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PEER-REVIEW REPORT

Name of journal: *World Journal of Hepatology*

Manuscript NO: 111902

Title: Harnessing artificial intelligence in gastroenterology and hepatology: Current applications and future perspectives

Provenance and peer review: Invited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 08591435

Position: Peer Reviewer

Academic degree and professional title: MD

Reviewer's Country/Territory: China

Author's Country/Territory: Greece

Manuscript submission date: 2025-07-12

Reviewer chosen by: AI Editor

Reviewer accepted review: 2025-07-14 09:08

Reviewer performed review: 2025-07-17 09:33

Review time: 3 Days

Content to be reviewed	Does the manuscript's content fall within the scope of the journal? Yes Is there any Key Word that is not included in the manuscript title? No Do authors' affiliations correspond to the content of the manuscript? Yes Does the Abstract contain the contents of each part of the manuscript (IMRaD)? Yes Are the Key Words complete? Yes
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Is the content of the Introduction adequate? **Yes**

Is the content of the Materials and Methods complete?

Not Applicable

Is the description of the experiments clear and complete? **Not Applicable**

Are the experimental data presented in the manuscript's biostatistics content reliable? **Not Applicable**

Are the experimental data of the Results true and reliable? **Not Applicable**

Are the quality and resolution of the images up to standard? **Yes**

Do the selection and design of the figures and tables follow the principles of necessity and clarity? **Yes**

Is there any duplication between various parts of the manuscript and between the main text and the content presented in the figures and tables? **No**

Are the figures and tables numbered consecutively in the order in which they appear in the manuscript? **Yes**

Is the content of the Discussion reasonable? **Yes**

Is the Conclusion reasonable? **Yes**

Are all references necessary and reasonable? **Yes**

Do authors omit important references? **No**

Are all references related to the topic of the manuscript? **Yes**

Do authors only cite their own earlier publications? **No**

Is the manuscript's text correct, concise, and clear? **Yes**

Will the manuscript's content be of interest to readers? **Yes**

Are additional experiments needed for the study? **No**



	Does the research scope comply with ethics? Yes
Scientific quality	Grade B (Very good)
Novelty of this manuscript	Grade B (Very Good)
Creativity or innovation of this manuscript	Grade B (Very Good)
Scientific significance of the conclusion in this manuscript	Grade B (Very Good)
Language quality	Grade B (Very good)
Does this manuscript describe a study of the existing knowledge system?	Yes
Does this manuscript report a revolutionary innovation?	No
Does this manuscript report an unconventional innovation?	No
Conclusion	Minor revision
Re-review	Yes
Peer-reviewer statements	Peer-Review: Anonymous
	Conflicts-of-Interest: No
Are your review comments generated by AI tools?	No

SPECIFIC COMMENTS TO AUTHORS

Thank you for the opportunity to review this manuscript. The authors provide a comprehensive, well-structured, and timely review of the role of Artificial Intelligence in gastroenterology and hepatology. The manuscript's strength lies in its logical flow, from foundational concepts (Section 1) to a clinically intuitive "patient journey" framework (Section 2), and a robust discussion of challenges and future perspectives (Section 3). The use of illustrative figures and detailed tables significantly enhances readability and



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provides a valuable reference for clinicians and researchers. The topic is highly relevant, and this paper is a welcome contribution to the World Journal of Gastroenterology. I recommend it for publication after addressing a few minor points that will further strengthen the manuscript.

Specific Comments for the Author:

Clarification of Terminology: In Section 1.1, the manuscript mentions "quantumness of digital data" [43] as a consideration for the responsible integration of AI. This term is highly unconventional in the context of clinical AI and may confuse the reader. I strongly suggest the authors either remove this phrase or replace it with a more standard and relevant concept, such as data fidelity, signal-to-noise ratio, or data integrity, to maintain technical accuracy.

Connecting Frameworks to Applications: The inclusion of the Hype Cycle (Figure 1) is excellent for framing expectations. To improve the manuscript's analytical depth, I suggest the authors briefly connect this framework to the applications discussed in Section 2. For example, they could explicitly state where key technologies like computer-aided polyp detection (CADe) or AI-based fibrosis staging currently reside on the curve—e.g., approaching the "Plateau of Productivity"—versus more nascent applications like reinforcement learning for IBD treatment, which might still be on the "Slope of Enlightenment." This would provide readers with a more dynamic understanding of the field's maturity.

