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career transition simplified

HOW CAN **WE USE MACHINE LEARNING IN** FITNESS - CASE STUDY BY BEPEC

**"Obesity is very easy to catch – They can't run very fast "**

Case Study (Obesity)

Obesity is a complex disease involving an excessive amount of body fat that it may have an adverse effect on health. It is defined by body mass index (BMI) and further evaluated in terms of fat distribution via the waist–hip ratio and total cardiovascular risk factors, such as heart disease, diabetes, high blood pressure and certain cancers.

There are many reasons why some people have difficulty avoiding obesity. Usually, obesity results from a combination of inherited factors, combined with the environment and personal diet and exercise choices.

The good news is that even modest weight loss can improve or prevent the health problems associated with obesity. We can implement some methods like Dietary changes, increased physical activity and behaviour changes can help you lose weight.
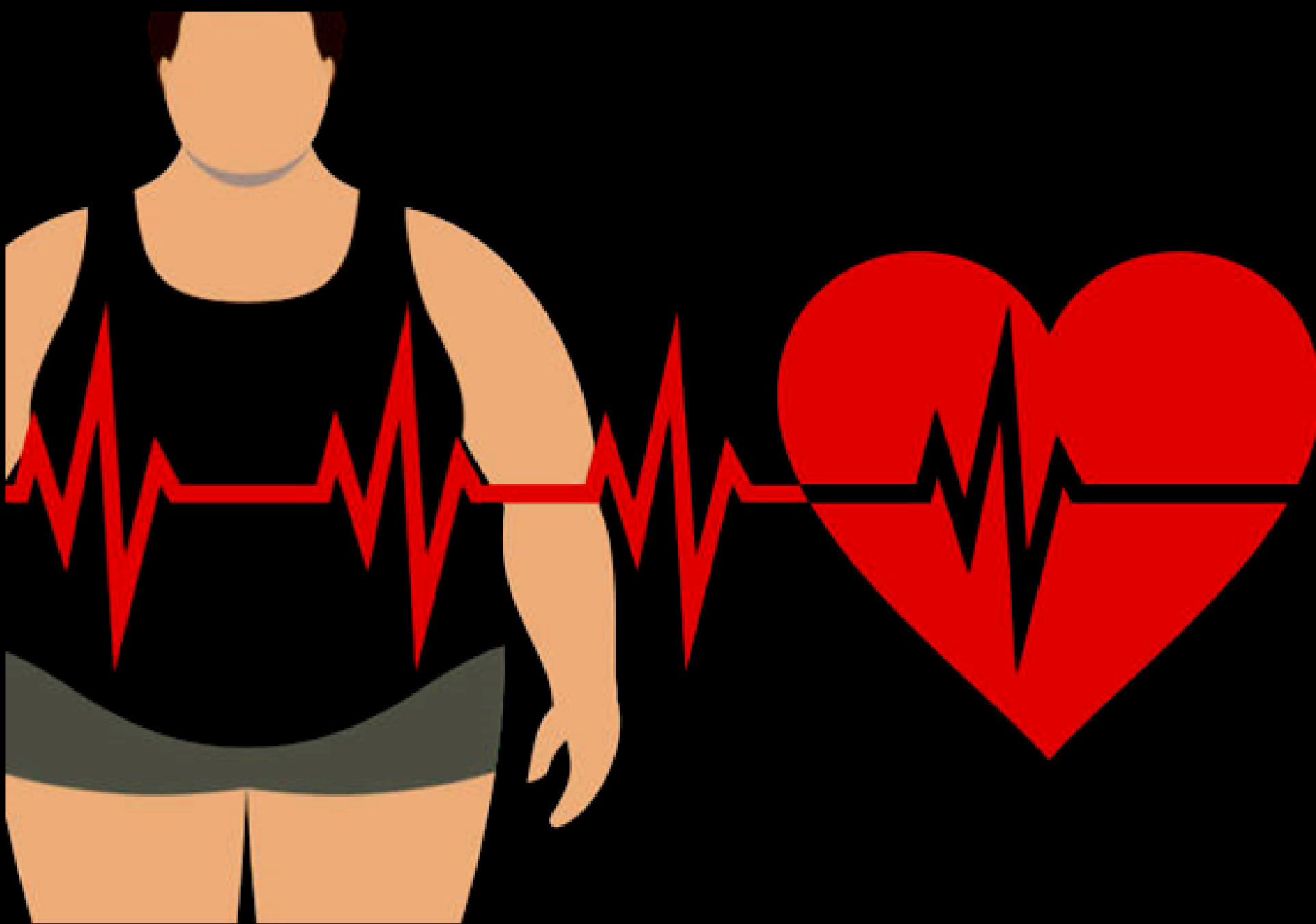
1.Heath Risk

You can always take precaution before it get worse .

