



PEER-REVIEW REPORT

Name of journal: *World Journal of Radiology*

Manuscript NO: 106682

Title: Non-contrast computed tomography radiomics model to predict benign and malignant thyroid nodules with lobe segmentation: A dual-center study

Provenance and peer review: Unsolicited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 08548531

Position: Peer Reviewer

Academic degree and professional title: Academic Fellow, Postdoc

Reviewer's Country/Territory: China

Author's Country/Territory: China

Manuscript submission date: 2025-03-11

Reviewer chosen by: Jia-Lin Zhang

Reviewer accepted review: 2025-03-26 01:33

Reviewer performed review: 2025-03-27 12:14

Review time: 1 Day and 10 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? Yes 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?

Yes

Is the description of the experiments clear and complete? **Yes**

Are the experimental data presented in the manuscript's biostatistics content reliable? **Yes**

Are the experimental data of the Results true and reliable? **Yes**

Are the quality and resolution of the images up to standard? **No**

Do the selection and design of the figures and tables follow the principles of necessity and clarity? **No**

Is there any duplication between various parts of the manuscript and between the main text and the content presented in the figures and tables? **Yes**

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 C (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

SPECIFIC COMMENTS TO AUTHORS

Reviewer Comments The manuscript titled “Non-contrast CT radiomics model to predict benign and malignant thyroid nodules with lobe segmentation: A dual-center study” presents a well-executed study that develops and validates a machine learning model based on non-contrast CT (NCCT) radiomics to preoperatively classify thyroid nodules. The use of lobe segmentation, dual-center validation, and the XGB model’s performance across multiple cohorts demonstrate a robust approach with potential clinical relevance. The SHAP analysis adds interpretability, enhancing its applicability. The paper is clearly structured, with detailed methodology and comprehensive results.



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However, minor revisions are required to address specific methodological clarifications, presentation inconsistencies, and figure optimization before it can be accepted for publication in the World Journal of Radiology. I recommend acceptance following these minor revisions. Comments and Suggestions for Revision

Class Imbalance in the Training Cohort The training cohort exhibits an imbalance between benign ($n = 80$) and malignant ($n = 184$) samples. While the Synthetic Minority Oversampling Technique (SMOTE) was employed to address this, the manuscript does not adequately discuss its potential impact on model performance, such as possible bias in predicting benign cases. I suggest adding a brief discussion in the “Discussion” section (e.g., 1–2 sentences) to acknowledge this limitation and its implications, such as: “Although SMOTE was applied to mitigate class imbalance, its effect on the model’s ability to accurately predict benign nodules may be limited by the original sample size, warranting further validation with a larger benign cohort.”

Manual Segmentation Feasibility The reliability of manual segmentation is supported by an intraclass correlation coefficient ($ICC \geq 0.80$), yet the manuscript does not address its practical feasibility or time cost in a clinical setting. I recommend briefly mentioning the potential of automated segmentation (e.g., using U-Net) as a future direction to improve scalability. This could be added to the “Limitations” or “Future Directions” section, for example: “While manual segmentation ensured consistency, its time-intensive nature may limit clinical adoption; automated approaches could enhance efficiency in future iterations.”

Statistical Notation Consistency Throughout the manuscript, the statistical symbol P should be consistently presented as capitalized and italicized (i.e., P) in accordance with standard statistical notation. Currently, the usage varies (e.g., lowercase “ p ” in some instances and uppercase “ P ” in others). Please revise the text, tables, and figure legends to ensure uniformity (e.g., $P < 0.001$).

Table 3 Formatting In Table 3 (“Weights of LASSO selected features and training set Z-score parameters”), the numerical values under the “Average”



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and “Variance” columns display inconsistent decimal places (e.g., 68429444 vs. 388518307.355696). I suggest standardizing the number of decimal places (e.g., to 3 or 4 digits) for clarity and uniformity, unless scientific precision dictates otherwise for specific features. Table 4 and Redundant Figures Table 4 (“Multi-cohort predictive performance of various models”) provides a comprehensive summary of model performance across cohorts but is not cited in the main text. Additionally, its content overlaps significantly with Figure 5 (“Performance evaluation of seven machine learning models”) and Figure 6 (“Radar plot comparing the diagnostic performance of the XGB model and radiologists”). The figures, while visually appealing, lack clarity due to low resolution and small font sizes, making the data less accessible than the table. I recommend retaining Table 4, citing it explicitly in the “Results” section (e.g., “Model performance across cohorts is summarized in Table 4”), and removing Figures 5 and 6 to avoid redundancy and improve readability. Figure Presentation Several figures (e.g., Figure 2: “Workflow of model development,” Figure 3: “LASSO feature selection and comparison,” and Figure 7: “SHAP analysis and clinical application”) contain text that is too small to be legible, hindering effective communication of results. I suggest revising these figures by increasing font sizes and optimizing layout to ensure all labels, annotations, and legends are clearly readable. High-resolution versions should be provided in the revised submission.



