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Heart Disease Prediction Using Machine Learning and Deep Learning

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Abstract: *Heart disease is among the top causes of mortality globally, and early prediction can greatly contribute to saving lives. Here in this project, we have created a system that takes advantage of both Machine Learning (ML) and Deep Learning (DL) methods to predict heart disease risk in individuals. The aim is to present an efficient, dependable, and smart solution that assists doctors and health experts in making more informed decisions.*

We gathered and processed medical information containing prominent health indicators like age, blood pressure, cholesterol levels, and so on. Several ML algorithms such as Logistic Regression, Random Forest, and Support Vector Machine were implemented and compared based on their performance. In addition to this, we also employed a Deep Learning model employing a neural network to enhance the accuracy of the predictions.

Our system also has a user-friendly interface where users can feed health parameters and obtain real-time predictions. The results indicated that Deep Learning models performed slightly better than the conventional ML models in accuracy. The hybrid method proves that integrating ML and DL can improve healthcare solutions.

As a whole, the project provides a useful and effective approach for prediction of heart disease in favor of the proposition that AI is a useful aid in medical diagnostics and preventive medicine.

Keywords: Heart Disease Prediction, Machine Learning (ML), Deep Learning (DL), Neural Network, Medical Diagnosis, Risk Analysis, Healthcare Technology, Classification Algorithms, Logistic Regression, Random Forest, Support Vector Machine (SVM), Artificial Intelligence (AI)

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