Transformation does not start with someone else changing you; transformation is an inner self reworking of what you are now to what you will be. To transform yourself, you don't need to do big things. Just do small things in big way. Transformation will follow you!

Transforming your body not only improve your health risk it can also improve your mind (learning and thinking).For achieving that regular aerobic exercise is recommended. See if this transformation motivate you so we will not need to go further studying about predicting obesity Health Risk.

2.Kanth Sir .

Predicting Obesity Health Risk
 It is very easy to spot a obese person but determining the cause and health risk the person is going to face from obesity is tough . Three machine learning algorithms for nonlinear regression can be implemented: support vector machines, random forests and extreme gradient boosting.

Let's dig deep and understand how these machine learning algorithms **support vector machines, random forests and extreme gradient boosting** can help in reducing the risk factor .First Understand about these , before going the path of algorithms we will understand **Machine Learning** .

"Machine Learning: A computer is able to learn from experience without being specifically programmed."
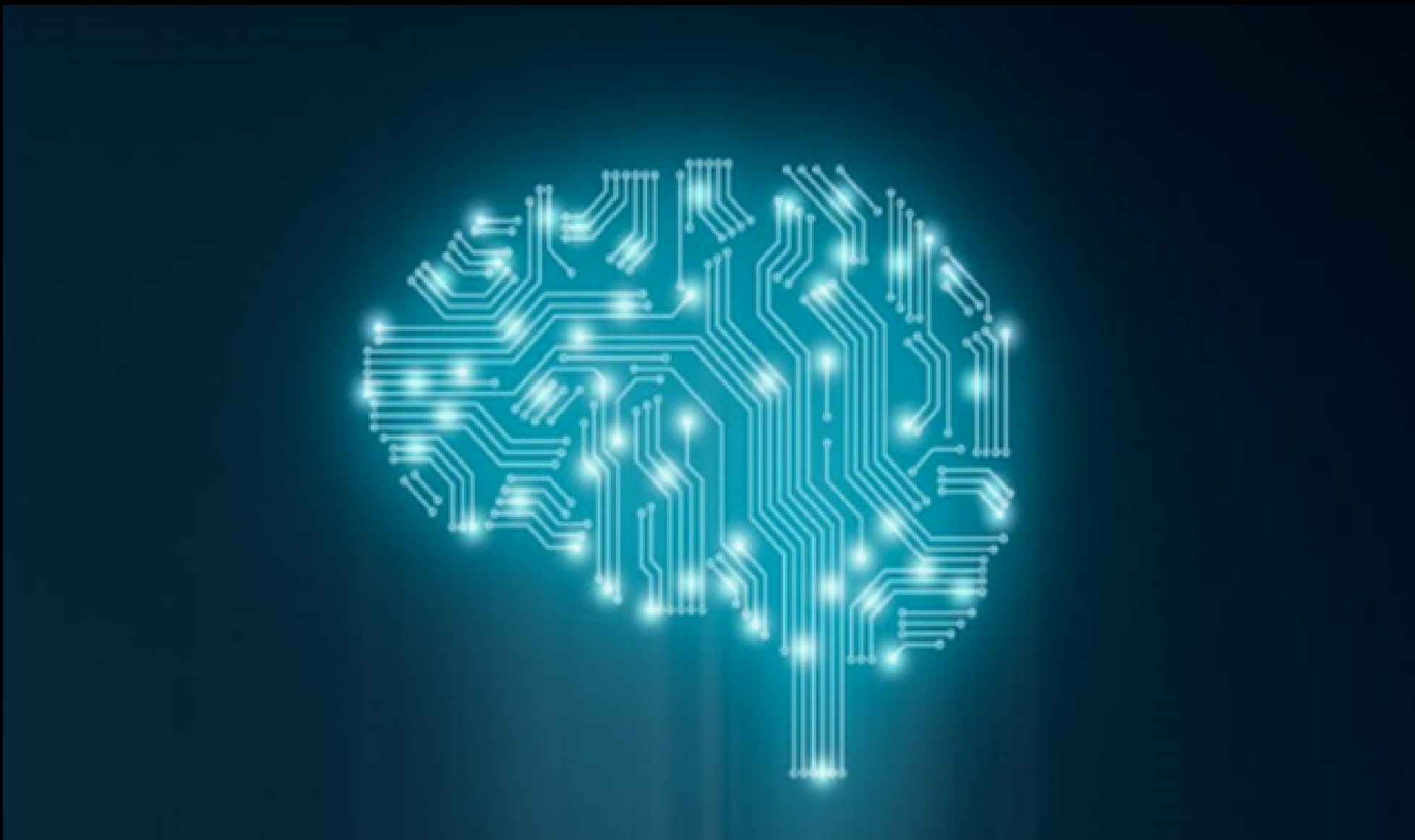
Machine Learning .
 Again going with the layman's terms Machine learning is the subset of Artificial Intelligence provides us statistical tool to explore data .
In Machine learning -:
- The system is able to make prediction or decision based on past data .
- Needs only small amount of data .
- Works well with low end computers .

