

Abstract

The human body consists of several vital organs that have an important role in humans life. One of the vital organs of humans is the lungs, which is responsible for the respiratory system to meet the body's oxygen needs. Respiratory system disorders can cause death. One method doctors use to diagnose lung disorders is by listening to breathing sounds using a stethoscope. However, the use of a stethoscope can still be misdiagnosed due to several factors, such as the doctor's ability, doctor's experience, doctor's sensitivity, and similar lung sound patterns. In this study, the classification of lung sounds using the Discrete Wavelet Transform (DWT) method and Artificial Neural Networks were optimized with Genetic Algorithms. Lung sounds are considered as sounds from the respiratory system, then normalized and the DWT coefficient is calculated. The lung sound signal characteristics are obtained by calculating the entropy at the DWT coefficient. Furthermore, the classification is solved using Artificial Neural Networks and optimized with Genetic Algorithms. Based on this solution, the classification of lung sounds can be completed with an accuracy of 57.45%.

Keywords: discrete wavelet transform, artificial neural network, genetic algorithm, lung sound