

## PEER-REVIEW REPORT

**Name of journal:** *World Journal of Orthopedics*

**Manuscript NO:** 73676

**Title:** Evaluation of AI models for osteoarthritis of the knee using Deep Learning Algorithms for Orthopaedic Radiographs (DLAOR).

**Provenance and peer review:** Invited Manuscript; Externally peer reviewed

**Peer-review model:** Single blind

**Reviewer's code:** 00505755

**Position:** Editorial Board

**Academic degree:** PhD

**Professional title:** Senior Research Fellow

**Reviewer's Country/Territory:** Japan

**Author's Country/Territory:** India

**Manuscript submission date:** 2021-11-30

**Reviewer chosen by:** AI Technique

**Reviewer accepted review:** 2021-12-01 01:08

**Reviewer performed review:** 2021-12-01 01:43

**Review time:** 1 Hour

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|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scientific quality | <input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good<br><input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish            |
| Language quality   | <input checked="" type="checkbox"/> Grade A: Priority publishing <input type="checkbox"/> Grade B: Minor language polishing<br><input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection |
| Conclusion         | <input type="checkbox"/> Accept (High priority) <input checked="" type="checkbox"/> Accept (General priority)<br><input type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection             |
| Re-review          | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                                             |



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| <b>Peer-reviewer<br/>statements</b> | Peer-Review: [ <input checked="" type="checkbox"/> ] Anonymous [ <input type="checkbox"/> ] Onymous<br>Conflicts-of-Interest: [ <input type="checkbox"/> ] Yes [ <input checked="" type="checkbox"/> ] No |
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#### **SPECIFIC COMMENTS TO AUTHORS**

This study demonstrates the deep learning approach in the prediction of grades of osteoarthritis.

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**Peer-review model:** Single blind

**Reviewer's code:** 02566952

**Position:** Editorial Board

**Academic degree:** MD, PhD

**Professional title:** Chief Doctor, Senior Researcher, Surgeon

**Reviewer's Country/Territory:** Romania

**Author's Country/Territory:** India

**Manuscript submission date:** 2021-11-30

**Reviewer chosen by:** AI Technique

**Reviewer accepted review:** 2021-12-28 14:44

**Reviewer performed review:** 2021-12-28 15:41

**Review time:** 1 Hour

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|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scientific quality | <input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good<br><input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish            |
| Language quality   | <input type="checkbox"/> Grade A: Priority publishing <input checked="" type="checkbox"/> Grade B: Minor language polishing<br><input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection |
| Conclusion         | <input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority)<br><input checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection             |
| Re-review          | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                                                             |

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| <b>Peer-reviewer<br/>statements</b> | Peer-Review: [ <input checked="" type="checkbox"/> ] Anonymous [ <input type="checkbox"/> ] Onymous<br>Conflicts-of-Interest: [ <input type="checkbox"/> ] Yes [ <input checked="" type="checkbox"/> ] No |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SPECIFIC COMMENTS TO AUTHORS

An ambitious work to validate machine learning approach for interpreting knee radiographs aiming detection of OA. But please keep in mind nowhere in the manuscript this statement appears, the reader is obliged to decipher him or her self what the work is about. Comments The abstract needs to be drastically shorten, please do not use numbered enumeration neither references within abstract, keep to essential focusing especially on the aim of the study (in the current form it is unclear what was the aim of the study) and on very briefly presenting results and conclusion Introduction OA is a degenerative disease of the whole joint not only of the cartilage. As to my knowledge references should be listed in the order of citation (why starting text with reference 42?) . Please keep the information in the introduction to the point, What has driverless cars to do with this manuscript, this is supposed to be a scientific writing and not a blog or social media post. Please clarify the paragraph “Deep Learning Algorithms for orthopaedic radiographs (DLAOR) had adopted transfer learning technique. The aim of this solution was to evaluate the feasibility and efficacy of the transfer learning algorithms in accurately assessing orthopaedic radiographs. Three key focus areas were determination of the disease pathology like osteoarthritis, identification of fractures and identifications of the implants”. Is this study about OA AND fractures And implants as it is suggested by this paragraph or is solely about knee OA? Please specify protocol for X Ray exposure, radiological incidence, were they taken by same radiologist/technician or not? X ray protocol can influence OA diagnostic and it is mandatory this remains consistent with training, testing and validation x Ray sets. Table 2 please give the formula for all parameters listed within the table. There is



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absolutely no comment regarding possible flaws of transfer learning model especially for this category of images. Negative transfer as well as overfitting are not only possible but highly probable in this kind of images and this could lead to the ridiculous interpreting of images. Validation set used here is not consistent enough to out rule this probability. AI based misdiagnosis is already there (we see it many times in lab data tests) and it really introduces way more hardship in resolving them. It is interesting to be high positive on AI based image interpretation but the consequences of many possible flaws need to be taken into account and, at least, discussed as such.