Breast Cancer Risk is Predicted Using Fuzzy Logic in MATLAB Environment

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Abstract : Machine learning tools in medical diagnosis is increasing due to the improved effectiveness of classification and recognition systems to help medical experts in diagnosing breast cancer. In this study, ID3 chooses the splitting attribute with the highest gain in information, where gain is defined as the difference between before the split versus after the split. It is applied for age, location, taluk, stage, year, period, martial status, treatment, heredity, sex, and habitat against Very Serious (VS), Very Serious Moderate (VSM), Serious (S) and Not Serious (NS) to calculate the gain of information. The ranked histogram gives the gain of each field for the breast cancer data. The doctors use TNM staging which will decide the risk level of the breast cancer and play an important decision making field in fuzzy logic for perception based measurement. Spatial risk area (taluk) of the breast cancer is calculated. Result clearly states that Coimbatore (North and South) was found to be risk region to the breast cancer than other areas at 20% criteria. Weighted value of taluk was compared with criterion value and integrated with Map Object to visualize the results. ID3 algorithm shows the high breast cancer risk regions in the study area. The study has outlined, discussed and resolved the algorithms, techniques / methods adopted through soft computing methodology like ID3 algorithm for prognostic decision making in the seriousness of the breast cancer.

Keywords : ID3 algorithm, breast cancer, fuzzy logic, MATLAB

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