HEART DISEASE PREDICTION

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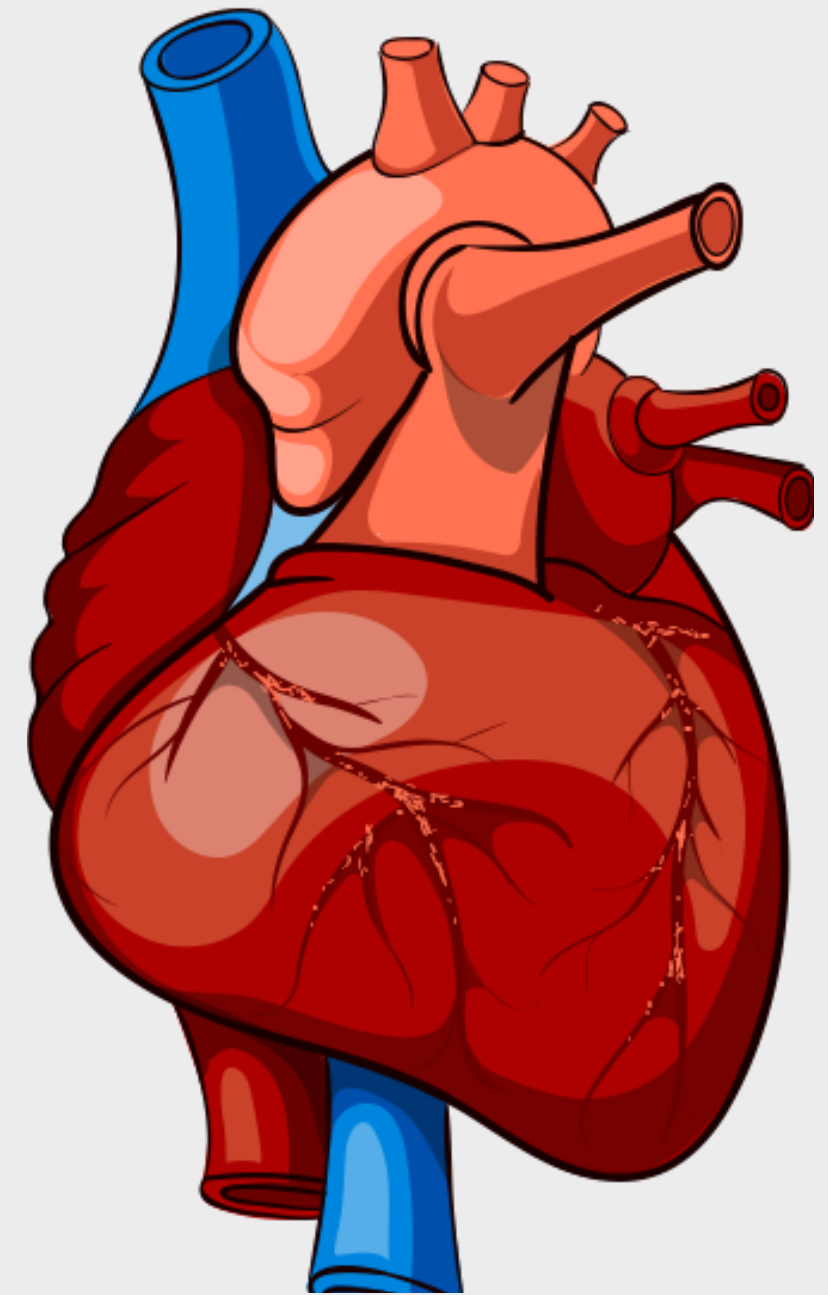 Bengrab Ilyas
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Introduction

Heart disease is a broad term that refers to a range of conditions that affect the heart. These conditions can include problems with the heart muscle, valves, or rhythm. Some common types of heart disease include:

1. Coronary artery disease: This occurs when the arteries that supply blood to the heart become narrowed or blocked, which can cause chest pain or a heart attack.

2. Arrhythmias: These are abnormal heart rhythms that can cause the heart to beat too fast, too slow, or irregularly.

3. Heart failure: This occurs when the heart is unable to pump enough blood to meet the body's needs.

Cloud Computing

Cloud computing is a technology that allows users to access and use computing resources, such as servers, storage, and applications, over the internet. Rather than hosting these resources on a local computer or server, cloud computing providers make them available remotely through a network of servers located in data centers around the world.

Ibm Cloud

IBM Cloud is a cloud computing platform provided by IBM that enables businesses and organizations to develop, deploy, and manage applications and services in the cloud. The platform offers a wide range of cloud services, including infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS), as well as tools for developing, testing, and deploying applications.

