

## Breast Cancer Diagnosing Based on Online Sequential Extreme Learning Machine Approach

**Authors :** Musatafa Abbas Abbood Albadr, Masri Ayob, Sabrina Tiun, Fahad Taha Al-Dhief, Mohammad Kamrul Hasan

**Abstract :** Breast Cancer (BC) is considered one of the most frequent reasons of cancer death in women between 40 to 55 ages. The BC is diagnosed by using digital images of the FNA (Fine Needle Aspirate) for both benign and malignant tumors of the breast mass. Therefore, this work proposes the Online Sequential Extreme Learning Machine (OSELM) algorithm for diagnosing BC by using the tumor features of the breast mass. The current work has used the Wisconsin Diagnosis Breast Cancer (WDBC) dataset, which contains 569 samples (i.e., 357 samples for benign class and 212 samples for malignant class). Further, numerous measurements of assessment were used in order to evaluate the proposed OSELM algorithm, such as specificity, precision, F-measure, accuracy, G-mean, MCC, and recall. According to the outcomes of the experiment, the highest performance of the proposed OSELM was accomplished with 97.66% accuracy, 98.39% recall, 95.31% precision, 97.25% specificity, 96.83% F-measure, 95.00% MCC, and 96.84% G-Mean. The proposed OSELM algorithm demonstrates promising results in diagnosing BC. Besides, the performance of the proposed OSELM algorithm was superior to all its comparatives with respect to the rate of classification.

**Keywords :** breast cancer, machine learning, online sequential extreme learning machine, artificial intelligence

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