and needed for more advancement.

References:

[1] Thu Huong, Nguyen & The Long, Nguyen & Sidorov, Denis & Dreglea, Aliona. (2018). Machine learning algorithms application to road defects classification. Intelligent Decision Technologies. 12. 1-8. 10.3233/IDT-170323.