A Comparative study of Deep learning models for Crack Detection and Measurement

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ABSTRACT

As the importance of safety management has emerged, many studies have been conducted on vision-based crack detection that are more objective than conventional methods that depend on manpower. However, crack detection using image data is still a challenging task, since it is difficult to apply on site, presents lack of reliability and a number of studies focuses on detection itself rather than gaining numerical data for safety inspection. Nowadays, there are many studies using faster region-based convolution neural networks (faster R-CNN) or mask R-CNN, and it is necessary to know which model is more suitable for application to geotechnical structures. In this study, we use two models which is composed of deep-learning algorithms and image analysis process for crack detection and obtaining properties such as length and width. Based on two deep-learning algorithms, faster R-CNN and mask R-CNN, we evaluate models with several aspects such as time, accuracy, etc. according to environmental conditions. The comparison result makes it possible to select a model according to each circumstance, and can be applied to safety management using numerical values obtained based on the model used.

REFERENCES

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