Machine learning in lung sound analysis: a systematic review

Abstract

Machine learning has proven to be an effective technique in recent years and machine learning algorithms have been successfully used in a large number of applications. The development of computerized lung sound analysis has attracted many researchers in recent years, which has led to the implementation of machine learning algorithms for the diagnosis of lung sound. This paper highlights the importance of machine learning in computer-based lung sound analysis. Articles on computer-based lung sound analysis using machine learning techniques were identified through searches of electronic resources, such as the IEEE, Springer, Elsevier, PubMed and ACM digital library databases. A brief description of the types of lung sounds and their characteristics is provided. In this review, we examined specific lung sounds/disorders, the number of subjects, the signal processing and classification methods and the outcome of the analyses of lung sounds using machine learning methods that have been performed by previous researchers. A brief description on the previous works is thus included. In conclusion, the review provides recommendations for further improvements.

Keywords — Review, lung sound, lung disorder, statistical, machine learning