

ABSTRACT

Cracks on building surfaces are early indicators of structural damage that may pose safety risks if not addressed promptly. Manual inspection requires a considerable amount of time and has limited coverage capabilities. Therefore, this study aims to develop an automatic crack detection system based on computer vision using the YOLOv8 algorithm, integrated with the Roboflow platform. A total of 608 images were collected through direct photography, then annotated and augmented to produce 1,749 image data. The model was trained using the Ultralytics library via Google Colab and resulted in the best model saved in best.pt format. Initial testing was conducted using the Deploy feature on Roboflow by analyzing images through URLs with a confidence threshold set at 95%. The results showed that the system was able to display crack detection through clear bounding box visualizations. Furthermore, the system was also tested on a drone device and successfully detected crack objects (crack) as well as objects resembling cracks (not crack) in real-time. This system is expected to serve as an early solution in the automated and efficient monitoring of building conditions.

Keywords: *crack detection, YOLOv8, drone, Roboflow, computer vision.*

