A Novel Method for the Contrast Enhancement of Fog Degraded Video Sequences

Abstract

Videos taken under fog suffer from degradation such as severe contrast loss. Unfortunately, that effect of fog cannot be overcome by simple image processing techniques. In this paper, a novel method for the contrast enhancement of foggy video sequences is proposed based on the Contrast Limited Adaptive Histogram Equalization (CLAHE), which limits the intensity of each pixel to user determined maximum. Thus, it mitigates the degradation due to fog and improves the visibility of the video signal. Initially, the background and foreground images are extracted from the video sequence. Then, the background and foreground images are separately defogged by applying CLAHE. The defogged background and foreground images are fused into the new frame. Finally, the defogged video sequence is obtained. The experimental results show that the proposed method is more effective than the traditional method. Performance of the proposed method is also analyzed with contrast improvement index (CI) and Tenengrad criterion (TEN).

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Index Terms

Computer Science
Image Processing

Keywords
video fog removal CLAHE image enhancement