



PEER-REVIEW REPORT

Name of journal: *World Journal of Gastroenterology*

Manuscript NO: 66595

Title: Recent advances in artificial intelligence for pancreatic ductal adenocarcinoma

Provenance and peer review: Invited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer’s code: 04770380

Position: Editorial Board

Academic degree: DSc, PhD

Professional title: Professor

Reviewer’s Country/Territory: Russia

Author’s Country/Territory: Japan

Manuscript submission date: 2021-04-03

Reviewer chosen by: AI Technique

Reviewer accepted review: 2021-04-03 12:41

Reviewer performed review: 2021-04-09 18:53

Review time: 6 Days and 6 Hours

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Language quality	<input type="checkbox"/> Grade A: Priority publishing <input checked="" type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
Conclusion	<input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority) <input checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
Re-review	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Peer-reviewer	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous



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Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

The submitted manuscript entitled “Recent advances in artificial intelligence for pancreatic ductal adenocarcinoma” by Hayashi and co-authors focuses on recent advancements in the use of artificial intelligence (AI) approaches in pancreatic ductal adenocarcinoma (PDAC) diagnosis, prognosis and prediction of treatment response. The topic of the manuscript is very important and is somewhat comprehensively discussed. The manuscript is well-organized and is of good quality. However, there are some concerns and recommendations. They are as follows: (1) The authors often referred to early review papers instead of recent original research papers or meta-analyses. For example, (i) Ref [27] was not found. Instead, the authors would discuss the following paper “Appelbaum L, Cambroner JP, Stevens JP, Horng S, Pollick K, Silva G, Haneuse S, Piatkowski G, Benhaga N, Duey S, Stevenson MA, Mamon H, Kaplan ID, Rinard MC. Development and validation of a pancreatic cancer risk model for the general population using electronic health records: An observational study. *Eur J Cancer*. 2021 Jan;143:19-30. doi: 10.1016/j.ejca.2020.10.019. PMID: 33278770”; (ii) Ref. [45] is an old review article. It should be replaced by more recent meta-analysis study: 45a. Rahman MIO, Chan BPH, Far PM, Mbuagbaw L, Thabane L, Yaghoobi M. Endoscopic ultrasound versus computed tomography in determining the resectability of pancreatic cancer: A diagnostic test accuracy meta-analysis. *Saudi J Gastroenterol*. 2020 May-Jun;26(3):113-119. doi: 10.4103/sjg.SJG_39_20. PMID: 32436866; PMCID: PMC7392294. (2) Explanations of many abbreviations were missed, and this led to repeated usage of full names and/or abbreviations or both. For example: in section “PDAC risk prediction by AI”, the authors wrote “HbA1C, cholesterol, hemoglobin, creatinine...”, however HbA1C is hemoglobin A1C. (3) A section “AI in response to



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chemotherapy" is poorly discussed. (4) Title of a section "Prognosis prediction" is not good. It is better to change it for example for "Survival prediction". Additionally, patient's survival is often assessed using imaging or in response of cancer treatment. Therefore, this section can be combined with some other sections. (5) Grammar should be checked, for exmple, "learning", etc.



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Peer-review model: Single blind

Reviewer's code: 05736510

Position: Peer Reviewer

Academic degree: MD

Professional title: Doctor

Reviewer's Country/Territory: Viet Nam

Author's Country/Territory: Japan

Manuscript submission date: 2021-04-03

Reviewer chosen by: AI Technique

Reviewer accepted review: 2021-04-03 14:48

Reviewer performed review: 2021-04-13 05:15

Review time: 9 Days and 14 Hours

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Language quality	<input checked="" type="checkbox"/> Grade A: Priority publishing <input type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
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Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