Netflix, Siri, and websites that recommend items based on other people's purchase behavior. What do these have in common? These are real-world examples of machine learning being used. **Machine learning** is the process of teaching machines to recognize patterns by providing them data and an algorithm to work with the data. And it has helped a lot in the field of healthcare in a number of different ways.
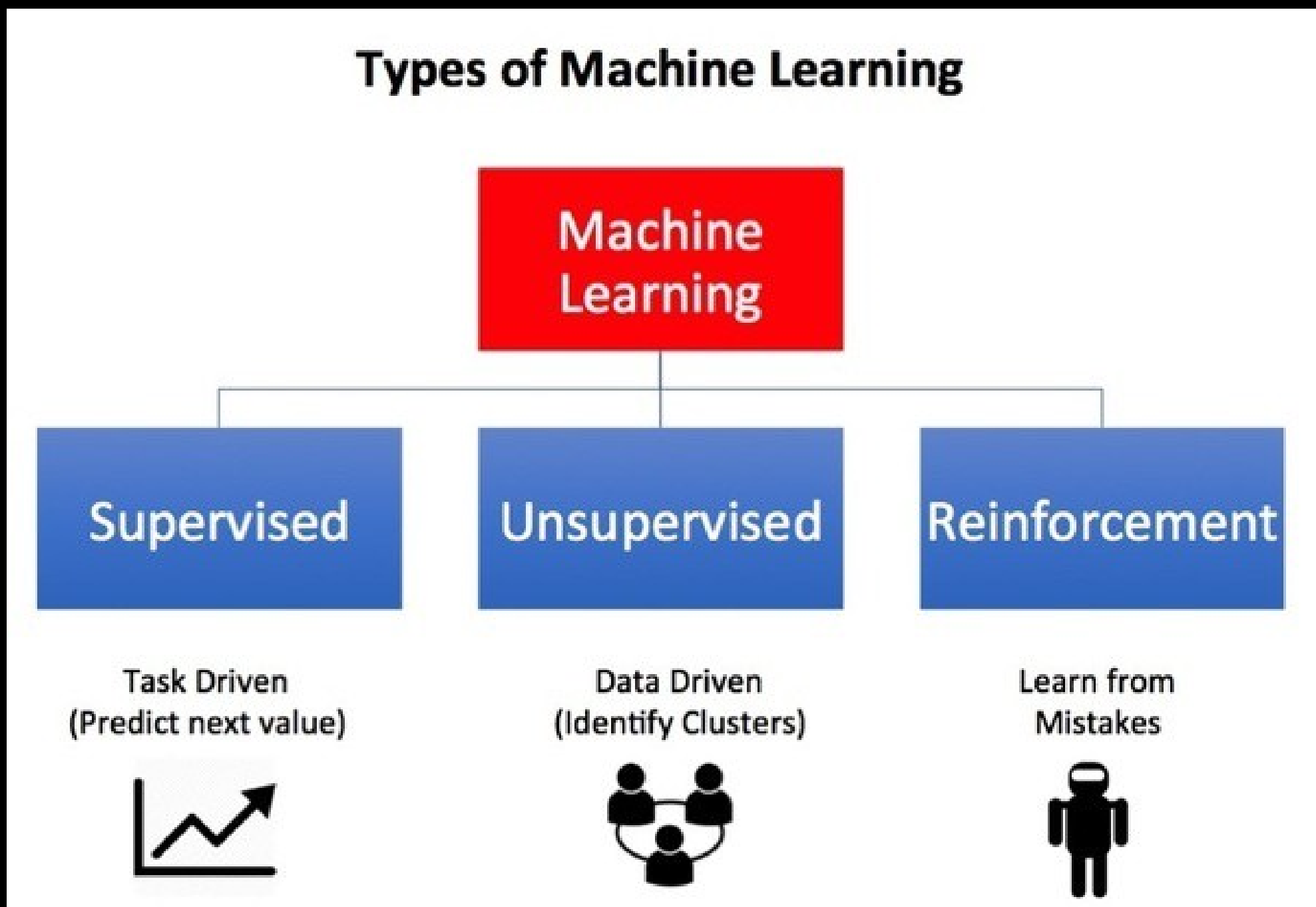

