Dear Reviewers and editors:

We are very grateful for your comments regarding our manuscript "Artificial intelligence in Small intestinal diseases: Application and prospects"(Manuscript NO.: 63169, Review). All your suggestions are very important to us, both for composing the manuscript and our further research. We have studied comments carefully and have made corrections which we hope meet with approval.

Based on your advice, we amended the relevant section in the manuscript. All your questions are answered below:

Reviewer #1:

1. Some AI research were done in animals and not in human. For example, the study involving calculating small bowel length based on MRE images were done in mice (reference 14). It is important to point out when results were done in animals and not yet ready to be applied to patients. Please go over all of the studies in the manuscript and make a comment (in the text and in the tables) if the research is an animal study.

Response:

We sincerely appreciate your comments. We have rechecked the references in the article, and all the conclusions based on non-human studies have been clearly marked. As you mentioned in reference 14, it has been stated in the corresponding position of the article that the study was conducted in mice. At the same time, we would like to explain that we included some animal studies in this paper to better explain the research direction and progress of artificial intelligence in the research of intestinal diseases, and to provide reference for subsequent application in human body.

2. The manuscript mentioned that AI can help in the assisted localization of radiotherapy. However, the manuscript did not mention any research on using AI to localize a small bowel lesion. Please elaborate on this topic.

Response:

Regarding your comment, reference 12 of the article is a study on the application of AI assisted localization in radiotherapy, in the corresponding position of the article we have made a brief description, please check. Meanwhile, as the relevant literature is not much, there is no systematic description, please understand.

3. It would be nice to have a quick overview of AI in health care in the beginning of the manuscript. For example, imaging processing, pathology recognition, algorithm, or risk modeling.

Response:

Thank you very much for your constructive suggestion. The relevant contents are briefly described in the "Core Tip" and "INTRODUCTION" parts of the article , hoping to meet your requirements.

Reviewer #2:

1. Not all the articles included in the analysis are based on the use of artificial intelligence. Some of them use computational analysis not considered artificial intelligence. Therefore, perhaps the title should be modified: Artificial intelligence and other computational analysis systems in Small intestinal diseases: Application and prospects.

Response:

Thank you very much for your suggestion. First of all, I would like to state that in this paper, all involved computational analysis are some kind of complicated algorithm carried out by computer; secondly, I would like to explain the definition of artificial intelligence we understand. AI is a large field of transdisciplinary science. The scientific disciplines that underlie AI include logic, statistics, cognitive psychology, decision theory, neuroscience, linguistics, cybernetics, and computer engineering.[1] The term"artificial intelligence" was first used in a proposal for a 1956 summer research workshop at Dartmouth College in New Hampshire. The workshop defined the "artificial intelligence problem" as one "of making a machine behave in ways that would be called intelligent if a human were so behaving."[2] Simply put, AI can be understood as an expansive general term that focuses on the use of computational methods to replicate human intelligence.

'Good Old-FashionedAI', which follows rules and logic specified by humans, has been used to develop healthcare software since the 1970s, though its impact has been limited. More recently there have been huge technological developments in the field of machine learning and especially with artificial neural networks, where computers learn from examples rather than explicit programming.[3] Therefore, we think that computer-aided algorithm analysis also belongs to the category of artificial intelligence, hope to get your understanding.

1. Russell SJ, Norvig P. Artificial Intelligence: A Modern Approach. 3rd ed. Uttar Pradesh, India: Pearson Education Limited; 2015.

2. McCarthy J, Minsky ML, Rochester N, Shannon CE A proposal for the Dartmouth Summer Research Project on Artificial Intelligence. 1955. http://jmc.stanford.edu/articles/dartmouth.html. Accessed June 21, 2019

3. Yu Kun-Hsing,Beam Andrew L,Kohane Isaac S,Artificial intelligence in healthcare.[J] .Nat Biomed Eng, 2018, 2: 719-731.

2. In the INTRODUCTION section, the authors mention double-balloon enteroscopy, perhaps it would be more appropriate to refer to balloon-assisted enteroscopy or deep enteroscopy. This would also consider spiral enteroscopy. "INTRODUCTION .... The traditional examination methods include X-ray barium enterography, CT, MRI, double-balloon enteroscopy, etc. In recent years, the emergence of capsule endoscopy (CE)......."

Response:

Thank you for your careful review and professional advice. Obviously, your comments is more standardized. We have revised the "double-balloon enteroscopy" to "balloon-assisted enteroscopy and deep enteroscopy" in the corresponding part of the article according to your comments

3. In line 6 of this same section, when the capsule endoscopy technique is introduced (....In recent years, the emergence of capsule endoscopy....), this sentence should be modified because capsule endoscopy has been available for 20 years.

