



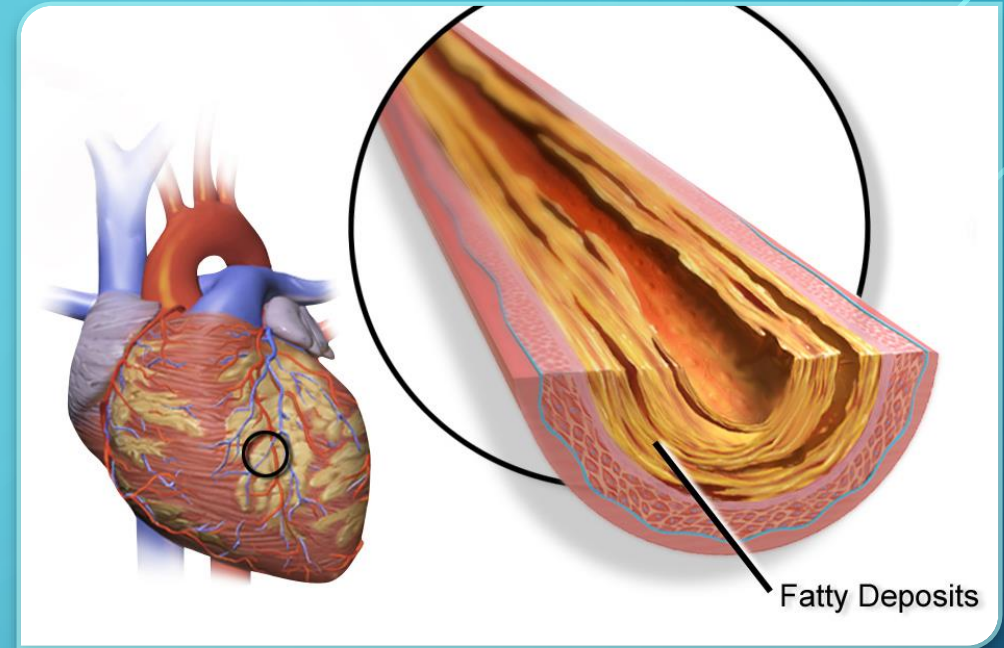
NEURAL NETWORKS IN HEART DISEASE DETECTION

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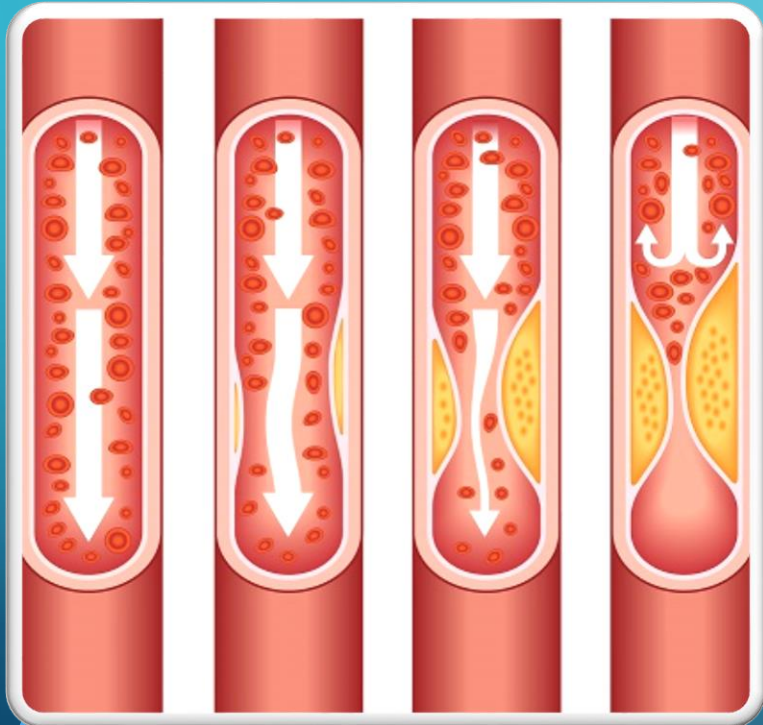
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INTRODUCTION

- Heart supplies blood to different parts of body
- Heart is a muscle (myocardium), so it itself needs blood to function
- Arteries that carry blood to the myocardium are called coronary arteries.
- Coronary arteries can get blocked, in general called Coronary Heart Disease (CHD)



