ABSTRACT

The rapid advancement of technology and the widespread use of the internet today have made it easier for everyone to obtain and share information in the form of digital media. Various types of data such as images and audio can be easily disseminated and accessed by various people. This situation has led to the undermining of the ownership rights of information, commonly referred to as copyright. This makes the ownership rights of information or what is commonly referred to as copyright no longer guaranteed. So a method for verification and authentication of digital data is needed to protect copyright. In this case watermarking can be a solution to the problem.

This research applies Machine Learning in Multi-bit SS-based audio watermarking to detect imperfect watermarks due to attacks. The watermark used is in the form of letters converted into images and audio with *.wav format as the audio host. The watermark will be inserted into the audio using the Multi-bit SS method to produce watermarked audio, then tested with several attacks to determine its durability. The watermark is extracted from the watermarked audio and then detected using Convolutional Neural Network (CNN) with text accuracy parameter.

Based on the simulation results, the average Signal to Noise Ratio (SNR) value obtained is 16.03, the average Objective Difference Grade (ODG) value obtained is -1.52, the capacity (C) value obtained is 57.42, the average Bit Error Rate (BER) value obtained is 0.26, and the average text accuracy value obtained is 30.72%.

Keywords: Audio watermarking, Multi-bit Spread Spectrum, Machine Learning, Convolutional Neural Network