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REVIEWER'S REPORT

Manuscript No.: IJAR-58653

Title: Evaluating the Accuracy of Measuring Endodontic Working Length from Diagnostic Radiographs Using Artificial Intelligence: An In Vitro Study.

Recommendation:
Accept as it is .....
Accept after minor revision...
Accept after major revision .....
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		Good		
Techn. Quality	Excellent			
Clarity	Excellent			
Significance	Excellent			

Reviewer's ID: Dr. Sumathi

Detailed Reviewer's Report

1. **Artificial intelligence (AI) is the ability of a computer system to do tasks that usually need human intelligence. This includes learning from data, solving problems, recognizing speech, and making choices.**
2. **Artificial intelligence, or AI, is computer technology that allows machines to learn, solve problems, and make choices like people do. Instead of just following strict rules, AI looks at data to find patterns and improve over time.**
3. **Working length in endodontics is the measured distance from a coronal reference point to the point where cleaning, shaping, and filling of the root canal should end. This endpoint typically terminates at the apical constriction (minor diameter), located about 0.5 to 1.0 mm short of the radiographic root tip. Getting this measurement right prevents leaving bacteria inside or pushing tools past the root.**
4. **A convolutional autoencoder is a special type of neural network that uses filter layers to compress an image into a small code, then**

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rebuilds the original image from that code. It learns spatial shapes automatically without human labels.

5. **Digital radiography (DR) is an advanced X-ray method that uses digital sensors instead of photographic film to capture and view images instantly on a computer. Key benefits include instant image viewing, lower radiation exposure, and no chemical processing.**
6. **Root canal segmentation is the process of digitally isolating and mapping the 3D space of a tooth's pulp chamber and root canals from medical imaging like Cone Beam CT (CBCT) scans. This digital separation helps dentists plan complex endodontic treatments, measure canal lengths, and view hidden internal anatomy.**
7. **Accurate endodontic length measurement is vital to determine the working length (0.5 to 1 mm short of the radiographic apex). Electronic apex locators (EALs) offer high clinical accuracy (82–87%) by locating the apical constriction. They outperform or complement traditional radiographs, which suffer from anatomical distortion, while cone-beam computed tomography (CBCT) and emerging artificial intelligence tools provide precise secondary verification.**
8. **Artificial intelligence improves diagnostic radiographs by accelerating image analysis, detecting subtle fractures or nodules, and auto-triaging urgent cases like pneumothorax or stroke. These tools reduce human error from fatigue and prioritize critical worklists, though they still face challenges regarding algorithmic bias and data transparency.**
9. **An in vitro study is a scientific experiment done outside a living organism. Researchers use lab tools like test tubes, flasks, and petri dishes to test cells, tissues, or molecules in a controlled environment.**
10. **Key words are good.**
11. **Research topic is scientifically helpful to improve next level and can get some new ideas to do this research.**
12. **Result part is very impressive with pictures, tables and graphs.**
13. **Summary points only can be included.**
14. **References should be with alphabetical order.**
15. **After a small changes good to publish in your journal.**