PEER-REVIEW REPORT

Name of journal: *World Journal of Radiology*

Manuscript NO: 106682

Title: Non-contrast computed tomography radiomics model to predict benign and malignant thyroid nodules with lobe segmentation: A dual-center study

Provenance and peer review: Unsolicited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer’s code: 08380617

Position: Peer Reviewer

Academic degree and professional title: MD, PhD, Postdoctoral Fellow

Reviewer’s Country/Territory: China

Author’s Country/Territory: China

Manuscript submission date: 2025-03-11

Reviewer chosen by: Jia-Lin Zhang

Reviewer accepted review: 2025-03-26 01:08

Reviewer performed review: 2025-03-29 11:17

Review time: 3 Days and 10 Hours

Content to be reviewed	<p>Does the manuscript’s content fall within the scope of the journal? Yes</p> <p>Is there any Key Word that is not included in the manuscript title? Yes</p> <p>Do authors’ affiliations correspond to the content of the manuscript? Yes</p> <p>Does the Abstract contain the contents of each part of the manuscript (IMRaD)? Yes</p> <p>Are the Key Words complete? Yes</p>
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Are the experimental data presented in the manuscript's biostatistics content reliable? **Yes**

Are the experimental data of the Results true and reliable? **Yes**

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? **Not Applicable**

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 A (Excellent)
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?	Yes
Does this manuscript report an unconventional innovation?	Yes
Conclusion	Minor revision
Re-review	Yes
Peer-reviewer statements	Peer-Review: Anonymous
	Conflicts-of-Interest: No

SPECIFIC COMMENTS TO AUTHORS

Overall Evaluation This study presents a well-designed, dual-center investigation developing an NCCT-based radiomics-clinical fusion model for preoperative differentiation of thyroid nodules. The integration of lobe segmentation, multicenter validation, and SHAP-driven interpretability strengthens the clinical relevance. The manuscript is logically structured, methodologically rigorous, and addresses a significant gap in thyroid nodule diagnostics. However, several issues require clarification and improvement to enhance scientific validity and readability. Major Comments 1. Methodological Concerns - Exclusion Criteria: Excluding nodules



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Provenance and peer review: Unsolicited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer’s code: 03731871

Position: Peer Reviewer

Academic degree and professional title: Associate Professor, MD, PhD

Reviewer’s Country/Territory: China

Author’s Country/Territory: China

Manuscript submission date: 2025-03-11

Reviewer chosen by: Jia-Lin Zhang

Reviewer accepted review: 2025-03-26 01:09

Reviewer performed review: 2025-04-07 03:54

Review time: 12 Days and 2 Hours

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

Is the content of the Materials and Methods complete?
Yes

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

Are the experimental data presented in the manuscript's biostatistics content reliable? **Yes**

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**

Are the experimental data of the Results true and reliable? **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**

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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 C (Good)
Novelty of this manuscript	Grade C (Good)
Creativity or innovation of this manuscript	Grade C (Good)
Scientific significance of the conclusion in this manuscript	Grade C (Good)
Language quality	Grade C (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

SPECIFIC COMMENTS TO AUTHORS

This study aims to develop a radiomics machine learning model based on NCCT, utilizing thyroid lobe segmentation. It evaluates the model's clinical utility in diagnosing thyroid nodules, aiming to provide a low-risk and efficient diagnostic tool for distinguishing between benign and malignant thyroid nodules. The author proposes using only standard CT images to differentiate between benign and malignant thyroid nodules, which can lower radiation exposure compared to enhanced CT scans. This is the main advantage of the manuscript. However, this manuscript has the following shortcomings: 1, In the abstract section, the description of methods and results is not



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concise and clear enough, lacking logical coherence; 2, In the introduction section, the author's rationale for selecting NCCT images of the thyroid gland for research is insufficient. 3, The exclusion criteria include the size of nodules, but the inclusion criteria do not include the size of nodules. 4, The author did not describe how to extract the specimen tissue of thyroid nodules in the main text; 5, The author describes the diagnosis of malignant thyroid nodules based on the following four conditions. Do malignant thyroid nodules identified on CT scans meet all four conditions at the same time, or only some of them? Additionally, it's important to note that some thyroid nodules with regular morphology can still be malignant. As a result, this diagnostic criterion may yield inaccurate results. 6, In the table 4, the AUC , Accuracy, Sensitivity, Specificity, PPV, NPV, Precision Recall, and F1 of RF and KNN were 1 in the training cohort, the authors needs to explain it. 7, In the discussion section, the author failed to adequately address the results, leaving key aspects of the findings underexplored. The clarity of the discussion was lacking, making it difficult for readers to grasp the main points effectively. Additionally, the focus of the discussion was not well-defined, which diminished its overall impact. Furthermore, there was a notable absence of comparative analysis with relevant previous studies, which could have provided valuable context and contributed to a more robust understanding of the results.



