

# Review of: "Application of Ensemble Learning in CXR Classification for Enhancing COVID-19 Diagnosis"

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**Potential competing interests:** No potential competing interests to declare.

**Clarity of Research Focus:** While the study highlights the importance of classifying chest X-ray (CXR) samples, particularly for COVID-19 diagnosis, it could benefit from a clearer delineation of its research objectives and scope. It's essential to specify whether the focus is solely on COVID-19 detection or if other respiratory ailments are also included in the analysis.

**Methodological Rigor:** The paper mentions the use of advanced clinical image analysis and computer-aided radiology techniques, but it lacks specific details on the methodology employed. Reviewers would appreciate more comprehensive descriptions of the image analysis and feature extraction processes, as well as the parameters and settings used for each classifier.

**Evaluation Metrics and Statistical Significance:** While impressive accuracy rates are reported for various classifiers, it's important to consider additional evaluation metrics beyond accuracy, such as precision, recall, and F1-score, to provide a more nuanced understanding of the model's performance. Additionally, statistical significance testing should be conducted to validate the reported improvements in COVID-19 detection accuracy.

**Generalizability and External Validation:** The study claims to offer a robust solution for COVID-19 diagnosis, but it's essential to assess the generalizability of the proposed approach across different datasets and clinical settings. External validation using independent datasets or real-world clinical data would strengthen the validity and applicability of the findings.

**Ethical Considerations and Bias:** Given the critical implications of COVID-19 diagnosis, it's crucial for the authors to address any potential biases in the dataset used for training and testing the classifiers. Additionally, ethical considerations related to patient privacy and informed consent should be thoroughly discussed and adhered to in the research methodology.

**Discussion of Limitations and Future Directions:** The paper should include a transparent discussion of the limitations of the proposed approach, such as potential biases in the dataset, limitations of the classifiers used, and challenges in real-world implementation. Furthermore, suggestions for future research directions to address these limitations and enhance the practical utility of the system would be valuable for readers and researchers in the field.

