

ABSTRACT

In determining the noise level of motorized vehicles, errors often occur because they are detected manually and in some cases, even though they use the original exhaust, the noise level exceeds the stipulated regulatory limits. So the author wants to design a classification method to detect and identify motor vehicle noise easily and efficiently.

So based on these problems, in this research, a system design that can detect vehicle noise levels is carried out based on regulations that have been decided by the State Minister for the Environment number 7 of 2009. This final project uses audio data input that is taken with a smartphone which is then processed using a simulator MatLab (Matrix Laboratory). By using a method of Mel Frequency Cepstrum Coefficients (MFCC) as a vector to present the sound of a motorcycle and K-Nearest Neighbor (K-NN) which can classify to detect and identify motor vehicle noise based on the type of engine.

In testing the system with Mel Frequency Cepstrum Coefficients (MFCC) and K-Nearest Neighbor (K-NN) it is done by changing several parameters, including the number of samples, the number of K values and the number of data proportions. The purpose of testing and analysis is to determine the effect of the number of samples, K values and the proportion of training data on system performance. The results of testing the system with the parameters above were obtained for the best final number of samples, namely at 75000, for the total proportion of data 80%, and for the total value of K is $K = 1$.

Keywords : Noise, Classification, MatLab, Mel Frequency Cepstrum Coefficients (MFCC), K-Nearest Neighbor (K-NN).