RE-REVIEW REPORT OF REVISED MANUSCRIPT

Name of journal: *World Journal of Radiology*

Manuscript NO: 106682

Title: Non-contrast computed tomography radiomics model to predict benign and malignant thyroid nodules with lobe segmentation: A dual-center study

Provenance and peer review: Unsolicited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 08548531

Position: Peer Reviewer

Academic degree and professional title: Academic Fellow, Postdoc

Reviewer's Country/Territory: China

Author's Country/Territory: China

Manuscript submission date: 2025-03-11

Reviewer chosen by: Yu Bai

Reviewer accepted review: 2025-04-22 01:30

Reviewer performed review: 2025-04-23 09:52

Review time: 1 Day and 8 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? Yes 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**

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Is the description of the experiments clear and complete? **Yes**

Are the experimental data presented in the manuscript's biostatistics content reliable? **Yes**

Are the experimental data of the Results true and reliable? **Yes**

Are the quality and resolution of the images up to standard? **No**

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

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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? **Yes**

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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 A (Excellent)
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	Minor revision
Peer-reviewer statements	Peer-Review: Onymous
	Conflicts-of-Interest: No

SPECIFIC COMMENTS TO AUTHORS

The authors have addressed my previous concerns satisfactorily. The manuscript is now close to being suitable for publication, pending minor revisions. I recommend acceptance after the following issues are addressed: Many of the figures still contain fonts that are too small, particularly the axis labels on both the x- and y-axes. This significantly compromises the readability of the visual data and may hinder comprehension for the reader. The authors should ensure that all textual elements in the figures are clearly legible when printed at journal size. Revisions should be made accordingly.



RE-REVIEW REPORT OF REVISED MANUSCRIPT

Name of journal: *World Journal of Radiology*

Manuscript NO: 106682

Title: Non-contrast computed tomography radiomics model to predict benign and malignant thyroid nodules with lobe segmentation: A dual-center study

Provenance and peer review: Unsolicited Manuscript; Externally peer reviewed

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Reviewer’s code: 08380617

Position: Peer Reviewer

Academic degree and professional title: MD, PhD, Postdoctoral Fellow

Reviewer’s Country/Territory: China

Author’s Country/Territory: China

Manuscript submission date: 2025-03-11

Reviewer chosen by: Yu Bai

Reviewer accepted review: 2025-04-22 01:31

Reviewer performed review: 2025-04-24 02:42

Review time: 2 Days and 1 Hour

Content to be reviewed	<p>Does the manuscript’s content fall within the scope of the journal? Yes</p> <p>Is there any Key Word that is not included in the manuscript title? No</p> <p>Do authors’ affiliations correspond to the content of the manuscript? Yes</p> <p>Does the Abstract contain the contents of each part of the manuscript (IMRaD)? Yes</p> <p>Are the Key Words complete? Yes</p>
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Is the description of the experiments clear and
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Are the experimental data presented in the
manuscript's biostatistics content reliable? **Yes**
Are the experimental data of the Results true and
reliable? **Yes**
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? **Not Applicable**
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 A (Excellent)
Novelty of this manuscript	Grade A (Excellent)
Creativity or innovation of this manuscript	Grade B (Very Good)
Scientific significance of the conclusion in this manuscript	Grade A (Excellent)
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?	Yes
Does this manuscript report an unconventional innovation?	Yes
Conclusion	Accept
Peer-reviewer statements	Peer-Review: Anonymous
	Conflicts-of-Interest: No

SPECIFIC COMMENTS TO AUTHORS

I appreciate the authors' thorough revisions in response to the previous comments. The manuscript has been significantly improved in both clarity and scientific rigor. All concerns raised during the initial review have been adequately addressed, with additional experiments/data and textual refinements strengthening the overall quality of the work. The study now presents a well-structured narrative, supported by robust methodology and clear results. The conclusions are justified by the data, and the discussion appropriately contextualizes the findings within the field. I recommend acceptance of the manuscript in its current form.