Consistent Data Acquisition Method Using Cnn-Based No-Reference Image Quality Assessment In Bridge Inspection Using Uav

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As infrastructure facilities are aging and large-scale accidents occur, the importance of safety inspection and maintenance is increasing. Traditional safety inspection and maintenance has a reliability problem due to the tendency to rely on the subjective judgment of experts. In addition, methods by inspectors are not only dangerous to inspectors, but also difficult to perform efficient internal/external inspections, and are time-consuming and costly. Due to these limitations, image-based safety inspection using unmanned aerial vehicles (UAV), which is known to be reasonable and effective, is trying to replace the existing method. However, there are problems to be overcome in order to apply the inspection using UAV to the actual structure. In particular, the system for acquiring the current image data is performed at the same time as checking the aircraft in flight. Due to this, low-quality inspection images may be obtained due to problems such as motion blur, exposure, and focusing. Low quality images are not suitable for image processing results to detect damage such as cracks, spalls, and rebar exposure. Therefore, this study proposes a methodology to acquire images of a consistent level by using an image quality evaluation model using deep learning. The dataset obtained through the experiment is validate whether the proposed method can classify images of consistent quality throughout the set inspection area. After that, it was compared with the case where low-quality images were included in the image processing results such as damage detection or stitching.