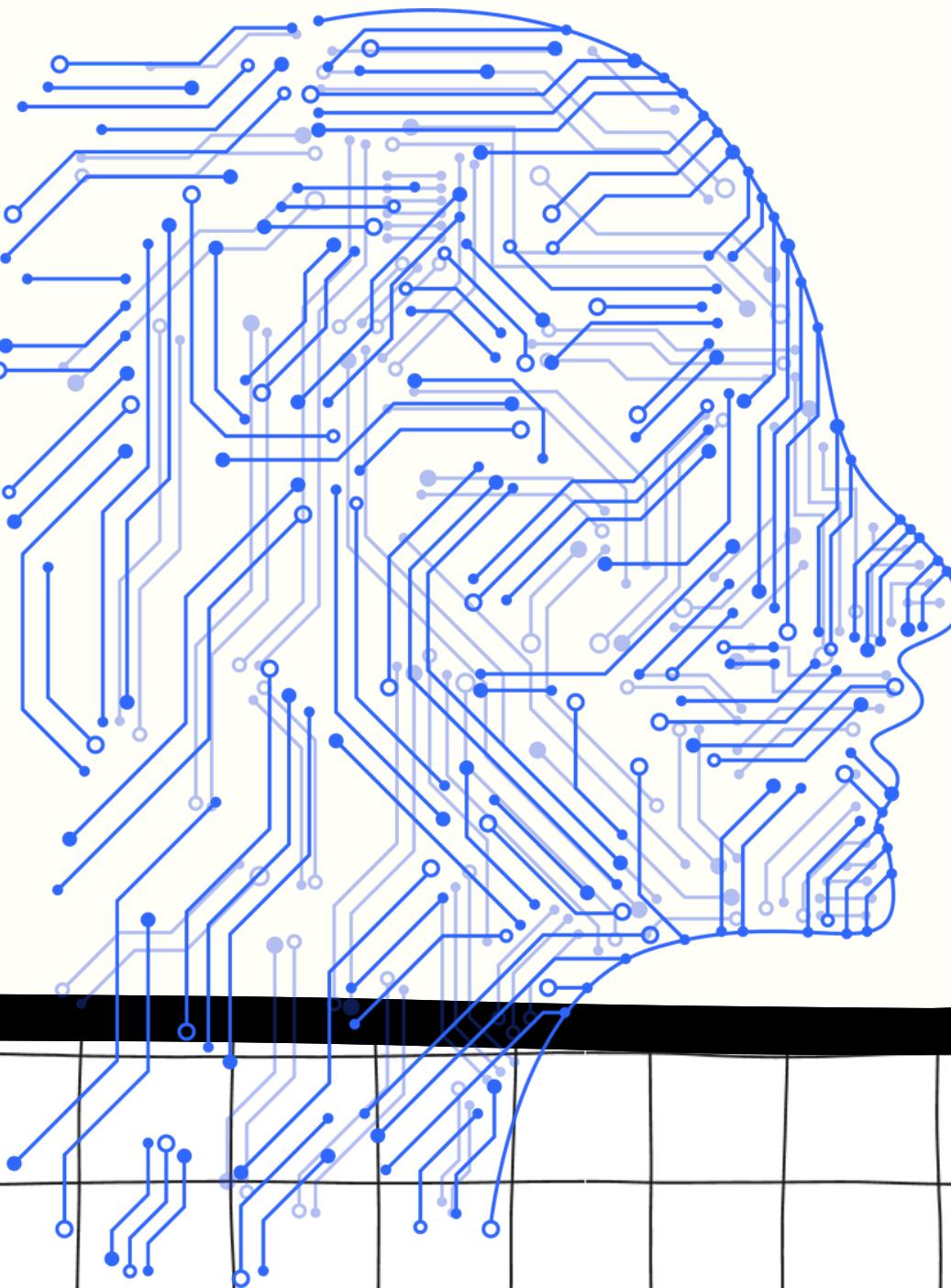
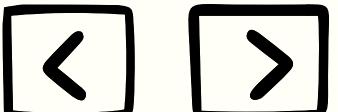