The entitled paper “Recent advances in artificial intelligence for pancreatic ductal adenocarcinoma” shed the light on early diagnosing Pancreatic ductal adenocarcinoma using different artificial intelligent (AI) approaches. This kind of cancer is very dangerous and the early detection of it could help doctors to treat the patients and prolong their life for as long as possible. Moreover, early and accurate detection could also important for researchers in the future to fight this deadly disease. The authors reviewed several AI models used in the medical sector. The paper is good and written in an interesting language and however, several notes should be taken into considerations before publishing this paper. 1. In the introduction section, the authors mentioned the application of AI in handling big data. Please provide some examples regarding the used AI approaches. 2. In “PDAC risk prediction by AI section”, the authors presented some AI-based prediction models. Please provide some details about those models such as model type (SVR, ANN, deep learning, and so on). Moreover, as you reviewed several studies, please conclude this section and focus on which models provided more accurate results. 3. I can see in some sections of your study that you just mention AI model, or machine learning approach. It is very important to give some details about the model. At least mention the type of AI model that should be mentioned in your manuscript. 4. Please conclude the obtained accuracy of adopted models in the Detection of early PDAC by biomarkers using AI. Which model is the best among the reviewed models developed by several studies? ... In all sections of your paper, as long as you reviewed several models, please conclude this section to help the researchers to focus on the robust models. 5. As this paper is a review paper, please suggest scientific recommendations for future researches. The recommendations include but are not



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limited to the main variables that could help improve the accuracy of diagnosis using AI approaches. Moreover, discuss unfamiliar factors that may have a major impact in improving diagnostic accuracy to help researchers in the future. 6. 7. Other observations should be addressed regarding AI models: In table 1, the backward stepwise approach is an approach used for feature selection not used for classification or regression purposes (it is not like ANN, CNN, deep learning, and so on). please take full information from the mentioned source (Boursi et al. [23], 2021). Define every approach/ technique, the method mentioned in the tables. establish a new section in your manuscript about the model evaluation (or you can conclude them in a table). This section provides information about the statistical parameters used in evaluating the prediction accuracy such as AUC, FI-score, RMSE, and so on. Discuss briefly the reviewed models by providing a general introduction about the used approaches. Provide more information about the pre-processing data. It is very important in obtaining reliable models. This process includes clean the data, outlier handling, normalization, noise removing. In some cases, many input parameters reduce the prediction accuracy. Therefore, it is important to use PCA method to reduce these inputs and remove the correlations between them. Provide general assessment about the reviewed models in terms of accuracy, sort of model, used input. Nowadays, deep learning models are well-known for dealing with big data. Please discuss that approach.



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Reviewer's code: 05224959

Position: Editorial Board

Academic degree: PhD

Professional title: Professor

Reviewer's Country/Territory: Spain

Author's Country/Territory: Japan

Manuscript submission date: 2021-04-03

Reviewer chosen by: AI Technique

Reviewer accepted review: 2021-04-03 16:12

Reviewer performed review: 2021-04-14 08:36

Review time: 10 Days and 16 Hours

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Language quality	<input type="checkbox"/> Grade A: Priority publishing <input checked="" type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
Conclusion	<input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority) <input checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
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Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

The authors are dealing with the Artificial Intelligence in pancreatic ductal adenocarcinoma (PDAC). In this paper, Hayashi et al. conduct a comprehensive review of the recent advances of AI in PDAC for clinicians. The topic is interesting because PDAC is a lethal type of cancer and this manuscript shows the ability of Artificial Intelligence to fight against this disease. In addition, the authors discuss advances in the disease from different approaches. I found the review work with the tables to be very appropriate and clear. It is a good selection of key studies in literature. The work is complete and up to date. The manuscript is very interesting. The motivation and justification are appropriate. The paper is well written in correct English. Now I include some typographical errors in References: In Keywords: For: machine lerning read: machine learning In Reference n. 76: Remove: "following competing interests: L. Cozzi acts as Scientific Advisor to Varian Medical Systems and is Clinical Research Scientist at Humanitas Cancer Center. All other co-authors declare that they have no conflict interests. A. Chiti received speaker honoraria from General Electric and Sirtex Medical System; acted as scientific advisor for Blue Earth Diagnostics and Advanced Accelerator Applications; benefited from an unconditional grant from Sanofi to Humanitas University. All honoraria and grants are outside the scope of the submitted work. This does not alter our adherence to PLOS ONE policies on sharing data and materials."



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Reviewer's code: 02534290

Position: Editorial Board

Academic degree: MD, MSc, PhD

Professional title: Doctor, Professor, Surgeon, Surgical Oncologist

Reviewer's Country/Territory: Romania

Author's Country/Territory: Japan

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Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
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Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

Dear Authors, I read very carefully your paper in which you managed to summon all the recent progresses that have been made in using AI in pancreatic ductal adenocarcinoma and I think the article is excellent