Deterministic Image Enhancement Based on Fuzzy Method

ABSTRACT

Image enhancement is an essential branch in image processing, and its purpose is to selectively highlight or preserve important features of the source image. Firstly, this work introduces a fuzzy technique with dynamic parameter k to enhance images taken in grayscale images. Secondly, the output image is obtained by modifying and updating the parameters in the algorithm. Finally, the feasibility and effectiveness of the algorithm are verified by specific experiments. In the experiment, we take the structural similarity (SSIM) between the image and the enhanced image as the evaluation criterion and the target variable. For test images and determining structural similarity values (SSIM =0.76, 0.86, 0.96), the corresponding parameter k values are calculated by the fuzzy enhancement algorithm. This result also shows that the output image with a different structural similarity from the original image can be obtained by the enhancement algorithm.