عنوان مقاله:

Comparing the efficiency of diagnostic models of breast cancer, using Genetic Algorithm and Multi-layer Perceptron models

محل انتشار:

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BACKGROUND AND OBJECTIVE: Breast cancer has become a common cancer in women. The early diagnosis of breast cancer has beneficial effects on the life patients. Due to difficulties in the disease, data mining techniques could help to facilitate the diagnosis, the current study amid the compare the efficiency of genetic algorithm (GA) and Multi-layer Perceptron (MLP) in the diagnosis of the breast cancer. METHODS: The database used in this paper is provided by Jahad Daneshgahi breast cancer research center Tehran University. This database included 7625 records, There were 4008 patients (52.4%) with breast cancers (malignant) and the remaining 3617 patients (47.6%) without breast cancers (benign). GA and MLP models were developed using 14 fields (risk factor) of the database. The present study divided the data into 10 folds where 1 fold for testing and 9 folds for for training as a way of validating the 10-fold crossover validation. Ultimately, the comparison of the models was made based on sensitivity, specificity, accuracy and ROC indicators. FINDINGS: ROC: sensitivity, specificity and accuracy of the GA model were 0.815, 76.27, 79.71, and 81.24 respectively. For the MLP model, the note indicators respectively reported: 0.884, 86.32, 87.67, 88.50.There was statistical significant difference between indicators of the two models (p-value<0.0001). CONCLUSION: Both models had acceptable efficiencies in diagnosing breast cancer, that GA had better efficiency. The number of breast cancer risk factors and number of database records can cause different sensitivity, specificity, accuracy and ROC indicators. Includes more Breast cancer risk factors such as mutation types could help to developing more efficient GA and ANN models.

کلمات کلیدی:

Diagnosis model, Breast Cancer, MLP, GA