**ABSTRACT** 

Guitar is arguably the most popular musical instrument these days because

guitar is relatively easy to learn. The most basic thing in learning a guitar is the

chord, and you will need a good hearing ability to distinguish one type of chord,

unfortunately most of the beginners did not manage to do that. Therefore, a chord

detection system that is able to determine the exact type of chord is needed and it

depends on the quality of the fingering.

In this final project the chord detection system is made by utilizes the

characteristics of a chord as a database feature that will then be used to classify the

type of chord that is inserted into the system. The process itself is data acquisition, pre

processing, feature extraction, classification and displaying results. Data acquisition is

done by using an electric guitar that is connected to the computer device via the sound

card. Pre processing done by changing the data format from stereo to mono, crop data,

and normalization. Feature extraction technique done by the decomposition with

Wavelet Transformation, followed by Fourier transformation and calculation of

average value of each frame and finally the K-Nearest Neighbor (kNN) for the

classification.

Real time chord detection system using Wavelet transformation is proven to

work well as real-time detection system by giving the best accuracy of 95% and

computation time of 0.98 seconds to 1.57 seconds by a single chord input. This

condition is achieved when the k value is 1, using the Haar mother wavelet, and the

overlap value is 0.5.

Key words: Chord, Detection, Wavelet, K-Nearest Neighbor (KNN), realtime

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