Refining the Definition of Reinforcement Learning: The description of Reinforcement Learning (RL) in Section 1.2 as being "based on didactic reward and punishment" through "human supervision" [52] could be more precise. While human feedback can be used, the core paradigm of RL involves an agent learning to make decisions by interacting with an environment to maximize a cumulative reward signal. Rephrasing this definition to better reflect this concept would improve accuracy.



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Actionable Future Directions: In Section 3.5, the call for interdisciplinary training and AI literacy [212, 213] is pertinent. This point could be made more concrete by suggesting specific core competencies that future clinicians should possess. Examples might include a foundational understanding of model validation metrics (e.g., AUC, precision-recall), the principles of data privacy, and the ability to critically appraise AI-related studies for biases and generalizability.

I am confident that by addressing these minor points, the authors will enhance the clarity and impact of this already excellent review. I look forward to seeing the revised version.



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Position: Peer Reviewer

Academic degree and professional title: Lecturer, MD, Researcher

Reviewer's Country/Territory: China

Author's Country/Territory: Greece

Manuscript submission date: 2025-07-12

Reviewer chosen by: Jia-Lin Zhang

Reviewer accepted review: 2025-07-21 08:27

Reviewer performed review: 2025-07-22 02:18

Review time: 17 Hours

Content to be reviewed	Does the manuscript's content fall within the scope of the journal? Yes Is there any Key Word that is not included in the manuscript title? No Do authors' affiliations correspond to the content of the manuscript? Yes Does the Abstract contain the contents of each part of the manuscript (IMRaD)? Yes Are the Key Words complete? Yes
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	Does the research scope comply with ethics? Yes
Scientific quality	Grade D (Fair)
Novelty of this manuscript	Grade D (Fair)
Creativity or innovation of this manuscript	Grade D (Fair)
Scientific significance of the conclusion in this manuscript	Grade D (Fair)
Language quality	Grade B (Very good)
Does this manuscript describe a study of the existing knowledge system?	No
Does this manuscript report a revolutionary innovation?	No
Does this manuscript report an unconventional innovation?	No
Conclusion	Major revision
Re-review	No
Peer-reviewer statements	Peer-Review: Anonymous
	Conflicts-of-Interest: No
Are your review comments generated by AI tools?	No

SPECIFIC COMMENTS TO AUTHORS

The overall framework of the manuscript is complete: from basic AI concepts to clinical application scenarios, and finally a discussion of challenges and future directions. However, there are the following issues:

1. Although the paper claims to be “clinically oriented,” nearly 40% of the first three chapters are devoted to technical foundations (AI classification, machine learning principles, etc.), while the chapters on actual clinical applications are compressed. This



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structure is not very reader-friendly for clinicians, who may be more interested in how AI can specifically help with diagnosis and treatment. The technical foundation section could be condensed and integrated into the introduction, or presented separately as online supplementary material.

2.The paper has 2 figures and 2 tables, but Table 1 only provides a general comparison of algorithm types, and Table 2 lists applications according to patient journeys but lacks specific data to support it. Core research data should be integrated into tables, such as a comparison of the performance of different AI tools in randomized trials.

3. The title of the paper emphasizes the “patient journey,” but the clinical application section (2.1-2.7) and the preceding technical section (1.1-1.6) are completely disconnected. For example, 1.5 discusses the technical details of computer vision, while 2.2 mentions colonoscopy applications. The logical structure should be to directly combine each stage of the patient journey with corresponding technical cases, such as discussing CV technology and colonoscopy research simultaneously under the “diagnosis stage.”

4.The section on future directions mentions “human-supervised AI” and “explainability,” but these are all vague terms. As experts in the field, you should specifically point out which technologies have the most potential for clinical translation, or recommend specific disease areas for conducting multicenter RCTs.

5.It does not mention cutting-edge directions such as multimodal large models (such as GPT-4) and AI-driven clinical trial design.

Suggested revisions: Restructure chapter weightings to integrate technology and clinical practice around the patient journey, enhance evidence visualization and depth of specialty challenges, and refine a differentiated vision for the future.