Response:

Thank you for your careful review and professional advice. We have revised the corresponding part of the article according to your comments. (….In the last 20 years, the emergence of capsule endoscopy….)
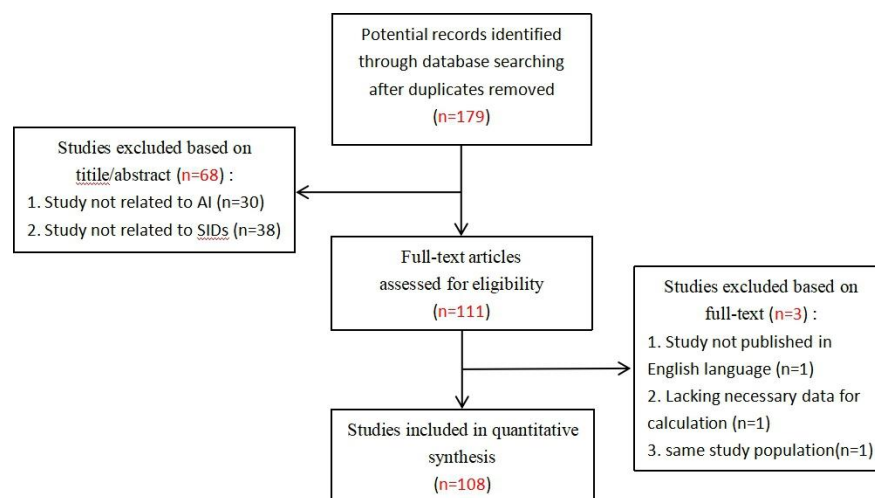
4. It would be appropriate to include a METHODOLOGY section. This section should specify the criteria followed for the selection of the articles, their description: years covered, types of studies.

It should also describe all the sources of information used and the languages selected. A flow figure could be included with the search information, screening process, number of rejected articles, number of selected articles (the area could even be specified: endoscopy, capsule, resonance, ….).

Response:

Thank you for your suggestion. Your suggestion is very scientific and standard. We modify the relevant content in the last paragraph of the introduction section of the article. （This study used the keywords of "artificial intelligence" and "small intestine" to search the relevant literatures in the databases of PubMed, Embase, Web of Science and Cochrane Library up to October 2020. Studies included in our review were required to meet the following inclusion criteria: (1) full-text paper available in English, (2) Studies that associated AI with the small intestinal diseases. We excluded descriptive papers without validation of methods. The application status of AI in SIDs was summarized, and the challenges and prospects in this field were discussed.）

The flow chart is as follows:

Reviewer #3:

1. Please don not use abbreviations in the abstract section and follow the instructions for authors.

Response:

We sincerely appreciate your comments. Refer to the guidelines for authors, we label abbreviations at first appearance.

2. Introduction: Review of the Literature The review of the literature is adequate and updated. However, several studies are still missing, thus should also be inserted, the authors may wish to add those in this section.

Response:

We sincerely appreciate your comments. In the last paragraph of the introduction, we have explained the criteria for the literature included in the study. We hope to get your understanding.

3. References The references are generally good, there are some minor errors which can be corrected. Grammar and Style Recommend the manuscript be reviewed for spelling, punctuation and grammar. There are few mistakes in the reference list which should be corrected. is in need of further refinement.

Response:

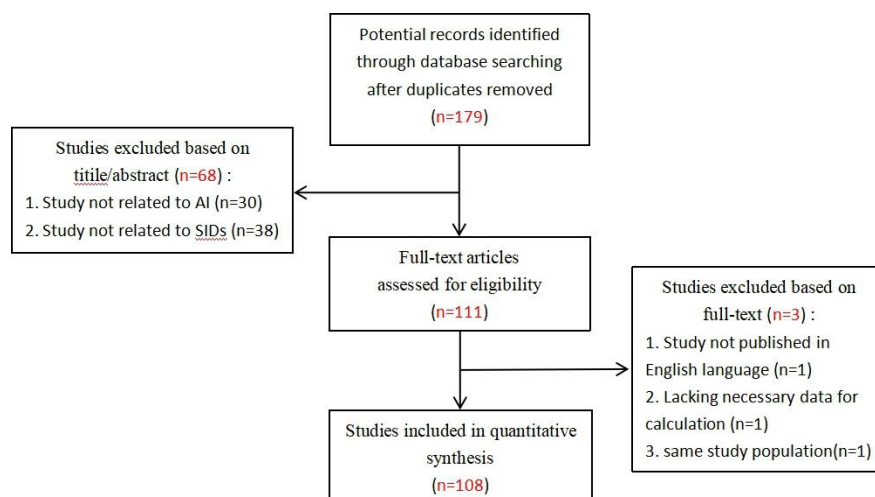Thank you for your careful review. We re-checked the references and modified some of the non-conforming areas.