3. Machine Learning.

Many sectors are using machine learning; healthcare cannot stand behind! Google has developed an ML algorithm to identify cancerous tumours, Stanford is using it to identify skin cancer.

Types of Machine Learning:-
1. Supervised Learning(label data /past data)
2. Unsupervised Learning(clustering)
3. Reinforcement/Semi-Supervised Learning(no raw data is given as input instead reinforcement learning algorithm have to figures out the situation on their own.)

4. Types of Machine learning.

Now , let's move on to understand how we reduce it with the help of machine learning and predict it.

Let's dig deep and understand how these machine learning algorithms support vector machines, random forests and extreme gradient boosting can help in reducing the risk factor .

Support Vector Machine

"Support Vector Machine" (SVM) is a supervised machine learning algorithm which can be used for both classification or regression challenges. However, it is mostly used in classification problems.

Support vector machine is highly preferred by many as it produces significant accuracy with less computation power. Support Vector Machine, abbreviated as SVM can be used for both regression and classification tasks. It is widely used in classification objectives.
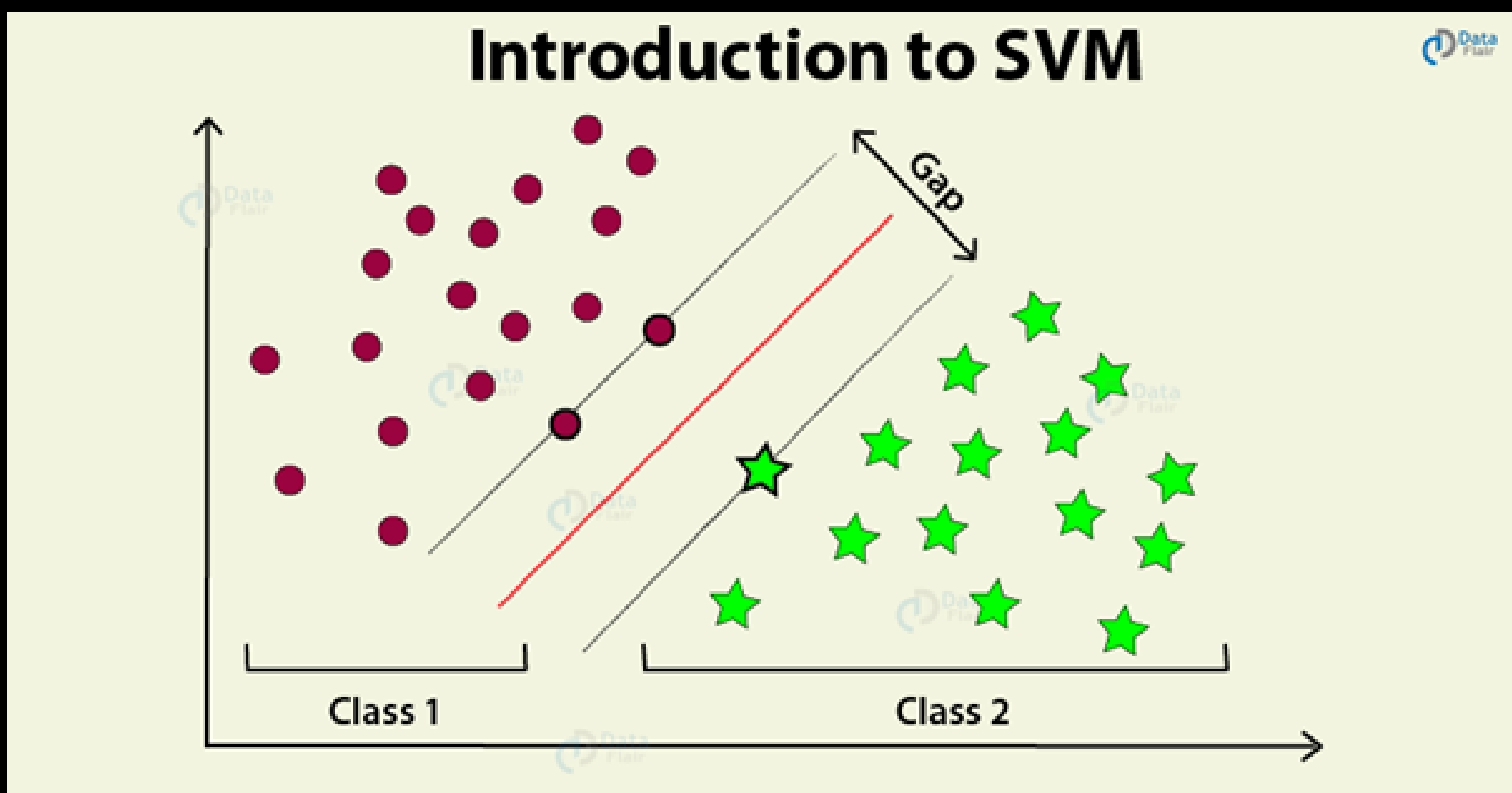
5. Support Vector Machine.

SVM classifier is used, as the classification accuracy, sensitivity and specificityof the SVM algorithm is found to be high, thus making it a superior alternative for diagnosis. Support vector machine modelling is a promising classification approach for detecting persons with common diseases such as diabetes and pre-diabetes in the population. This approach should be further explored in other complex diseases using common variables.

Problem Statement

Heart failure(HF)

Heart Disease is one of the major concerns for society today. Obesity increases the risk of developing heart failure (HF).To study a heart disease suppose a data set is given and to model a classifier for predicting whether a patient is suffering from any heart disease or not. Data Analysis is also done based on age, gender,and health conditions.

