ABSTRACT

Photo or image is one of the media used to capture certain events in life. But sometimes there are some obstacles in the image-making process to produce an image. One such obstacle is bad weather so that the image produced is less than optimal, whereas not all events can happen and not every scene would be the same at different times. The rainy season is one of an example of bad and unwanted weather that makes the image less than optimal. The image that is taken in the rain will take place rain water-containing granules and cover some parts of the image so that the image resulting granules mixed with rain.

This paper has designed a system that will perform the separation of noise in the form of rain from a digital image using image decomposition. Input image will be decomposed into two parts with bilateral filtering into the high frequency component (HF) and low frequency (LF), HF component will then be decomposed into rain and non-rain components with Morphological Component Analysis (MCA) methods. So that the component can be removed from the images of rain and produce images without noise. The software used in this paper is Matlab R2012b.

The output is an image that has been separated from the rain with a better quality with PSNR 33.84, 278.71 computing time and the value of 0592 CC.

***Keywords**: rain, image decompositon, MCA, sparse coding, dictionary learning*