ABSTRACT

Sense is an organ that every living creature has to know their living environment condition. In every condition, every people perception sense will be different, also on sight sense (eyes). In some application (such as satellite drawing, medic, astronomy, and photo), human act as an analyze subject. That is why the resulted image from the applications must have a good quality. Image quality descendant usually happen at transmission process, image grabbing, and others.

Image Restoration gives solution to obtain image with a better quality. This Final Project will discuss about image restoration process by using *Bayesian Least Square-Gaussian Scale Mixtures* (BLS-GSM) method. *Image Restoration* refers to the improvement of the original image which has flawed that can decrease the image quality. *Image restoration* can remove or minimize some image quality descendant. Because it is grayscale image that is used so this GSM method is use on wavelet domain.

The output of this project is to perform a system which is able to do image restoration process with variation of degradation factor (noise and blur) and have better performance than the general system that usually used in restore image. From the experiment that has been done, it obtain result image of restoration system have good performance for restoration and denoising process. This can be conclude based on PSNR and SNR value from system. Based on restoration process, PSNR which is obtained has value around 26 until 29 dB and ISNR is around 2 until 6 dB. While in denoising process, PSNR which is obtained has value around 26 until 29 dB and ISNR has value around 10 until 13 dB.

Key word : *Image Restoration, Gaussian Scale Mixtures* (GSM)**,** *Wavelet***,** *noise* **and** *Blur, Bayesian Least Square-Gaussian Scale Mixtures* (BLS-GSM)