Diagnosis of COPD Based on a Knowledge Graph and Integrated Model

Abstract:

Chronic obstructive pulmonary disease (COPD) is a chronic lung disease that causes a progressive decline in respiratory function. Diagnosing COPD in the early curable stages is very important and may even save the life of a patient. In this paper, we present an integrated model for diagnosing COPD based on a knowledge graph. First, we construct a knowledge graph of COPD to analyze the relationship between feature subsets and further discover the knowledge of implied diseases from the data. Second, we propose an algorithm for sorting features and an adaptive feature subset selection algorithm CMFS-η, which selects an optimal subset of features from the original high-dimensional set. Finally, the DSA-SVM integrated model is suggested to build the classifier for the diagnosis and prediction of COPD. We performed extensive experiments on the dataset from the hospital outpatient electronic medical record database. The classification accuracy of our method was 95.1%. It is superior to some state-of-the-art classification methods for this problem.

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