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Enhancing Heart Disease Prediction using Advanced Feature Engineering and Ensemble Learning Techniques

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Abstract: *This study introduces a holistic model for predicting heart disease ,integrating advanced algorithms with a focus on feature engineering. The dataset encompasses a diverse range of patient parameters, including demographics, lifestyle factors, and medical history.*

Feature engineering involves a meticulous process of selecting, transforming, and augmenting relevant features to enhance the model's ability to discern patterns and relationships within the data. This stage is essential for increasing the predicted accuracy of the model and gleaning insightful information from intricate datasets.

The logistic regression algorithm is employed to establish a baseline predictive model, providing insights into the individual contribution of each feature. Subsequently, a neural network is implemented to capture intricate non-linear dependencies and interactions within the data, further refining the predictive capabilities.

Results indicate that the incorporation of feature engineering significantly improves the model's performance compared to traditional approaches. Early experiments demonstrate promising accuracy rates in heart disease prediction, showcasing the potential for early detection and proactive healthcare interventions.

This method not only enhances predictive modeling for heart disease but also emphasizes the significance of feature engineering in maximizing the full capabilities of machine learning algorithms for medical applications.

Keywords: Heart disease prediction, feature engineering, logistic regression, neural network, dataset, predictive accuracy, machine learning, early detection, healthcare interventions, medical applications

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