

عنوان مقاله:

A New Knowledge-Based System for Diagnosis of Breast Cancer by a combination of the Affinity Propagation and Firefly Algorithms

محل انتشار:

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خلاصه مقاله:

Breast cancer has become a widespread disease around the world in young women. Expert systems, developed by data mining techniques, are valuable tools in diagnosis of breast cancer and can help physicians for decision making process. This paper presents a new hybrid data mining approach to classify two groups of breast cancer patients (malignant and benign). The proposed approach, AP-AMBFA, consists of two phases. In the first phase, the Affinity Propagation (AP) clustering method is used as instances reduction technique which can find noisy instance and eliminate them. In the second phase, feature selection and classification are conducted by the Adaptive Modified Binary Firefly Algorithm (AMBFA) for selection of the most related predictor variables to target variable and Support Vectors Machine (SVM) technique as classifier. It can reduce the computational complexity and speed up the data mining process. Experimental results on Wisconsin Diagnostic Breast Cancer (WDBC) datasets show higher predictive accuracy. The obtained classification accuracy is 98.606%, a very promising result compared to the current state-of-the-art classification techniques applied to the same database. Hence this method will help physicians in more accurate diagnosis of breast cancer.

کلمات کلیدی:

Breast Cancer, Affinity Propagation, Feature Selection, Binary Firefly Algorithm, Support Vectors Machine

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