ABSTRACT

In digital signal processing, a sampling process where the analog signal is converted into digital signal (discrete) has a very important role. Where based on Shannon's sampling theorem there is a rule minimal sampling rate for the signal can be reconstructed according to its origin, that is equal to two times the bandwidth of the signal and then do data compression for transmission or storage.

In the data compression stage, previously taken a number of N samples of digital data with large amounts of data obtained during the process of sensing, then the N-samples are discarded. To avoid these inefficiencies used a technique of compressive sensing.

This final project using the Discrete Wavelet Transform with Daubechies Wavelet as a sparsity transform, where the object of experience measurement.The measurement is done using the projection transformation based on Gaussian distribution. Then based on the measurement results, grayscale videos reconstructed by using the basis pursuit.

From the research result is known that wavelet transforms can be used as a sparsity transform to make the component images (frames) are sparse. Effective type of wavelet transform is used for compressive sensing for each video is a transformation dB1 level 2 with PSNR $\geq$ 25 dB. For the average computation time required when the rate of 20% between 769-2072 seconds, while the computation time for the rate of 40%, 60% and 80% respectively required 3-5 times, 6-9 times and 10-13 times the computing time when rate of 20%.

Keywords: compressive sensing, discrete wavelet transform, daubechies wavelet, sparsity, basis pursuit.