IBM Cloud is also integrated with other IBM products and services, such as Watson, the company's AI platform, and it supports hybrid cloud environments, allowing businesses to integrate their on-premises infrastructure with IBM Cloud

Implementation

Problematic

Our challenge involves developing a predictive model that can identify the presence of heart disease in patients based on various user characteristics. This is a crucial problem in the field of medicine. However, due to the large size of our dataset, using a local machine to process the data may not be the most efficient solution.
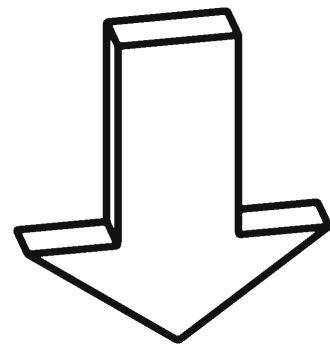
IBM Watson Machine Learning service

# Tools
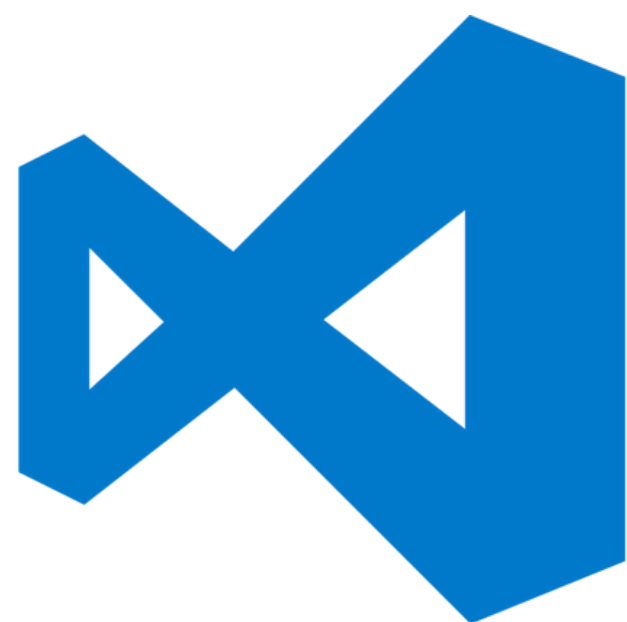
DATASET

ABOUT OUR DATASET

Our dataset has 459574 rows and 22 cloumns all the values are numerical without no missing values

	HeartDiseaseorAttack	HighBP	HighChol	CholCheck	BMI	Smoker	Stroke	Diabetes	PhysActivity	Fruits	...	AnyHealthcare	NoDocbcCost	GenHlth	MentHlth	PhysHlth	DiffWalk	Sex	Age	Education	Income
0	0.0	1.0	1.0	1.0	40.0	1.0	0.0	0.0	0.0	0.0	...	1.0	0.0	5.0	18.0	15.0	1.0	0.0	9.0	4.0	3.0
1	0.0	0.0	0.0	0.0	25.0	1.0	0.0	0.0	1.0	0.0	...	0.0	1.0	3.0	0.0	0.0	0.0	0.0	7.0	6.0	1.0
2	0.0	1.0	1.0	1.0	28.0	0.0	0.0	0.0	0.0	1.0	...	1.0	1.0	5.0	30.0	30.0	1.0	0.0	9.0	4.0	8.0
3	0.0	1.0	0.0	1.0	27.0	0.0	0.0	0.0	1.0	1.0	...	1.0	0.0	2.0	0.0	0.0	0.0	0.0	11.0	3.0	6.0
4	0.0	1.0	1.0	1.0	24.0	0.0	0.0	0.0	1.0	1.0	...	1.0	0.0	2.0	3.0	0.0	0.0	0.0	11.0	5.0	4.0

