

Breast cancer classification using Fuzzy classifier

Type of article: Conference Abstract

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Abstract:

Background:

Breast cancer constitutes a major health problem around the world because of its frequency, morbidity and mortality, as well as its impact on women, their families and society. At present, it is the second leading cause of death for women. There is still no way to prevent breast cancer and the solution lies in their early detection in order to increase the effectiveness of treatments. Therefore, designing systems of automatic detection of the breast cancer is a very important medical problem. In this work, we develop a new system for classification of breast cancer disease using fuzzy IF-THEN rules. In such fuzzy systems, choosing the number of fuzzy rules and setting the membership functions are the important tasks.

Methods: The use of the clustering methods to find a compact rule base constitutes an interesting alternative approach to the conventional methods based on grid-partitions and selection of rules. The proposed scheme consists of two stages. In the first, the subtractive clustering method is applied to the training data to generate the premise of rules, i.e. the parameters of the membership functions. In the second, the cuckoo search algorithm is used to set the consequent parameters, i.e. the rule weights.

Results: The proposed system generates fewer fuzzy rules with high classification accuracy; it is tested on Wisconsin Breast Cancer (WBC) database and compared with several state-of-the-art methods.

Conclusion: Our proposed system has successfully demonstrated its competence in generating both membership function and certainly grades. It improved the classification rate of Wisconsin Breast Cancer (WBC) data base with few rules.

Keywords: Fuzzy Rule Based Classification, Subtractive Clustering, Cuckoo Search Algorithm, Wisconsin Breast Cancer.

1. Declaration of conflicts

This article was selected from ICHSMT'17 abstract book.

2. Authors' biography

No Biography

3. References

No reference