

## ABSTRACT

Sometimes an image experienced damage which is called noise. One kind of noise is Random Valued Impulse Noise (RVIN). The impulse noise may occur because the surrounding distracts the image capturing process. One of that example is dust. It makes image that should be seen good become poor in quality. So that is urgently needs the noise filtering on digital image processing. In the recent years, there are many techniques have developed in order to reduce noise on image.

The system which is going to develop is aimed to implement testing on the combination between Adaptive center-Weighted Median Filter method and Detail Preserving Variational Method. The system implemented windows matrix  $3 \times 3$  to practicing whole processes, detecting and filtering. First of all insert an image which is processed and tested. Next, reads the image file as pixel matrix. Then inserts the wished noise probability to be tested and insert it into the image so that PSNR value may occur from the noised image. Then takes the matrix of the noised image. Detects the damage pixel caused by RVIN using ACWMF. The output of ACWMF is the map of binary matrix meanwhile the rate of detection accuracy occurs. Next step, according to the binary matrix map which is followed by filtering process using median filter combined with DVPM on choosing the median filter result. Then the system will display the image of filtering result and image's PSNR result of filtering process. The filtering image result will be detected on its edge by edge detection method and the real image is also processed with edge detection in order to understanding the relation between the two edge of those images.

According to the analysis on the objective measuring indicates the performance of ACWMF as noise detector and the combination between ACWMF and DPVM are able to produce fine PSNR and correlation result. ACWMF is able to detect any kind of images characteristic and the damage rate which involves threshold value.

**Keyword:** *Random Valued Impulse Noise (RVIN), Adaptive Center-Weighted Median Filter, Detail Preserving Variational Method, Median Filter, PSNR, accuration, corelation.*