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A new denoising method for removing salt & pepper noise from image

Abstract

Digital image has a significant importance in many fields in human life such as, in medicine, photography, biology, astronomy, industry and defense. Thus, it attracts the attention of large number of researchers, among them those interested in preserving the image features from any factors that may reduce the image quality. One of these factors is the noise. Thus far, solving this noise problem remains a challenge point for the researchers in this field, a huge number of image denoising techniques have been introduced in order to remove the noise with taking care of the image features (edges, sharpness). However, besides that, the findings proved to be inconclusive yet. From this point, the current paper aims to introduce a new denoising method for removing salt & pepper noise from the digital image through spatial way. This denoising method exploits the relationship between pixel's values when the image changes color. Which gives ordered sequences of values in the four directions, horizontal, vertical and diagonals of the window. The proposed method relays on this concept to change the corrupted pixel, by using the neighbors in the window to extracts the truest value (subjects to this sequence) of the treated pixel. This method has been proven to be simple, effective and performing well comparing with the existing restoration methods with low computational cost.

Keywords

Digital image; Image denoising; Image restoration; Salt and pepper noise; Sequence