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Paper: **"Neural Network Approaches for Early Breast Cancer Detection"**

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Peer review:

Reviewer 1: Daniel B. Hier
Missouri University of Science and Technology, USA

Reviewer 2: Takafumi Mizuno
Meijo University, Japan

Reviewer C:
Recommendation: Revisions Required

The TITLE is clear and it is adequate to the content of the article.

The title is clear. I am not sure "early" is needed in title. Perhaps, "Neural Network Classifiers for Breast Cancer Detection" would suffice.

The ABSTRACT clearly presents objects, methods, and results.

The abstract is adequate.

There are a few grammatical errors and spelling mistakes in this article.

Writing is clear and free of grammatical and spelling errors. In the US and UK, Kingdome is spelled Kingdom. Usually Department of Compute Science is capitalized.

The study METHODS are explained clearly.

Methods are adequately discussed.

The body of the paper is clear and does not contain errors.

The body is well-written and conveys the results of the study.
The discussion of prior machine learning studies of these datasets is inadequate.
The authors need to cite prior studies and compare their results to prior studies.
Some discussion is needed as to the differences between the two datasets. One is based on blood biomarkers and the other on tissue histology.

The CONCLUSION or summary is accurate and supported by the content.

The authors can conclude by indicating whether their results were better, about the same, or inferior to prior studies with machine learning classifiers on the same datasets.

The list of REFERENCES is comprehensive and appropriate.

Please consider adding these references:
Patrício, M., Pereira, J., Crisóstomo, J., Matafome, P., Gomes, M., Seiça, R., & Caramelo, F. (2018). Using Resistin, glucose, age and BMI to predict the presence of breast cancer. BMC cancer, 18, 1-8.
Salama, G. I., Abdelhalim, M., & Zeid, M. A. E. (2012). Breast cancer diagnosis on three different datasets using multi-classifiers. Breast Cancer (WDBC), 32(569), 2.
Agarap, A. F. M. (2018, February). On breast cancer detection: an application of machine

learning algorithms on the wisconsin diagnostic dataset. In Proceedings of the 2nd international conference on machine learning and soft computing (pp. 5-9).

Please rate the TITLE of this paper.

[Poor] **1-5** [Excellent]

2

Please rate the ABSTRACT of this paper.

[Poor] **1-5** [Excellent]

2

Please rate the LANGUAGE of this paper.

[Poor] **1-5** [Excellent]

1

Please rate the METHODS of this paper.

[Poor] **1-5** [Excellent]

2

Please rate the BODY of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the CONCLUSION of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the REFERENCES of this paper.

[Poor] **1-5** [Excellent]

4

Overall Recommendation!!!

Accepted, minor revision needed

Comments and Suggestions to the Author(s):

I would add in references to prior work with machine learning classifiers on these well-known datasets. Some discussion as to to differences between the two datasets is needed. Accuracy, not surprisingly, was higher with features based on cell histology (essentially the gold standard) than with blood biomarkers.
Some discussion of paper limitations is needed (the small size of the datasets, the limited number of features used, the lack of imaging features, etc.). Comparison to prior studies is needed. Also only neural network classifiers were used with no comparison to SVM, Logistic regression, etc.

Reviewer D:
Recommendation: Accept Submission

The TITLE is clear and it is adequate to the content of the article.

The title is enough.

The ABSTRACT clearly presents objects, methods, and results.

The approach depends on particular software packages of MATLAB.
You prefer denoting the software name on the abstract or keyword lists.

There are a few grammatical errors and spelling mistakes in this article.

I did not find grammatical errors or typos on the paper.

The study METHODS are explained clearly.

Please describe in detail why you adopted the network models, if you can afford it.

The body of the paper is clear and does not contain errors.

I can read the statements of the paper clearly.

The CONCLUSION or summary is accurate and supported by the content.

I think that instance sizes (116 or 699) are few.
You prefer denoting the sizes are enough in the medical area you treat.

The list of REFERENCES is comprehensive and appropriate.

The lists are enough.

Please rate the TITLE of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the ABSTRACT of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the LANGUAGE of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the METHODS of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the BODY of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the CONCLUSION of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the REFERENCES of this paper.

[Poor] **1-5** [Excellent]

4

Overall Recommendation!!!

Accepted, minor revision needed