I. INTRODUCTION

SEVERAL researchers have conducted research on wheezing classification using machine learning methods, namely the Support Vector Machine (SVM) [1], Mel-frequency cepstral coefficients (MFCC) [2], [3], empirical mode decomposition (EMD), Artificial Neural Network (ANN), ensemble (ENS), K-Nearest Neighbor (KNN) and Short-Time Fourier Transform (STFT) [4] and Convolutional Neural Network(CNN) [5]. In research [1] G. D. Sosa et al discusses automatic wheezing detection by evaluating several acoustic feature extraction methods and C-weight SVM. In [6], P. Bokov et al discusses the introduction of wheezing using recorded mouth breathing sounds taken using a smartphone in children. In [4], D. Oletic and V. Rinse discusses wheezing detection based on Compressively Sensed Respiratory Sound Spectra. In research [2] M. Akanat et al discussed about the classification of wheezing with the Convolutional Neural Network method. In the study [7], A. Parkhi and M. Pawar discussed the analysis of lung abnormalities using the Short Time Fourier Transform (STFT)

Spectogram analysis of lung sounds. In [8]. Anggoro. et al discussed about speech recognition in the northern Sundanese dialect. In this study, the researcher uses the feature extraction method, namely MFCC for the introduction method using RNN. The researcher has five samples of speech in Sundanese which will be tested for ten times with each part namely epoch testing and mini batch testing. The results obtained in the test that is equal to 74%. In [8], Erwin et al discussed the introduction of Manado dialect using the Recurrent Neural Network. In this study, the researcher used the feature extraction method, namely MFCC. Researchers used ten samples of Manado speech taken from three sources using cellphones. Researchers used three testing methods, namely epoch testing, mini batch, and system testing. Each test method was carried out for ten to eleven repetitions. The accuracy results obtained are 87% using ideal parameters and carried out for ten times of testing. 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. Based on the above problems, this final project is an analytical study of the Convolutional Neural Network and Long-Short Term Memory classification algorithms using the feature extraction method MFCC and STFT.