ABSTRACT

Process of data sampling is a process that exists in every transducer device that serves as analog to digital converter. The process is done by sampling data from the analog signal with sampling frequency of twice its maximal frequency, according to Shannon-Nyquist theorem. But, the growth of field of information technology demands more efficiency from such process. The number of samples needed or the sampling frequency is too high and it makes the process not efficient because most of the samples is dumped at the compression process.

In this final project is given analysis of compressive sampling for audio signal. The audio signal is transformed into sparse signal using sparsity transform with Daubechies discrete wavelet transform as its method. Hadamard matrix is used for the projection transform. The result of the two transformation then will be reconstructed into the original signal using basis pursuit algorithm.

Compressive sampling system performance in this final project is acquired by doing testing to obtain several parameter values such as sparsity, SNR, MSE, PEAQ and compression ratio. The best result is acquired when the system adopted DWT type dB3, which the maximum sparsity reaches 36%, maximum SNR reaches 51.23 dB. Thus, the higher the DWT level, the better the output.

Keywords : Compressive sampling, DWT, Hadamard, Basis Pursuit