Review of: "An Improved Hybrid Transfer Learning-Based Deep Learning Model for Alzheimer's Disease Detection Using CT and MRI Scans"

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Potential competing interests: No potential competing interests to declare.

The paper presents a comprehensive study on Alzheimer's disease prediction using pre-trained deep learning models. It provides a detailed overview of the dataset used for the study, specifying the number of images per class and their dimensions and the explanation of data balancing using down sampling is well articulated. Addressing the following points will further strengthen the clarity, transparency, and impact of the research

- it would be beneficial to include information on the nature of the ADNI dataset, such as patient demographics or any potential biases, to enhance the transparency and reproducibility of the research and it might be useful to elaborate on why down sampling was chosen over other techniques, and if any challenges or considerations were encountered during this process.
- The paper appropriately outlines the techniques used, including horizontal flipping and rotation. However, it would be valuable to discuss how the choice of these specific augmentation methods aligns with the characteristics of MRI images and the potential impact on model performance.
- To strengthen the experimental section, consider including information on the number of training epochs and batch size used during the training phase.
- it would be valuable to include more details on the training process, such as convergence speed or any observed challenges during training.
- The presentation of classification reports for each model adds granularity to the evaluation. It's noteworthy that VGG16 outperforms ResNet50 in terms of precision, recall, and F1-score. Consider discussing any potential reasons behind the performance variations among the models, providing a deeper understanding of their strengths and limitations.
- The comparative analysis depicted in Figure 9 is a crucial element of the paper. However, it lacks specific details on the metrics used for comparison. Consider adding labels or a legend to the figure to clarify the aspects being compared, making it more accessible for readers.
- To enhance the conclusion, consider providing a brief reflection on the limitations encountered during the study and how they might be addressed in future research.