5 rows × 22 columns

DATASET

Data Visualization
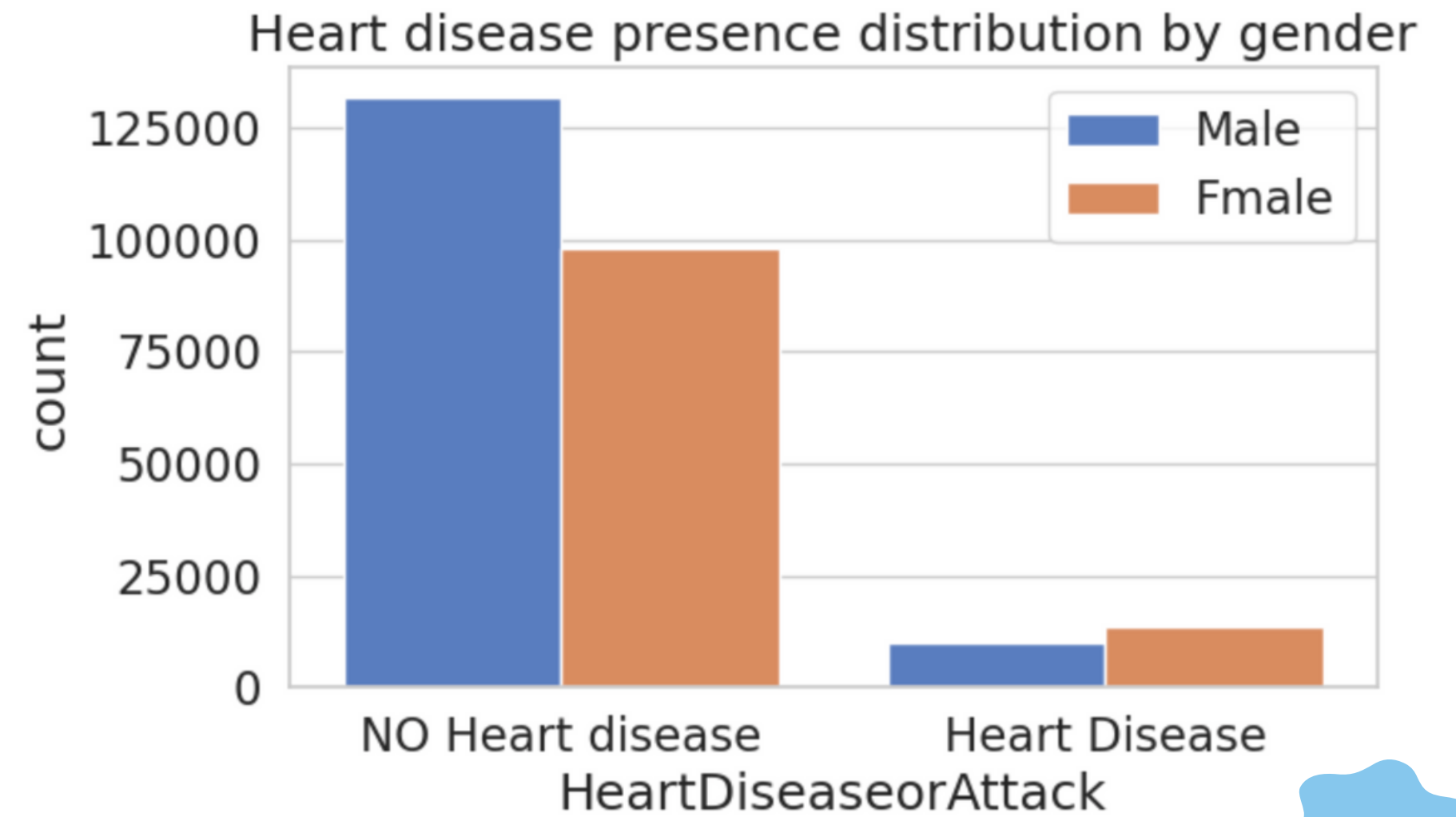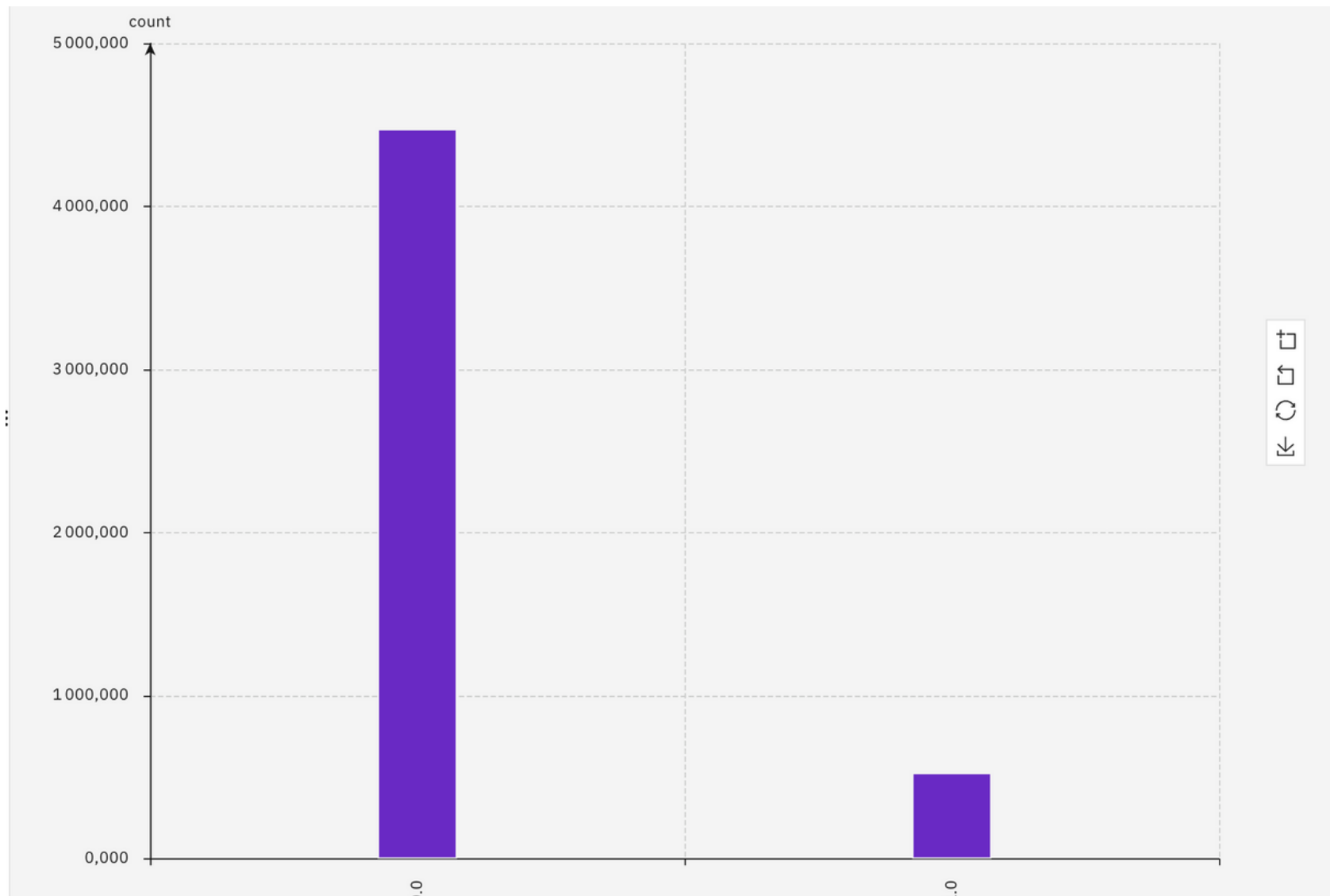
Algorithms

