

## **Review Report**

**Title:** Detection and diagnosis of diabetic eye diseases using two-phase transfer learning approach

**Journal:** PeerJ Computer Science

The topic is interesting and suitable to the current situation where the number of diabetic patients is increasing daily. Based on my review, the authors must acknowledge the following comments/suggestions.

1. The limitation of each work cited in the Literature must be highlighted and should claim how the proposed model overcomes it.
2. Research gaps must be highlighted.
3. The Literature discusses only six works published in 2021 which is inadequate for a standard journal. The literature can be improved with the latest articles/works. Authors are suggested to cite the following articles at appropriate places.
  - a. DRFL: Federated Learning in Diabetic Retinopathy Grading Using Fundus Images
  - b. An efficient microaneurysms detection approach in retinal fundus images
  - c. Optimal hybrid feature selection technique for diabetic retinopathy grading using fundus images
  - d. Fast and robust exudate detection in retinal fundus images using extreme learning machine autoencoders and modified kaze features
  - e. A novel four-step feature selection technique for diabetic retinopathy grading
  - f. AMDNet: Age-related Macular Degeneration diagnosis through retinal Fundus Images using Lightweight Convolutional Neural Network
  - g. Role of Machine and Deep Learning Techniques in Diabetic Retinopathy Detection
  - h. ViT-DR: Vision Transformers in Diabetic Retinopathy Grading Using Fundus Images
  - i. Deep learning for diabetic retinopathy detection: Challenges and opportunities
  - j. Exudate detection with improved u-net using fundus images
  - k. Optic disc segmentation in fundus images using operator splitting approach
  - l. Exudate localization in retinal fundus images using modified speeded-up robust features algorithm
  - m. An Improved Accuracy Rate in Microaneurysms Detection in Retinal Fundus Images Using Non-local Mean Filter
4. Avoid using paraphrased words throughout the manuscript. For example 'inform' in Methodology Section. The technical writing/representation of the manuscript can be improved.

5. The resolution of Figure 1 needs to be more precise. Replace the same with a higher resolution one.
6. Authors must justify using grayscale images instead of RGB fundus images.
7. Equations (1) to (5) are not mentioned in the manuscript. Authors are suggested to cite (call) the same.
8. Verify and Correct “Equation (1) defines accuracy” in the “classification performance analysis” Section.
9. From Figure 2 it is evident that the database is entirely imbalanced and the authors have not mentioned any data augmentation. The authors should justify the same with detailed explanations.
10. Figure 4 resolution should be improved.
11. Authors should include ground truth images (annotations) in Figure 5.
12. In general, the segmentation results are measured in terms of Dice and IoU scores. Justify how the proposed model is superior to the state-of-the-art without standard metrics.
13. The authors have proposed two techniques one for classification and the other for segmentation. The authors should mention the proposed model in Figure 6 and Figure 7 is meant either for classification or segmentation.
14. Figure 6 resolution should be improved.
15. All grammatical and spelling mistakes must be avoided.
16. The computational complexity of the model should be mentioned and compared with the state-of-the-art.