

عنوان مقاله:

Applying Two Computational Classification Methods to Predict the Risk of Breast Cancer: A Comparative Study

محل انتشار:

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خلاصه مقاله:

Introduction: Lack of a proper method for early detection and diagnostic errors in medicine are some fundamental problems in treating cancer. Data analysis techniques may significantly help early diagnosis. The current study aimed at applying and evaluating neural networks and decision tree algorithm on breast cancer patients' data for early cancer prediction. Methods: In the current study, data from Breast Cancer Research Center (BCRC), ACECR (the Academic Center for Education, Culture and Research) were used consisting of data from 4004 patients with breast cancer risk factors. Of all records, 1642 (41%) were related to malignant changes and breast cancer and 2362 (59%) were related to benign tumors. Data were analyzed by neural networks perceptrons and decision tree algorithm and divided into two parts for training (70%) and testing (30%) using Rapid Miner 5.2. Results: For decision tree, accuracy of 81.62%, specificity of 79.80%, sensitivity of 89.49%, and for neural network, accuracy of 81.62%, specificity of 89.99%, and sensitivity of 90.80% were reported. Results showed acceptable capabilities to analyze breast cancer data for both algorithms. Conclusions: Although both models provided good results, neural network showed better diagnosis for positive cases. Database type and analysis method influenced the results. On the other hand, information about more powerful risk factors of breast cancer can provide models with high coverage

کلمات کلیدی:

.Decision Tree, C5.5, Neural Network, Breast Cancer, Data Mining

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