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| Journal Name: | [**Journal of Advances in Mathematics and Computer Science**](https://journaljamcs.com/index.php/JAMCS) |
| Manuscript Number: | **Ms\_JAMCS\_139406** |
| Title of the Manuscript: | **PROPOSAL OF A CONVOLUTIONAL NEURAL NETWORK-BASED PREDICTION MODEL FOR PROSTATE CANCER FROM MRI** |
| Type of the Article | **Original Research Article** |

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| PART 1: Comments | | |
|  | Reviewer’s comment **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | **This paper introduces a Convolutional Neural Network (CNN) model for predicting prostate cancer from MRI images. The authors present a solid application of deep learning techniques in a highly relevant and critical field in medical diagnostics, specifically cancer detection. Below is a detailed review based on several key aspects of the paper** | This manuscript proposes a Convolutional Neural Network (CNN) model for the detection of prostate cancer from MRI images. It represents a relevant contribution to the application of artificial intelligence in medical diagnosis, a field with significant clinical impact. As prostate cancer is one of the most common cancers in men, improving its early detection through AI is a major challenge. This work can thus serve as a foundation for future integration into clinical systems. |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **Yes** | We thank you for approving the title of our article. We confirm that it aligns well with the content and objectives of the manuscript. |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | **In Abstract, ROC Abbreviation needs to be expanded.**  **Need more clarity of why your work importance in medical imaging** | We sincerely thank you for this valuable comment. The abbreviation ROC (Receiver Operating Characteristic) has been expanded in the abstract, along with a brief explanation of its meaning and role. We have also further clarified the significance of our contribution in the field of AI-assisted medical imaging. |
| Is the manuscript scientifically, correct? Please write here. | **The topic is extremely relevant to the medical community, as prostate cancer is one of the most common cancers in men. Early diagnosis significantly impacts treatment outcomes, and improving diagnostic tools is an area of ongoing research.** | We thank you for this positive evaluation. The topic is indeed crucial, as prostate cancer is one of the most prevalent among men. Our study highlights the usefulness of CNN-based approaches in optimizing early diagnosis. We hope it will contribute to advancements in this field. |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | **Need more references** | Thank you for this observation. We have reviewed and updated the bibliography by adding more recent and relevant references, including similar studies published between 2020 and 2024. These additions enhance the scientific context of the manuscript. |
| Is the language/English quality of the article suitable for scholarly communications? | Consult or edit with English native speaker |  |
| Optional/General comments | **Lack of Comparison: The paper could have done more to compare the CNN model’s performance with other machine learning models or traditional diagnostic methods. This would provide a clearer indication of the CNN’s superiority or limitations in the context of prostate cancer detection.**  **While the authors mention that they collected data from various sources, the dataset size and diversity are not discussed in detail. The model’s performance on more varied or large-scale datasets could be different, and this is a limitation to consider.**  **The model was trained on 50 epochs, and while the accuracy is high, there’s no discussion on potential overfitting or validation on unseen data (beyond the test dataset). Cross-validation or external validation could add strength to the paper.**  **Though the model's architecture is detailed, some finer implementation details, such as the hyper-parameters used (e.g., learning rate, batch size), could help in replicating the study or improving it further.**  **Clinical Impact: The paper could expand on the potential impact of the model in real-world clinical settings. For example, while the accuracy is good, the authors don’t discuss how the model would handle edge cases, rare cancer types, or noisy data.**  **Comparison with Other Models: The paper lacks comparison with other machine learning models or previous studies. Discussing how the CNN model compares to existing models (e.g., traditional radiological methods, or other AI-based models) would provide a better understanding of its strengths and weaknesses.**  **The conclusion is somewhat optimistic about the model’s real-world applicability. While the model shows promise, the paper could have acknowledged challenges, such as clinical validation and generalization across diverse datasets.** | We thank the reviewer for this relevant comment. A comparison section has been added to the Discussion, including a comparative analysis with classical models such as SVM, Random Forest, and KNN, using the same dataset. We acknowledge the importance of this step in better positioning our CNN model.  We have enriched the "Materials and Methods" section by specifying the size of each data subset, their sources, and the associated demographic and clinical characteristics. We recognize that data diversity impacts model generalization, and we have emphasized this limitation in the Discussion.  Thank you for this important observation**.** We have included an assessment of overfitting by analyzing the evolution of loss and accuracy curves on both training and validation sets. In addition, 5-fold cross-validation was performed, and the average results have been incorporated into the Results section.  We have updated the "Model Architecture" section to include all key hyperparameters: learning rate, batch size, activation function, loss function, optimizer, and regularization method. These details will support the reproducibility of our study.  We expanded the Discussion section to address clinical integration challenges, including the handling of atypical cases and robustness to artifacts or noise. We stress the need for a clinical validation phase prior to any real-world application.  A comparative synthesis with recent studies using AI approaches for prostate cancer diagnosis has been added. This positions our contribution within the current state of the art, highlighting both its strengths and limitations.  We have refined our conclusion by explicitly mentioning limitations such as the need for clinical validation, standardization of imaging protocols, and inter-institutional variability. These points are essential to consider for potential real-world deployment of the model. |

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| **PART 2:** | | |
|  | Reviewer’s comment | **Author’s Feedback (It is mandatory that authors should write his/her feedback here)** |
| **Are there ethical issues in this manuscript?** | **(If yes, Kindly please write down the ethical issues here in detail)**  **No ethical consideration** | non |