

### Abstract

Asthma is a public health problem in almost all countries in the world. One of the symptoms that exist in asthmatics is wheezing. Several researchers have conducted research on wheezing classification using machine learning methods, namely the Support Vector Machine (SVM), Mel-frequency cepstral coefficients (MFCC), empirical mode decomposition (EMD), Artificial Neural Network (ANN), ensemble (ENS), K-Nearest Neighbor (KNN) and Short-Time Fourier Transform (STFT) and Convolutional Neural Network (CNN). Of the many studies that have been carried out in detecting wheezing, however, researchers only focus on proposing a new algorithm for wheezing detection. Rarely do researchers focus on comparative analysis to existing algorithms. This study aims to determine the accuracy of the results from wheezing classification of respiratory sounds by comparing the algorithm. In the experiment, 4 algorithm were analyzed namely Classification using Convolutional Neural Network (CNN) with Short-Time Fourier Transform (STFT) extraction feature, Classification using Convolutional Neural Network (CNN) with Mel-Frequency Cepstral Coefficients (MFCC) extraction, Classification using Long-Short Term Memory (LSTM) with Short-Time Fourier Transform (STFT) extraction feature, Classification using Long-Short Term Memory (LSTM) with Mel-Frequency Cepstral Coefficients (MFCC) extraction. Rigorous experiments have been carried out, and it is proven that Classification using Convolutional Neural Network (CNN) algorithm is better than using Long-Short Term Memory (LSTM). Classification with 2 CNN algorithms has 98% accuracy while classification with LSTM and STFT algorithms has 58% accuracy, and LSTM and MFCC algorithms has 100% accuracy.

**Keywords:** asthma, classification algorithm, wheezing, convolutional neural network, long short-term memory