View Review

Paper ID
1

Paper Title
Deep kNN for Medical Image Classification

REVIEW QUESTIONS

1. Recommendation
Strong accept

2. Summary of the paper
In this research, the author improved the Knn by incorporating it with the feature extraction process and named it as deep KNN. It is applicable to small class prediction, where deep learning models do not generalize well. The author enforced the idea that the training sample and its K-nearest neighbors belong to the same class during learning the feature extractor. Finally, results declared that deep KNN outperformed strong classifiers on medical image datasets where classes are small or imbalanced.

3. Strengths
- Description of the problem is very clear.
- The researcher unified the feature extraction and the kNN classification procedure, that tlead to become the better feature extractor which can be learned specifically for the kNN classifier and the task of interest
- Faster in convergence regardless of model structures and datasets
- Flexibility with architecture (can be integrated with any deep learning network)

4. Shortcomings
Overall, the paper is well written and proposed solution to adress the challenges are highly related but I could not find any time complexity parameter which compare that its time efficient as well.
Additionally, future work or its applicability on other should also be discussed.
Does it perform state-of-the-art in the era of few-shot learning is the question mark.

5. Justification of rating
- Comprehensive evaluations on multiple medical image datasets showed that the proposed approach, outperforms various kNNs and even CNN classifiers particularly for small class prediction the proposed novel loss function can help train the feature extractor much faster.
- It was observed that the proposed triplet loss takes much fewer epochs than the traditional loss to reach the same level of training accuracy.

6. Confidence of your assessment
Highly confident

7. How many years have been reviewing for MIUA? (or other medical imaging conferences e.g. CVPR, ICCV, MICCAI, ISBI)
Never

8. Should this paper be considered for the best paper award?
No