

## ABSTRACT

By taking advantage of technological developments, the exchange of information will be very much easier. The smaller the size of the data sent, the faster the process of exchanging information that occurs and vice versa. Compression is the process of compressing a data to occupy a smaller storage space. Audio compression is one of the solutions that is quite popular to use related to storage problems. There is a compression method that is still relatively new, namely CS (Compressive Sensing). CS is a method where signal acquisition and compression are performed at the same time.

In this final project, compressive sensing method is applied to tone using the Orthogonal Matching Pursuit (OMP) reconstruction algorithm. The designed system consists of two processes, the first process is the audio signal compression process and the second process is reconstructing the audio signal. In the compression process, the audio signal is first transformed from the time domain to the frequency domain using the Discrete Cosine Transform (DCT) transformation. While in the reconstruction process, the compressed signal is reconstructed back into its original form using the Orthogonal Matching Pursuit (OMP) algorithm. For tone recognition using feature extraction Fast and fourier transform and Euclidean Distance Matrix (EDM) classifier.

From the results of the study, it was found that compressing a tone can be done using the CS technique and reconstructed using the OMP method. The CS technique on the tone and reconstructed again using the OMP method with a compression ratio of 12.5, segment 1024, threshold 1 0.1 and threshold 2 50 is considered successful because it gets an average accuracy rate above 90%. A low level of accuracy is obtained when the compression ratio and segment is changed to a smaller number, while threshold 1 and threshold 2 are changed to a larger number.

**Keywords:** *Compressive Sensing*, Sinyal audio, OMP, DCT, FFT, EDM