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Bipolar Impulse Noise Removal and Edge Preservation in Color Images and Video Using Improved Kuwahara Filter

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Abstract : Both image capturing devices and human visual systems are nonlinear. Hence nonlinear filtering methods outperforms its linear counterpart in many applications. Linear methods are unable to remove impulsive noise in images by preserving its edges and fine details. In addition, linear algorithms are unable to remove signal dependent or multiplicative noise in images. This paper presents an approach to denoise and smoothen the Bipolar impulse noised images and videos using improved Kuwahara filter. It involves a 2 stage algorithm which includes a noise detection followed by filtering. Numerous simulation demonstrate that proposed method outperforms the existing method by eliminating the painting like flattening effect along the local feature direction while preserving edge with improvement in PSNR and MSE.

Keywords : bipolar impulse noise, Kuwahara, PSNR MSE, PDF
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