ABSTRACT

Year to year technology continues to develop. Almost every individual uses technology to exchange information start from fast sending of text, sound, images, and other important files. The files that are sent or received are sometimes quite large, so it will require a large enough storage media. In addition, because the exchange of information is mostly done using the internet, it will make the data more susceptible to noise. To avoid this, the Compressive Sensing (CS) method and also a digital filter are used.

This final project analyzes the effect of Compressive Sensing on the performance of adaptive filters. CS has a function to compress the host audio that has been mixed with noise. In the CS acquisition stage, the DCT method is used to change the signal from time domain to frequency domain, in the reconstruction process the Orthogonal Matching Pursuit (OMP) method is used. In this method, the adaptive filter uses the Least Mean Square (LMS) algorithm. Observations were made on the order of the filter, which is the level of the filter used, N is the length of the initial audio signal value used in the system, μ is the coefficient of the filter speed used, L is the length of the audio acquired and M is the vector length of the CS sample.

From this Final Project, has been obtained the results from this study Compressive Sensing affect the performance of LMS-based adaptive filters. The designed system works optimally when the filter speed coefficient = 0.005, the compression ratio is 50% and the parameter value N = 80000. Filtering that is influenced by Compressive Sensing produces an SNR value that is 0.1 dB smaller than the filtering results that are not influenced by the Compressive Sensing process.

Keywords: *Compressive Sensing, Filter adaptive, Least Mean Square, Orthogonal Matching Pursuit.*