ABSTRACT

Sound is one of the most important means of communication in conveying information, including the sound produced by the human body's vocal cords through vocal cord vibrations. Like other body tissues, vocal cords can also be damaged, a condition known as vocal cord disorder. This study aims to develop various non-invasive methods for diagnosing vocal fold disorders. The research was conducted to determine the optimal model architecture and the accuracy level of the analysis for detecting vocal fold disorders. Pre-processing was performed using normalization, framing, and windowing, followed by feature extraction using Linear Predictive Coding (LPC) and Mel Frequency Cepstral Coefficients, with 12 and 13 features, respectively, then combined into a single vector. Analysis was then performed using the Backpropagation Neural Network method with two datasets with different variables, namely data with variable and non-variable neurons, resulting in an optimal architecture for data with non-variable neurons with a hidden layer of 4 and 150 epochs, achieving an accuracy of 89.65%, precision of 86.6%, and recall of 92.8%.

Keywords: Voiceband, LPC, MFCC, BNN, Accuracy, Precision, Recall