Reviewer(s)' Comments to Author:  
  
Reviewer: 1  
  
Comments:  
The manuscript present a detailed structure of the problem of Manual disease identification using Mulberry leaves and the results are good.  
I have the following concerns:  
~~1. The abstract needs to improve so the it will provide at least 2 points of modification in the deep learning model.~~  
2. The exploration of the model in terms of the modification comparison and original.  
3. ~~Reasoning is required for the modification and its utility~~.  
  
~~4. The result needs to improve and present some intermediate results as provided in the suggested references.~~    
  
1. Deep CNN model for crops’ diseases detection using leaf images  
<https://doi.org/10.1007/s11045-022-00820-4>  
2.  Leaf image analysis-based crop diseases classification. <https://doi.org/10.1007/s11760-020-01780-7>  
  
English is good, but still needs to improve some standard of usage.  
  
  
  
  
Additional Questions:  
Please confirm that you have reviewed all relevant files, including supplementary files and any author response files, which can be found in the "View Author's Response" link above (author responses will only appear for resubmissions): Yes, all files have been reviewed  
  
1) Does the paper contribute to the body of knowledge?: Yes, The writing of the work is aligned with the journal and the flow is good.  
  
2) Is the paper technically sound?: It needs to open some internal structure of the used features  in terms of the intermediate features and analysis.  
  
3) Is the subject matter presented in a comprehensive manner?: Yes, It is presented the theory in the comprehensive manner.  
  
4) Are the references provided applicable and sufficient?: Recommended references for comparison and find intermediate results similar to provided in these articles will help to guide the technical analysis of the proposed model.  
  
1. Kurmi, Y., Saxena, P., Kirar, B.S. et al. Deep CNN model for crops’ diseases detection using leaf images. Multidim Syst Sign Process 33, 981–1000 (2022). <https://doi.org/10.1007/s11045-022-00820-4>  
  
2. Kurmi, Y., Gangwar, S., Agrawal, D. et al. Leaf image analysis-based crop diseases classification. SIViP 15, 589–597 (2021). <https://doi.org/10.1007/s11760-020-01780-7>  
  
5) Are there references that are not appropriate for the topic being discussed?: No  
  
5a) If yes, then please indicate which references should be removed.:  
  
  
Reviewer: 2  
  
Comments:  
This paper introduces Mulberry Leaf Disease Detection Using CNN-based Smart Android Application. The subject matter is both compelling and applicable. Notably, the model put forward attains remarkably good levels of accuracy, precision, recall, and F1-score. Nevertheless, a few minor comments are provided for consideration.  
1. It is imperative to accentuate the limitations of existing methods.  
2. The absence of a reference for the dataset, both in the Materials and Methods section and in Sections A, B, and D, is notable.  
3. The captions for the figures are inadequately formulated.  
4. In the Materials and Methods section, specifically on pages 8 and 9, the authors have presented information without providing any references.  
5. The clarity of figures (a) and (b) in Figure 5 is compromised. Furthermore, it is unclear whether the parameters on the y-axis are expressed in percentages.  
~~6. The paper lacks sufficient elaboration on mathematical modifications made to the pretrained model to enhance performance. Simply adding a convolutional layer may not be adequate to improve performance significantly.~~  
7. It would be beneficial to include a flow chart illustrating the functionality of the Android system for better comprehension.

8. The paper appears to focus primarily on implementation and lacks novelty.

Authors note: Thanks for still accepting xD

9. The comparison with only one other work is insufficient. Additional works should be included for comparison, particularly those dealing with similar datasets.  
10. The absence of a discussion section is notable. The authors may find the following papers helpful for structuring the Results and Discussion section: "Deep CNN Model for crops' diseases detection using leaf images" published in Multidimensional Systems and Signal Processing (<https://link.springer.com/article/10.1007/s11045-022-00820-4>) and "Performance Analysis of Deep Learning Models for Accurate Glaucoma Detection" (<https://ieeexplore.ieee.org/abstract/document/10482336>).  
11. The references are not formatted correctly and require attention.  
  
  
Additional Questions:  
Please confirm that you have reviewed all relevant files, including supplementary files and any author response files, which can be found in the "View Author's Response" link above (author responses will only appear for resubmissions): Yes, all files have been reviewed  
  
1) Does the paper contribute to the body of knowledge?: Yes  
  
2) Is the paper technically sound?: Partially  
  
3) Is the subject matter presented in a comprehensive manner?: Partially  
  
4) Are the references provided applicable and sufficient?: yes  
  
5) Are there references that are not appropriate for the topic being discussed?: No  
  
5a) If yes, then please indicate which references should be removed.:  
  
  
Reviewer: 3  
  
Comments:  
~~1. There is no representation of the other two CNN models, namely the ResNet50 and VGG19 models. Only the MobileNetV3\_small was discussed and presented in the paper as mentioned in the Materials and Methods section.~~  
2. There is NO discussion on the GRAD-CAM techniques in the methodology section as it was mentioned in the objectives of the study but it was presented in the results and discussion section,  
3. As presented in Figure 6, the Android application was presented in the results and discussion section but did not discussed/presented in the methodology and in the introduction of the study.  
4.  
The architecture/framework of the Android application was not mention/presented in the manuscript.  
  
