

## ABSTRACT

Audio compression is one solution that is quite popular to use related to storage problems and real-time access. Compression techniques are used as optimal as possible by paying attention to several aspects so as to produce lossless and lossy compression techniques. There is also a new compression method called Compressive Sensing (CS). Compressive Sensing (CS) is a new sampling method in which signal acquisition and compression are carried out at the same time. This study aims to design a compression system on guitar tones using Compressive Sensing (CS). Compressive Sensing (CS) itself consists of two steps, namely the process of compression and reconstruction. The initial step of the guitar sound is taken from the Walkband software on Android. Records in the form of .wav format will be compressed using the Discrete Cosine Transform (DCT) method, which is then reconstructed using the Iteratively Reweighted Least Square (IRLS) method. The stages carried out in this study consisted of stages of audio acquisition, audio transformation process to the area of Discrete Cosine Transform (DCT), and Application of Compressive Sensing (CS). After CS compression, feeding will be reconstructed using the Iteratively Reweighted Least Square (IRLS) algorithm. The proposed performance parameters are the quality of compression seen from the value of Signal Noise Ratio (SNR), Mean Square Error (MSE) and Mean Opinion Score (MOS). The MOS value has a value of 1 to 4, where the smaller the MOS value, the worse the quality of the compression, and vice versa the greater the MOS the better the quality of the compression. The results of this study obtained the best SNR value obtained at 23.4203 dB. Audio quality is produced based on MOS assessment, 2X compression produces audio compression with good quality, 4X audio compression has good quality, and 8x compression audio has poor quality.

**Keywords:** Compressive Sensing, Iteratively Reweighted Least Square, Discrete Cosine Transform.