

## **A validation study on the quality enhancement and evaluation methodology of UAV images.**

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### **ABSTRACT**

Although the proportion of UAV-based monitoring technology is gradually increasing in inspection of large structures such as bridges and dams, factors that deteriorate the quality of UAV images such as blur and noise are still not resolved. The degradation of UAV image quality results from the interference of external environmental factors such as wind and vibration and the physical limitations of the mounted imaging device. Therefore, this study proposed an image enhancement model based on Generative Adversarial Network to suppress the blurring effect, which is the most important cause of UAV image quality deterioration, and applied an evaluation model based on local blur map (LBM) to objectify the image quality. The proposed quality enhancement model was validated through the data set obtained in the actual bridge inspection process using UAV, and as a result, the effect of reducing blur by 30% on average was confirmed. In addition, the proposed evaluation model was verified to be superior to the existing model such as High-Frequency Multiscale Fusion and Transform (HiFST), Singular Value Decomposition (SVD) in terms of accuracy and computational cost. This study, which newly suggested a method to solve image quality-related issues, can increase the reliability of UAV-based structure evaluation results and is expected to be actively used in the field using various UAV imagery.

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