Additional Questions:  
Please confirm that you have reviewed all relevant files, including supplementary files and any author response files, which can be found in the "View Author's Response" link above (author responses will only appear for resubmissions): Yes, all files have been reviewed  
  
1) Does the paper contribute to the body of knowledge?: Yes  
  
2) Is the paper technically sound?: Yes  
  
3) Is the subject matter presented in a comprehensive manner?: Yes  
  
4) Are the references provided applicable and sufficient?: Yes  
  
5) Are there references that are not appropriate for the topic being discussed?: No  
  
5a) If yes, then please indicate which references should be removed.:  
  
  
Reviewer: 4  
  
Comments:  
Detailed state of the art, although on other types of plants, presumably due to the novelty of its application to mulberry.  
Interesting interdisciplinarity with participation of Sericulture experts.  
Generally accepted traditional methods for data augmentation.  
Evaluated with three different network architectures.  
Methods of evaluation of the results obtained correct in the area.  
It is interesting to go into details of the development of the application.  
The contribution in terms of explanatory AI adds a lot of value to the proposal.  
Adequate technical description of the hardware resources used.  
  
I do not recognise the meaning of the letter E in line 5 on page 7.  
It does not introduce the term XAI used in Table I (eXplaniable AI).  
~~There is some lack of appreciation of the battery consumption of running deep learning algorithms on a mobile terminal.~~  
Apart from an interesting proof-of-concept, a classification between two diseases with clearly different symptoms for an experienced farmer does not seem to be a final application of interest.  
A possible future application could be the automation of the classification process of diseased trees using drone technologies, autonomous vehicles or strategically placed cameras as a tool for monitoring, early warning or quantification of the area affected by the crop.  
  
  
  
  
Additional Questions:  
Please confirm that you have reviewed all relevant files, including supplementary files and any author response files, which can be found in the "View Author's Response" link above (author responses will only appear for resubmissions): Yes, all files have been reviewed  
  
1) Does the paper contribute to the body of knowledge?: The proposal addresses the classification of mulberry leaf diseases, which are vital for silk production.  
It uses proven classification models for the early detection of this type of images and achieves significant results of up to 97% accuracy by applying data augmentation techniques.  
A smartphone application was developed to run the proposed model, providing the farmer with a disease classification tool that outperforms SOTA.  
  
2) Is the paper technically sound?: Appropriate technical language, models, validation techniques are applied to the results obtained and references.  
  
3) Is the subject matter presented in a comprehensive manner?: Yes  
  
4) Are the references provided applicable and sufficient?: Yes  
  
5) Are there references that are not appropriate for the topic being discussed?: No  
  
5a) If yes, then please indicate which references should be removed.:  
  
  
If you have any questions, please contact article administrator: Mrs. Shilpa Verma [shilpa.verma@ieee.org](mailto:shilpa.verma@ieee.org)

Table: The results of five transfer learning models with augmentation in multiclass classification.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model Name** | **Accuracy (%)** | **Precision (%)** | **Recall (%)** | **F1 Score (%)** | **AUC (%)** |
| DenseNet121 | 94.32 | 90.17 | 92.77 | 90.56 | 97.48 |
| MobileNet | 91.68 | 90.83 | 91.13 | 91.48 | 98.35 |
| MobileNetV2 | 90.75 | 90.99 | 88.77 | 90.01 | 96.71 |
| Xception | 89.12 | 86.52 | 85.45 | 86.84 | 94.74 |
| VGG19 | 89.17 | 87.53 | 85.41 | 85.48 | 96.45 |

In this work,  a number of cutting-edge deep learning models were used to classify images of mulberry leaves into three class. Overall, the DenseNet121 model was the most accurate (94.32%), with high precision (90.17%) and memory (92.77%), showing that it could reliably identify the difference. Its strong discriminatory power is further shown by its high AUC of 97.48%. With a 91.68% accuracy rate, an AUC of 98.35%, and balanced precision (90.83%) and recall (91.13%), MobileNet proved to be very efficient and effective at this classification job.  
  
The accuracy of MobileNetV3 was 90.75%, and its precision and recall were 90.99% and 88.77%, respectively. The AUC for this model stayed high at 96.71%, showing good results. With an accuracy of 89.12% and an AUC of 94.74%, Xception did a good job, but its precision (86.52%) and memory (85.45%) were a little lower, which suggests that it could do better at telling the difference between scarred leaves. VGG19 got an impressive AUC of 96.45%, which shows that it can do the classification job even though it isn't as advanced as some newer models. Its accuracy was 89.17%, its precision was 87.53%, and its recall was 85.41%.

