

# Comparing ML Algorithms

The dataset contains information related to heart conditions, which we utilized to classify individuals as either healthy or sick based on specific criteria. We evaluated more than 5 machine learning algorithms using this dataset to determine the one that achieves the highest accuracy.

The dataset includes several features related to heart conditions, such as age, sex, Constrictive pericarditis (CP), resting blood pressure, cholesterol level, fasting blood sugar (FBS), and resting electrocardiographic results (Restecg).

Other features include the maximum heart rate achieved (Thalach), ST depression induced by exercise relative to rest (Old peak), the slope of the peak exercise ST segment (Slope), number of major vessels colored by fluoroscopy (Ca), and Thalassemia.

We used these features to develop a predictive model for heart disease classification.

We utilized several machine learning algorithms in our project, including Logistic Regression, K-Nearest Neighbors' Classifier, Support Vector Machine, Decision Tree Classifier, Random Forest Classifier, XGBoost Classifier, and MLP Classifier. These algorithms were compared to identify the one that provided the best performance for our heart disease classification model.

**The key to a fair comparison of machine learning algorithms is to make sure that they are all tested on the same data. This can be accomplished by requiring each algorithm to be assessed on a standardized test harness. Here we will test 6 different algorithms and by Comparing Between them we will find which will best fit and get the least error**

So, For Last we found that the Logistic Regression Classifier is our best-performing model and algorithm for a classification problem, since it provides the highest testing accuracy with a moderate training accuracy, ensuring that there will be no overfitting in this model.

[35] :

	Model	Training Accuracy %	Testing Accuracy %
0	Logistic Regression	86.792453	91.208791
1	Decision Tree Classifier	100.000000	71.428571
2	Support Vector Machine	91.981132	89.010989
3	K-nearest neighbors	86.320755	82.417582
4	XGBoost Classifier	100.000000	82.417582
5	Random Forest Classifier	100.000000	89.010989
6	MLP Classifier	95.754717	86.813187
7	Gaussian Naive Bias Classifier	81.603774	86.813187