

## **ABSTRACT**

*Chords and tuning is an important part performed while playing the guitar. Chord is a combination of three or more tones played together while tuning is a way to set the strings on the guitar to be suit with the standard. The use of chords and tuning become one of the challenges for beginner guitar players. Therefore, we need a system that is capable of detecting faults in a guitar chord is being played. With this system someone can know which string recommendations experiencing errors.*

*Research has been done related to the application system that can detect errors by providing a recommendation string chords are experiencing errors. The method used is a frequency -based signal processing techniques to see which frequency tones have a more dominant power. Stages of processing which are performed fast fourier transform, envelope detection, harmonic product spectrum, and frequency analysis for fault detection and chord recognition.*

*The advantages of this system are the chord being played can be recognized and the system can determine the tone of the chord constituent. Chord recognition rate of the system 100 %. While the system detects an error rate reached 91.14 % correct on the system accuracy reach 73.67 %. Downside of this system, if the constituent tones chord has more than one string contained on the guitar, then one string has an error, then the system can not detect these strings. This is resulting in an error rate reaches 26.33 % of 350 samples of data used.*

*Keywords: chords, tuning, FFT, envelope detection, harmonic product spectrum, frequency analysis.*