REVIEW ARTICLE

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Review top 7 Algorithms in Data Mining for Prediction Survivability, Diagnosis and Recurrence of Breast Cancer

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Background: The prediction of breast cancer Diagnosis, survivability and Recurrence has been a challenging research problem for many researchers. Thanks to new technologies, better explanatory prognostic factors are being measured and recorded; thanks to low cost computer hardware and software technologies, high volume better quality data is being collected and stored automatically; and finally thanks to better analytical methods, those voluminous data is being processed effectively and efficiently.

Materials and Methods: The main objective of this manuscript is introducing some popular and well known data mining algorithms in breast cancer researches. The medical predictive models are designed to aid physicians to overcome health problems, routine classification tasks which should otherwise be referred to the specialist in a particular area of medicine by extracting **hidden patterns.** We present the top seven common data mining algorithms (Artificial Neural Networks/ANNs. Decision Trees، Bayes Nets, Naive Bayes, Support Vector Machine, Decision Tree with Naive Bayes) besides the most widely used statistical method (Logistic Regression model).

Results: These top 7 algorithms are among the most influential data mining algorithms in the research community. With each algorithm, we provide a description of the algorithm, discuss the impact of the algorithm, and review current and further research on the algorithm. Decision Trees and Support Vector Machine are optimal models to prediction, survivability and recurrence of breast cancer and trend to show high accuracy.

Conclusion: These algorithms cover classification, clustering, statistical learning, association analysis, and link mining, which are all among the most important topics in data mining research and development. Critical success factors in data mining projects are including: accessing enough data, mining in data and reliable variables, build multiple targeted models, less missing data and other key factors depending specific data mining algorithms.

Keywords: Breast Cancer, Data mining Algorithms, Prediction, Artificial Neural Networks, Decision Trees, Naive Bayes, Logistic Regression, Support Vector Machine.

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