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PEER-REVIEW REPORT

Name of journal: *World Journal of Gastroenterology*

Manuscript NO: 78896

Title: Machine learning-based gray-level co-occurrence matrix signature for predicting lymph node metastasis in undifferentiated-type early gastric cancer

Provenance and peer review: Unsolicited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 03738573
Position: Peer Reviewer
Academic degree: MD

Professional title: Doctor

Reviewer's Country/Territory: China

Author's Country/Territory: China

Manuscript submission date: 2022-07-20

Reviewer chosen by: AI Technique

Reviewer accepted review: 2022-07-20 15:11

Reviewer performed review: 2022-07-21 08:43

Review time: 17 Hours

Scientific quality	[Y] Grade A: Excellent [ ] Grade B: Very good [ ] Grade C: Good [ ] Grade D: Fair [ ] Grade E: Do not publish
Language quality	[ ] Grade A: Priority publishing [Y] Grade B: Minor language polishing [ ] Grade C: A great deal of language polishing [ ] Grade D: Rejection
Conclusion	[Y] Accept (High priority) [ ] Accept (General priority) [ ] Minor revision [ ] Major revision [ ] Rejection
Re-review	[Y] Yes [ ] No

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Peer-reviewer statements	Peer-Review: [Y] Anonymous [ ] Onymous Conflicts-of-Interest: [ ] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

This study focuses on the lymphatic metastasis of undifferentiated type early gastric cancer. From the perspective of clinical concerns, this is a hot spot of great concern and has always been a thorny problem faced by clinical surgeons. The author's research is of great practical value. In this study, the author proposed a new LNM prediction model through GLCM features and machine learning algorithm, which is worth learning. However, I have the following confusion about this study, as follows: 1. In this study, the author shared five machine learning models, which are: random forest classifier (RFC) model, support vector machine (SVM), eXtreme gradient boosting (XGBoost), artificial neural network (ANN), and decision tree (DT). Among them, RFC model has the best prediction efficiency, and the author also gives the corresponding candidate variables. In my opinion, the author should list clearly in Table 2, which variables are used in each model, so as to show more clearly what variables are used in GLCM model. 2. In this study, the author emphasizes that the model obtained by machine learning algorithm is better than the traditional model, which has been demonstrated in this paper. It is suggested that the author add the relevant content of the traditional model (such as logistics regression model, and visualize it by means of nomograph) in this paper, which can more fully show the advantages and disadvantages between machine learning and traditional model (logistics model). 3. In this study, the author used CIC to visualize the optimal model, and found that the differentiation efficiency of RFC model is very good, which is very encouraging. In my opinion, the author should use other models, such as decision tree, neural network, support vector machine, gradient lifting algorithm, etc. the CIC results of these models can be presented in the attached drawings.

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4. In this study, some words that need to be corrected are expressed as follows, for example: Line139, Therefore, in order to solve this thorny problem, exploring an robust tool that can predict LNM is necessary. Maybe “precise tool” is better. Line166, Two radiologists with rich experience in gastrointestinal imaging diagnosis referred to T2WI and DWI images to sketch the lesions on the ADC map respectively. In my opinion, the efficiency of artificial recognition should be compared with machine learning model, although artificial recognition may not be as good as machine learning algorithm. Similarly, the prediction efficiency of logistics model should also be shown in Table 2. In general, congratulations to the author's team. This research is of great clinical application value, and the author has a unique way to extract feature factors by using GLCM in image omics, and to use cutting-edge machine learning algorithms. These are very instructive. It is suggested that the author modify the relevant content to make the article more substantial. In short, I suggest giving priority to publishing this research.

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Peer-review model: Single blind

Reviewer's code: 06301996
Position: Peer Reviewer
Academic degree: MD

Professional title: Doctor

Reviewer's Country/Territory: Greece

Author's Country/Territory: China

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Reviewer accepted review: 2022-07-20 15:11

Reviewer performed review: 2022-07-27 18:57

Review time: 7 Days and 3 Hours

Scientific quality	[Y] Grade A: Excellent [ ] Grade B: Very good [ ] Grade C: Good [ ] Grade D: Fair [ ] Grade E: Do not publish
Language quality	[ ] Grade A: Priority publishing [Y] Grade B: Minor language polishing [ ] Grade C: A great deal of language polishing [ ] Grade D: Rejection
Conclusion	[ ] Accept (High priority) [ ] Accept (General priority) [Y] Minor revision [ ] Major revision [ ] Rejection
Re-review	[ ] Yes [Y] No

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Peer-reviewer statements	Peer-Review: [ ] Anonymous [Y] Onymous Conflicts-of-Interest: [ ] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

Congratulations to the authors for the originality of their research and the robustness of their methodology. AI is gaining more and more popularity in various clinical aspects and will soon become an indispensible step in the decision-making process of complex clinical challenges, as is exactly the case with undifferentiated early gastric cancer. All the checklist points have been addressed effectively and adequately. In the attached file you can find some minor comments and suggestions. Two more things in addition: 1) Regarding cross-validation, why would you opt not to use for a k-fold method? 2) I would suggest recapitulating the core characteristics of your study (study design-prognostic vs diagnostic-classification vs regression-according to Luo W, Phung D, Tran T, Gupta S, Rana S, Karmakar C, et al. Guidelines for Developing and Reporting Machine Learning 397 Predictive Models in Biomedical Research: A Multidisciplinary View. J Med Internet Res [Internet]. 2016 Dec 1;18(12). Available from: https://pubmed.ncbi.nlm.nih.gov/27986644/. Although not mandatory or endorsed by a formal corpus, it would make the study more legible, especially on behalf of the non-familar-with-AI clinician.

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Peer-review model: Single blind

Reviewer's code: 03767650
Position: Editorial Board
Academic degree: MD, PhD
Professional title: Director, Professor
Reviewer's Country/Territory: Japan
Author's Country/Territory: China

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Reviewer chosen by: AI Technique

Reviewer accepted review: 2022-07-22 03:48

Reviewer performed review: 2022-08-02 06:31

Review time: 11 Days and 2 Hours

Scientific quality	[ ] Grade A: Excellent [Y] Grade B: Very good [ ] Grade C: Good [ ] Grade D: Fair [ ] Grade E: Do not publish
Language quality	[Y] Grade A: Priority publishing [ ] Grade B: Minor language polishing [ ] Grade C: A great deal of language polishing [ ] Grade D: Rejection
Conclusion	[ ] Accept (High priority) [ ] Accept (General priority) [Y] Minor revision [ ] Major revision [ ] Rejection
Re-review	[Y] Yes [ ] No

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Peer-reviewer statements	Peer-Review: [Y] Anonymous [ ] Onymous Conflicts-of-Interest: [ ] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

I read this article with interest. Wei et al. found that the accurate risk stratification of UEGC patients who should underwent additional surgery depended on the added value of GLCM. Second, a new ML-based prediction model was used to identify patients and whether they have LNM. This article is well written. However, I have minor concerns. 1. Abbreviations in the table and figure should be exlained. 2. Please describe the difference among random forest model(RFC), decision tree(DT), support vector machine(SVM), eXtreme gradient boosting (XGBoost) and neural network(ANN).