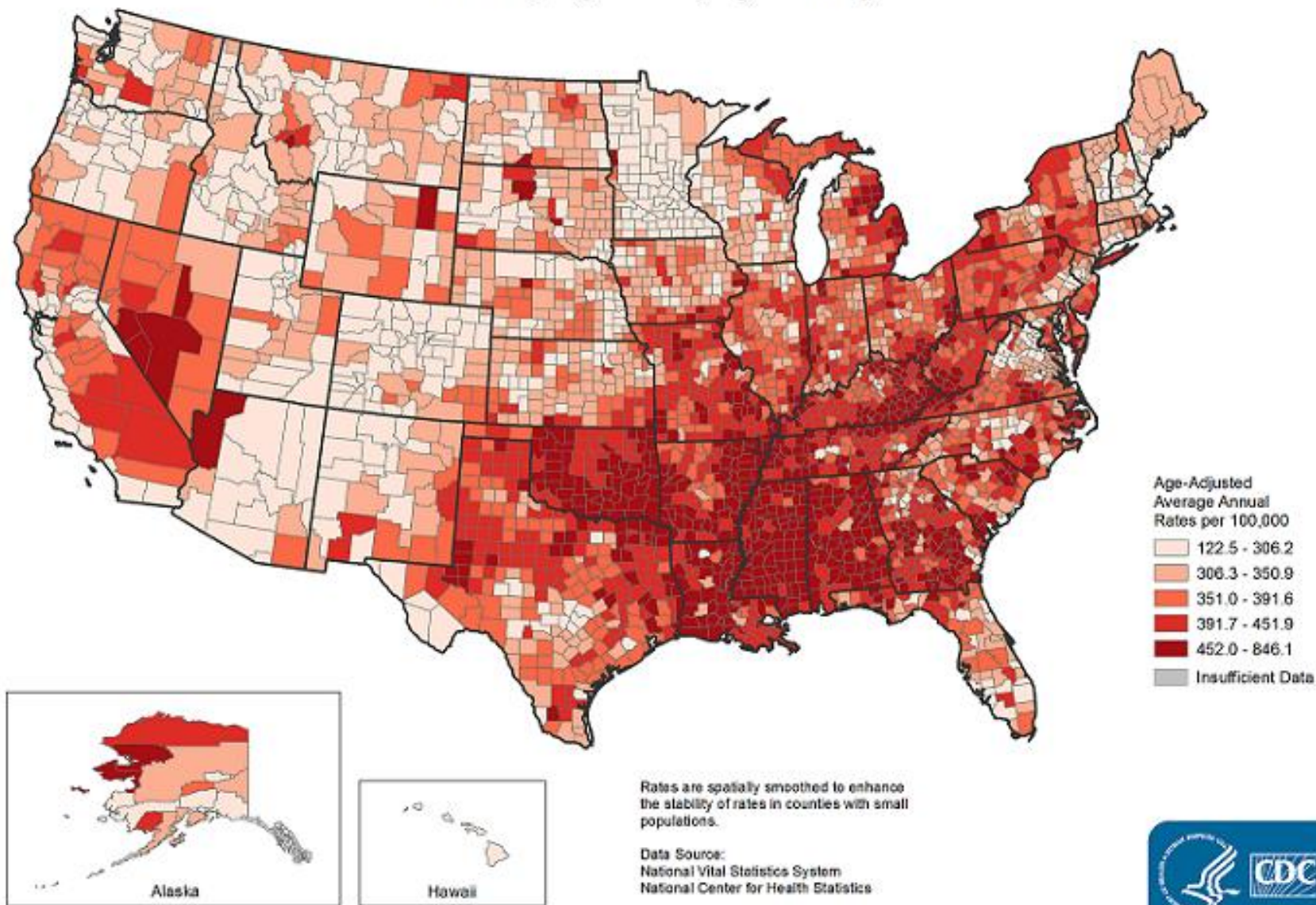
MOTIVATION



- About 610,000 people die in the United States due to heart diseases every year.
- That's about 1 in every 4 deaths
- Coronary Heart Disease (CHD) is the most common type of heart disease.
- CHD causes more than 370,000 deaths annually.
- Modern Machine Learning algorithms, combined with powerful hardware have become sophisticated enough to aid CHD detection.



