**Comparative Analysis of Machine Learning Algorithms for Heart Disease Prediction: A Study on Performance**

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**Abstract:** Heart disease analysis, prediction, and early detection are vital challenges within the healthcare domain. The availability of expensive therapies and medical interventions emphasizes the significance of anticipating heart diseases before they reach critical stages. This study aims to contribute to global healthcare by conducting an extensive investigation into heart disease prediction using diverse machine learning algorithms, including XGBoost, Naive Bayes, SVM, Logistic Regression, Random Forest, and LSTM etc. The central objective of this research is to compare the predictive performance of these machine learning algorithms, evaluating their accuracy, precision, recall, and F1-score. By doing so, we seek to identify the most effective and accurate models for heart disease prediction. The findings of this study can potentially empower medical practitioners and decision-makers to make informed choices about early intervention, ultimately leading to improved patient outcomes.

**Keywords:** heart disease analysis, prediction, detection, machine learning, predictive performance, effective and accurate model.