

Evaluation of K-fold value in breast cancer diagnosis technique using SVM and bio-inspired optimization algorithm (JA-ABC5)

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ABSTRACT

Breast cancer is a fatal condition that kills thousands of people annually and is becoming more common. Lowering the mortality rate linked to breast cancer requires early detection. On the other hand, screening tests like mammography, ultrasound, and MRI that rely on human interpretation run the risk of overdiagnosis or underdiagnosis. Classification techniques can be used to improve the accuracy of breast cancer diagnosis to get around this limitation. The purpose of this study is to determine how K-fold cross validation affects breast cancer classification performance. The K-fold value is crucial in determining the right value to use in order to speed up evaluation and guarantee consistency in the analysis. The study looks at how breast cancer identification accuracy is impacted by the K-fold value. The accuracy of the algorithmic performance estimation depends on K. Finding the right K value is crucial because a higher value of K produces an estimate that is more accurate but also costs more to compute. For practical classification performance analysis, a K-fold value of K5 is advised based on the Wisconsin dataset results. With an accuracy rate of 98.49% and an average completion time of 2677.823 seconds, this value showed superior robustness and completion time. This study emphasises the need for and value of K-fold cross-validation in enhancing the classification accuracy of breast cancer.

KEYWORDS

Machine learning; Classification; Bio-inspired algorithm; K-fold validation

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