Reviewer #4:

1. What are the criteria of literature screening after machine searching? Please clarify.

Response:

Thank you for your suggestion. Your suggestion is very scientific and standard. We modify the relevant content in the last paragraph of the introduction section of the article. （This study used the keywords of "artificial intelligence" and "small intestine" to search the relevant literatures in the databases of PubMed, Embase, Web of Science and Cochrane Library up to October 2020. Studies included in our review were required to meet the following inclusion criteria: (1) full-text paper available in English, (2) Studies that associated AI with the small intestinal diseases. We excluded descriptive papers without validation of methods. The application status of AI in SIDs was summarized, and the challenges and prospects in this field were discussed.）

The flow chart is as follows:

Potential records identified through database searching after duplicates removed (n=179)

Studies excluded based on titile/abstract (n=68) :
1. Study not related to AI (n=30)
2. Study not related to SIDs (n=38)

Full-text articles assessed for eligibility (n=111)

Studies excluded based on full-text (n=3) :
1. Study not published in English language (n=1)
2. Lacking necessary data for calculation (n=1)
3. same study population(n=1)

Studies included in quantitative synthesis (n=108)

2. Both the terminologies of "AI" and "SID" are big concepts. It is suggested to include an illustrative graph to show the sub-categories and the relationships.

Response:

Thanks for your valuable suggestion. As you said AI and SIDs are both a big concept, so we briefly describe the subset included in these two concepts in the introduction section of the article. Considering that the focus of this paper is to introduce the relationship between AI and SIDs, and the subsets contained in each of the two concepts are both complex systems, we only introduce the most widely used parts, so this study did not include an illustrative graph to show the sub-categories and the relationships. Hope to get your understanding.

3. While your work is overall informative, I am missing some take-home message. What new findings do you want to deliver to the readers? The discussions have been informative. However, I do not think the current conclusion does a good job.

Response:

We sincerely appreciate your comments and we are very sorry that we did not clearly present the key information of the article. Considering that the article is a review, there are not some new findings in our article. In the conclusion of the article, on the one hand, we want to express the

achievements of artificial intelligence in the application of small intestinal diseases management, on the other hand, we want to say that there are still many problems to be solved. Hope to get your understanding, and thank you again for your comments, we will continue to practice and further improve our writing ability.

4. In the section of "Diagnosis of small intestinal mucosal lesions", all parts are not treated equally. More details and in-depth discussions are needed here.
Response:
We sincerely appreciate your careful works. It is true that we did not present the contents in the form of a table in this part. Our considerations are as follows: 1.There are various kinds of small intestinal mucosal lesions. 2. There are not many related studies on each kind of mucosal lesions. 3. Some of the studies cited include multiple lesions in the same study, and there will be duplication in the literature when distinguishing the list of lesions. 4. In consideration of the above points, if this part is presented in the form of a table, the format cannot be unified with other parts of the table. We hope to get your understanding.

5. The "challenges" proposed should be linked to what you have discussed above. Also, in the review-type article, some time slots for what have been achieved and what to achieve in the future are expected.
Response:
Your suggestions are very valuable. We have re-examined our design of the article, and indeed there are some deficiencies in the article design. First of all,we used A large amount of space to describe the achievements already achieved, without describing the deficiencies of the current research，as a result, it would be disjointed to describe the challenges in part of "CHALLANGES AND PROSPECTS". Second, we re-examined the achievements made by artificial intelligence in the whole field of intestinal diseases, We thought that no achievement can be defined as a milestone, and possible future achievements cannot be reliably dated from existing researches, therefore, this part of content cannot be presented in the form of time slots. We hope to get your understanding.

6. Further discussion about related techniques from other applications, such as Lightweight attention convolutional neural network for retinal vessel image segmentation.
Response:
Thank you for your valuable suggestions. We have added item 6 in the "CHALLANGES AND PROSPECTS" section of this article to include your suggestions. (6. AI has been widely researched in various fields. We should attach importance to learning experience from different research fields, and try to carry out related research in the field of SIDs, so as to promote the continuous progress of AI research in the field of SIDs.)

7. Editorial: Why some words are capitalized in the paper title while the others are not?
Response:
We sincerely appreciate your comments. Refer to the "Guidelines for authors" of "World Journal of Gastroenterology", some words are capitalized in the paper title the others are not.

Science editor:

1. The "Author Contributions" section is missing. Please provide the author contributions;

Response:

Thanks for the Science editor's reminder, we added "Author Contributions" section to the title page. (**Author contributions:** Yang Y searched the literature for recent advances in the field, and wrote the manuscript; Yang Y, Li YX, Yao RQ and Du XH edited and revised the manuscript; Yao RQ was added as co- author for great contribution in revising the manuscript. Ren C designed the study; All authors authors approved the final version to be published.)

2. Designation of co-first authors and co-corresponding authors is not permitted;

Response:

Thank you for your reminding. We have modified this part of content.

3. The authors did not provide the approved grant application form(s). Please upload the approved grant application form(s) or funding agency copy of any approval document(s).

Response:

Thank you for your reminder, we will submit the relevant document at the time of revision.

We tried our best to improve the manuscript and made some changes in the manuscript. These changes will not influence the content and framework of the paper.

We appreciate for Editors/Reviewers' warm work earnestly, and hope that the correction will meet with approval.

Once again, thank you very much for your comments and suggestions.