



RESEARCH ARTICLE

A Novel Prediction on Breast Cancer from the Basis of Association rules and Neural Network

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Abstract— *The use of machine learning tools in medical diagnosis is increasing gradually. This is mainly because the effectiveness of classification and recognition systems has improved in a great deal to help medical experts in diagnosing diseases. Such a disease is breast cancer, which is a very common type of cancer among woman. As the incidence of this disease has increased significantly in the recent years, machine learning applications to this problem have also took a great attention as well as medical consideration. This paper presents an automatic diagnosis system for predicting breast cancer based on association rules (AR) and neural network (NN). In this study, AR1 and AR2 are used for reducing the dimension of breast cancer dataset and NN is used for intelligent classification. The proposed AR1 + AR2 + NN system performance is compared with NN model. The dimension of input feature space is reduced from nine to four by using AR1 & AR2. In test stage, 3-fold cross validation method was applied to the Wisconsin breast cancer dataset to evaluate the proposed system performances. The correct classification rate of proposed system is 98.4%. This paper demonstrated that the AR1 and AR2 can be used for reducing the dimension of feature space and proposed AR1 + AR2 + NN model can be used to obtain fast automatic diagnostic system for breast cancer.*

Key Terms: - *Breast cancer diagnosis; Wisconsin Breast Cancer Database (WBCD); Association Rule; Neural Network; Multilayer Perceptron (MLP); feature selection; 3-Fold cross validation*

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