

HYBRID FILTER WITH IMPULSE DETECTOR FOR NOISY GREY SCALE IMAGES

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ABSTRACT

In this paper, a hybrid filter with impulse detector is proposed to remove any mixing of gaussian and/or salt & pepper noise from noisy grey scale images. To speed up the noise filtering process, ROAD (Rank Order Absolute Difference) statistics is introduced to check the salt & pepper noise in the selected window prior to suppressing it. If the impulse noise (salt & pepper noise) is detected in the selected window, only then impulse denoising filter is employed on that window followed by gaussian filter, otherwise only gaussian filtering part of the proposed filter works on it to suppress the gaussian noise.

To examine and demonstrate the filtering performance of proposed filter, various tests have been conducted and it is observed from experimental results that the proposed filter is more capable in suppressing any mix of impulse (salt & pepper) & gaussian noise and it can preserve the image detail better as compared to other standard filters like Bilateral, Median and Trilateral filters etc.

KEYWORDS: Adaptive Median Filter, Bilateral Filter, Gaussian Noise, Hybrid Filter, Impulse Noise, PSNR (Db), ROAD, UQI