ABSTRACT

At the present time the development of the technological advances in the field of digital signal processing has been growing rapidly, technology that is being developed at this time is technology in the field of signal processing and that is undeniable that humans growing together with the development of technology in every single time. Without realizing it anyway, a lot of tools and computer software that the unconscious plays an important role in helping human activity. In the previous research, quality detection of tile has been designed using Average Energy method. So in this research the authors will make quality detection of tile using Linier Predictive Coding and Zero Crossing Rate methods.

In this final project, feature extraction methods and classification method are needed. the research conducted by dropping a golf ball to hit the ceramic tile that has been installed and recorded the sound that is generated using the microphone on the phone with voice recorder application. This study will use the voice feature extraction methods called Linear Predictive Coding (LPC) and Zero Crossing Rate (ZCR) with the classification method, K-Nearest Neighbor (KNN) and then compares the value of feature extraction tests that captured by phone with a trainer sound which has been saved.

After testing with different scenarios on the designed system, it can be determine whether the ceramic tiles that have been installed must be replaced or still fit for use. After do the Linear Predictive Coding (LPC) feature extraction author got 95% accuracy at 40 cm altitude with k = 3 and LPC order = 16, while the Zero Crossing Rate (ZCR) obtained an accuracy of 91.66% at 10 cm altitude with k=5.

Keywords : audio signal processing, Linier Predictive Coding, KNN, ZCR