Heart Disease Dataset
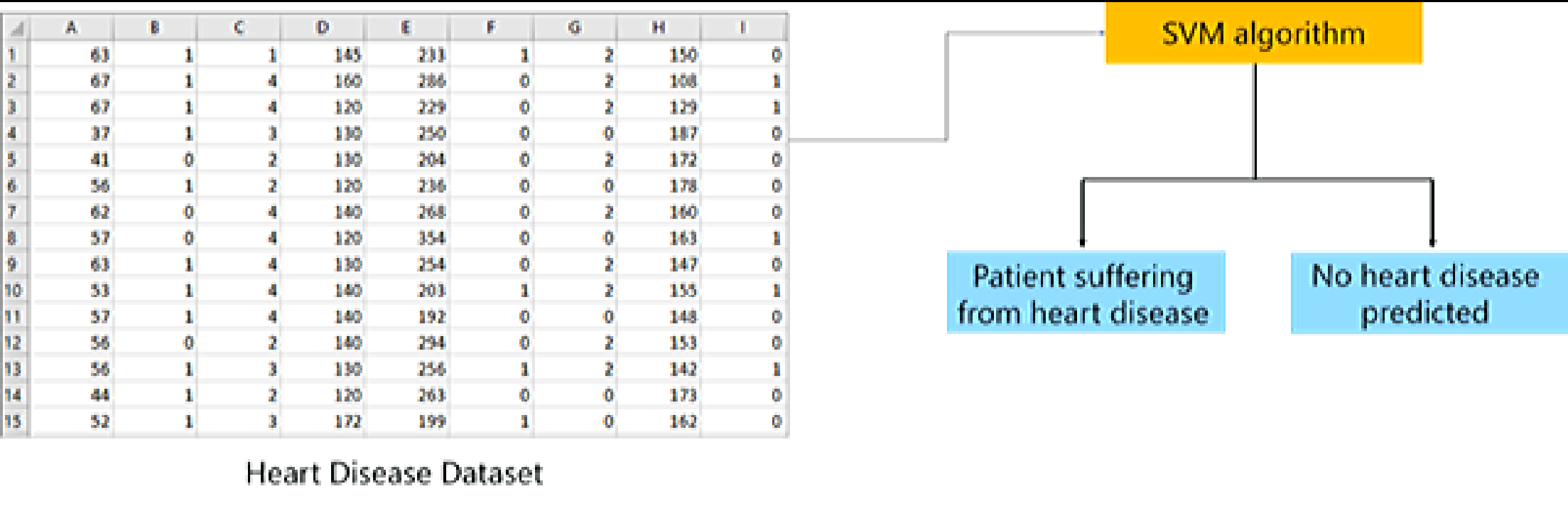
6. Data Set Example.

The data must involve **age , sex , blood pressure , blood sugar level , cholesterol , ECG , chest pain , depression** etc.
These all data is need as from the collection of data you will notice men are at greater risk of heart disease than pre-menopausal women and further more things

Approach

Python programming can be used in implementing code and different classification methods are applied such as (SVM , Naive , Bayes , Logistic Regression , Decision Tree , Random Forest , LightGBM ,XGboost).
For further approach of Data Analysis , Data Processing , Training.
Then we follow the basic rule of Data Science .

In this way Data can lower the risk of heart failure (HF). That's why we call "Data really powers everything that we do."

 Predicting obesity from food sales using machine learning. Three machine learning algorithms for nonlinearregression were implemented using purchase and obesity prevalence data from 79 countries: support vector machines, random forests and extreme gradient boosting. The proposed method was validated in terms of both the absolute prediction error and the proportion of countries for which the obesityprevalence was predicted satisfactorily. We found that the most-relevant foodcategory to predict obesity is baked goods and flours, followed by cheese and carbonated drinks.

From these predictions we can also conclude that the use of machine learningalgorithms quiet helpful in providing insight to cope with fighting (OBESITY).

Conclusion

OBESITY ∝ HEART FAILURE.
OBESITY ∝ DIABETES.

As obesity is directly proportional or the major cause of heart failure. The heart is an important organ of the human body. If the blood circulation is inadequate, the organs of the body i.e. brain and heart stop working and death occurs. Heart disease is a leading cause of death worldwide from past several years. So it is very important to predict Heart disease at an early stage to avoid human death. The importance of data mining in medical/healthcare domain is realized and numerous steps are taken to apply relevant techniques in the Disease Prediction. The parameter on which heart disease is mostly dependent is extremely susceptible and variant and obesity plays a major role in it. So after getting historical information in about the patient, heart disease can be predicted. Here, the proposed system predicts the heart disease based on the historical clinical data of patient using SVM (Support Vector Machine) algorithm. SVM is a model-free method that provides efficient solutions to classification problems without any assumption regarding the distribution and interdependency of the data. SVM classifier is used, as the classification accuracy, sensitivity and specificity of the SVM algorithm is found to be high, thus making it a superior alternative for diagnosis. Data Analysis is also done based on age, gender, and health conditions.
"A fit healthy body that is the best fashion statement"

Recap

What I have presented here are the insights of Applications of Machine Learning in Healthcare: Case Study (Obesity). I hope you learned something today. Always
remember that solid business questions, clean and well-distributed data always beat fancy models. Feel free to leave a message if you have any feedback, and share with anyone that might find this useful.