Our problem is a classification problem, and using a classification algorithm is the solution. During our training process, we have utilized five different algorithms, including:

1. Logistic Regression: This algorithm is used for binary classification problems and estimates the probability of an event occurring based on input variables.
2. K-Nearest Neighbor (KNN): This algorithm classifies new data points based on the majority class of its k-nearest neighbor
3. Decision Trees: This algorithm creates a tree-like model of decisions and their possible consequences to classify new data.
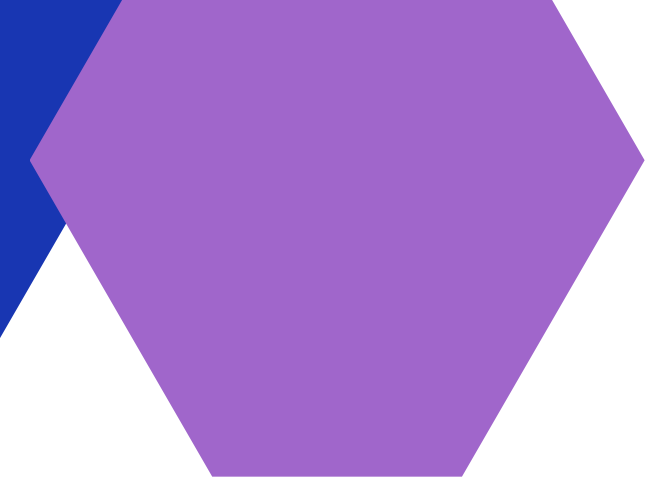
Algorithms

4.Random Forest: This algorithm builds multiple decision trees and combines their predictions to classify new data.

5.Naive Bayes: This algorithm uses Bayes' theorem to predict the probability of each class given the input variables, assuming that the input variables are independent of each other.

6-Deep Learning: This algorithm is a subset of machine learning that utilizes deep neural networks with multiple layers to learn features from the input data and make predictions. Deep learning models have shown to be highly effective in solving complex classification problems with large amounts of data.

Performance Of Each Algorithm

ALGORITHM	ACCURCY	RECALL	F1_SCORE	PRESICION	TIME
NAIVE BAYS	72%	74%	73%	74%	2S
LOGISTIC REGRESSION	77%	78%	73%	74%	3.3S
KNN	90.19%	92%	90%	90%	44S
DEEP LEARNING	93%	93%	92%	92%	2.5H
DESICION TREE	95%	95%	95%	94%	2S
RANDOM FOREST	97%	96%	97%	96%	54S

Conclusion

The impact of AI in healthcare is significant and has the potential to revolutionize the way healthcare is delivered, leading to improved patient outcomes, reduced healthcare costs, and increased efficiency.

Heart Disease
Predicting

THANKS!

We hope this presentation was insightfull