Heart Disease Death Rates, 2008-2010 Adults, Ages 35+, by County



PROJECT GOALS

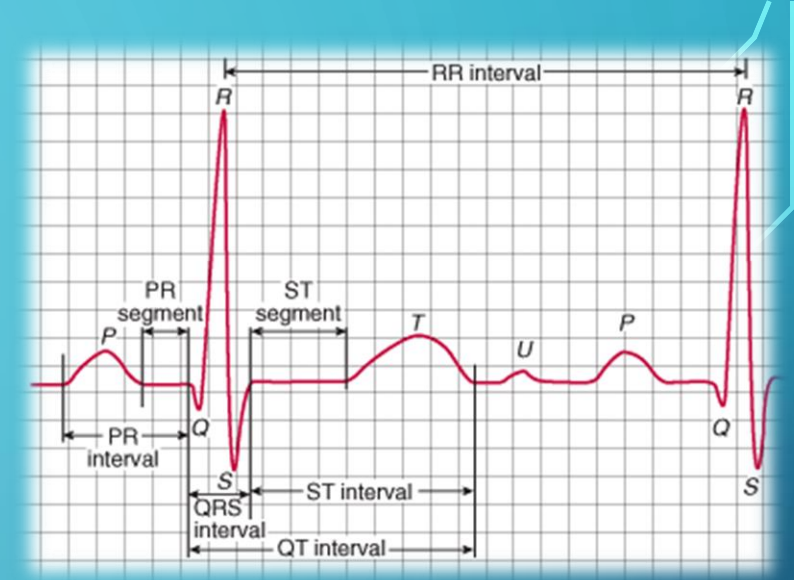
- Predict if a patient will get heart disease or not using the UCI database
- Compare the performance of different algorithms
- Algorithms used are K-Nearest Neighbor, Backpropagation, Decision Tree and Radial Basis Function.

UCI DATABASE

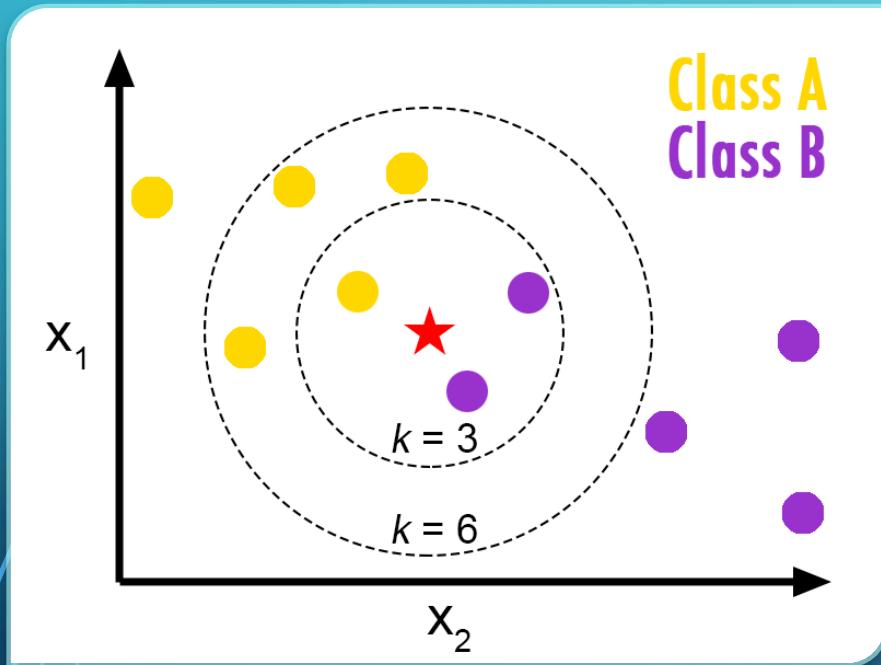
- Very comprehensive database which contains data from different parts of the world.
- Provides many attributes which records many parameters that checks the health of the heart
- Provides ample number of samples

ATTRIBUTES

- 10 attributes used
- Age, Sex, Chest pain type, Resting blood pressure, Cholesterol, Blood sugar, Resting ECG, Maximum heart rate, Exercise induced angina (chest pain) and ST depression induced by exercise.

