

Review of: "Implementing Machine Learning to predict the 10-year risk of Cardiovascular Disease"

Manikandan Rajagopal¹

¹ Christ University

Potential competing interests: No potential competing interests to declare.

The research paper titled "Machine Learning Models for Predicting Cardiovascular Disease Risk" addresses a significant and pressing issue—predicting the 10-year risk of cardiovascular disease (CVD). The authors undertake a comprehensive literature review to explore existing methodologies, algorithms, and data sources used in previous studies, with the ultimate goal of developing an effective Machine Learning (ML) model for CVD risk prediction. The paper showcases the potential of ML in enhancing CVD risk assessment and highlights the current challenges and limitations in this field. The research employs the UCI Heart dataset to train various ML models, including Logistic Regression, Decision Trees, Random Forests, Support Vector Machines, Artificial Neural Networks, and K-Nearest Neighbors, and employs optimization techniques such as Cross Validation, normalization, and hyperparameter tuning to enhance model performance. The study also compares the results with traditional models.

Overall, the research paper offers valuable insights into the field of CVD risk prediction and the potential benefits of ML-based approaches. It addresses a crucial public health concern and highlights the promise of more accurate risk assessment for early intervention and prevention. The incorporation of various ML algorithms and optimization techniques demonstrates a thorough approach to model development, which is commendable.

However, there are several aspects of the paper that could benefit from revision and improvement:

Clarity and Structure: The paper's structure could be enhanced for better readability. A clearer outline, with well-defined sections for the literature review, methodology, results, and discussion, would improve the flow and understanding of the paper.

Detailed Methodology: While the paper mentions the use of various ML algorithms and optimization techniques, it lacks a detailed explanation of the specific approaches used, including the rationale behind their selection. Providing more in-depth information about the modeling process would enhance the paper's scientific rigor.

Results Presentation: The paper mentions reporting results and comparing them with traditional models but does not provide the actual results or performance metrics. It is crucial to include tables, figures, or statistical measures to support the findings and facilitate a thorough evaluation of the model's performance.

Discussion of Limitations: While the paper briefly mentions the challenges and limitations of current research, a more comprehensive discussion of these limitations and potential sources of bias or error would strengthen the paper's

credibility.

Practical Implications: The paper mentions the implications of the research, including improved preventive strategies and healthcare resource optimization. However, a more detailed discussion of how these implications could be practically implemented and the potential impact on healthcare systems would be valuable.