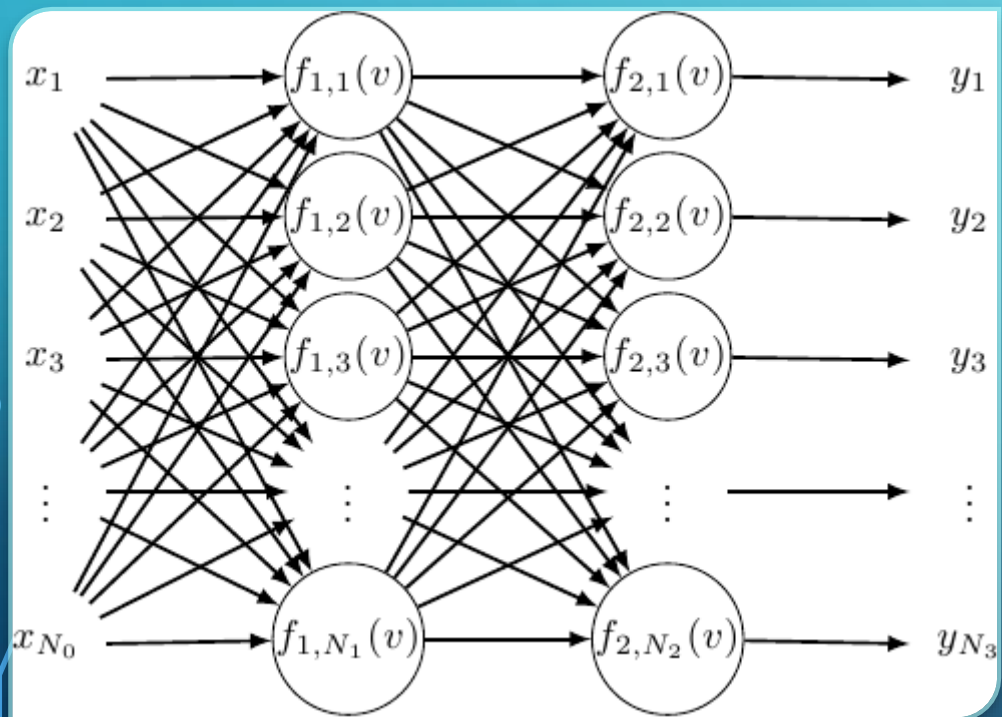


K-NEAREST NEIGHBOR

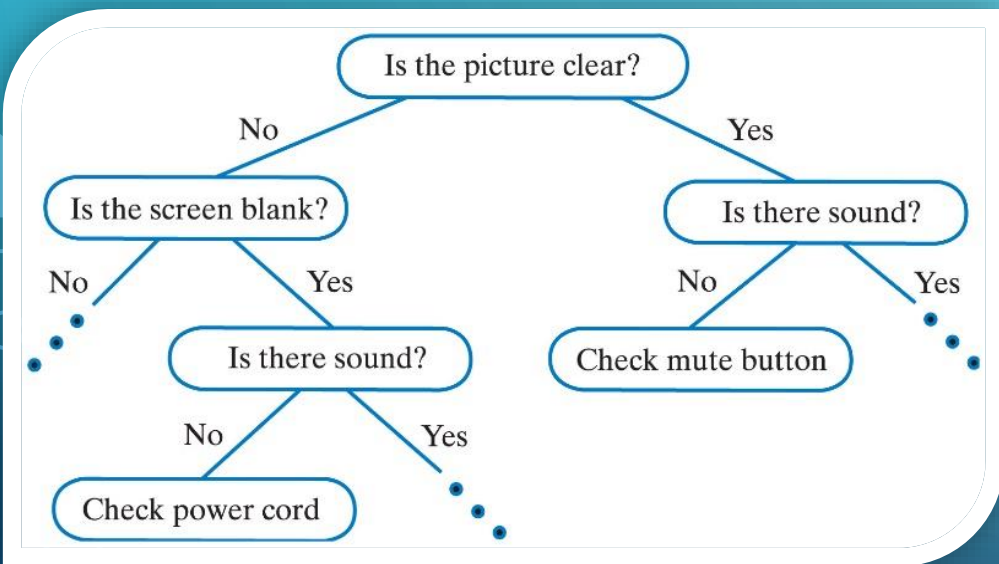


- Find the number of k nearest values corresponding to the new observation.
- Find which attribute has the maximum frequency among them.
- The predicted output will be the one with the maximum frequency
- The algorithm optimizes the value of k and the distance function to give the best results.

BACKPROPAGATION



DECISION TREE



- Grow a decision tree based on the input values.
- Cross check with testing data

RADIAL BASIS FUNCTION