# Machine Learning

Lecture:1



# Contents



01

Why Machine  
Learning

02

What is Machine  
Learning

03

What Machine  
Learning does

04

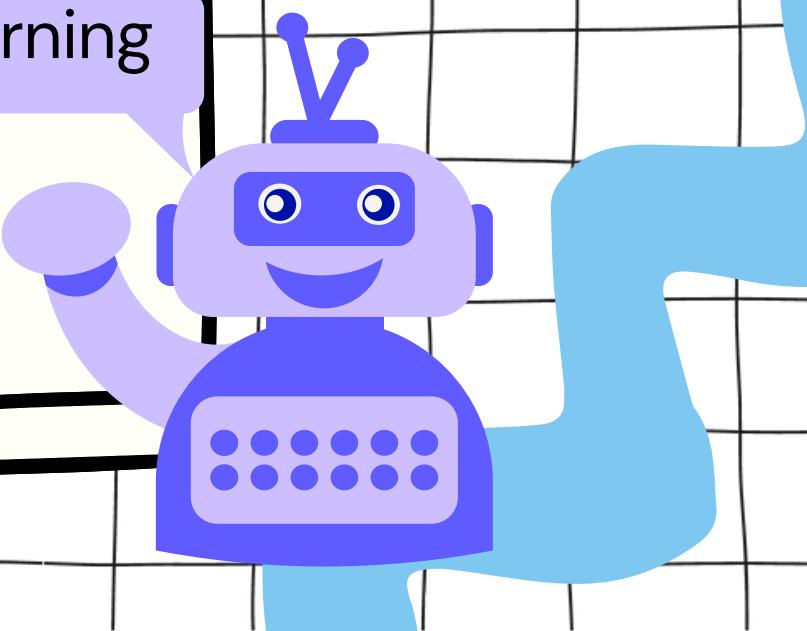
Types of Machine  
Learning

05

Supervised  
Machine Learning

06

Unsupervised  
Machine Learning



# Why Machine Learning?



Because Machine  
can drive your  
car for you..

# Why Machine Learning?



Because Machine  
can detect eye  
diseases..

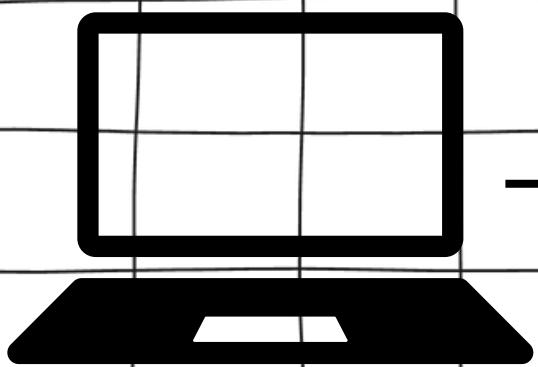
# why Machine Learning?



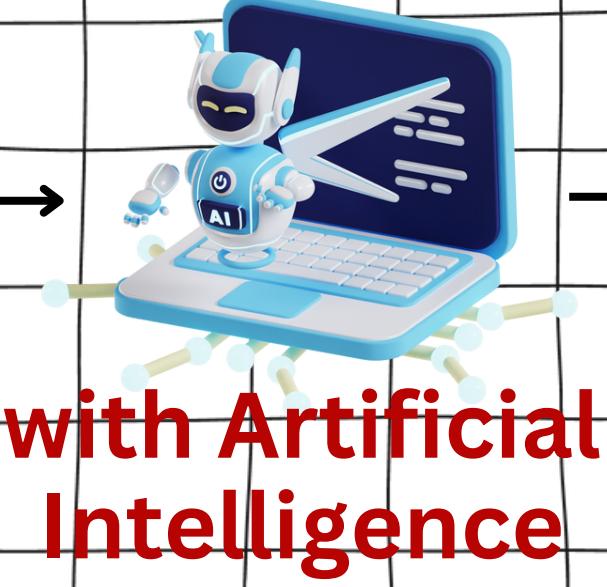
Because Machine  
can unlock your  
phone with your  
face.

# What is Machine Learning?

Machine Learning is the science of making the computers learn and act like humans by feeding data and information without being explicitly programmed.

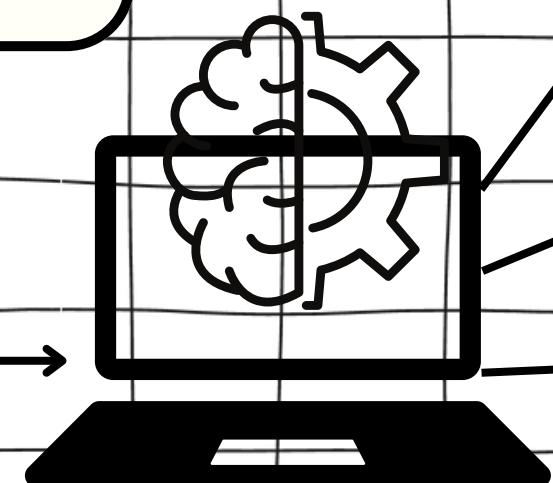


Ordinary  
System

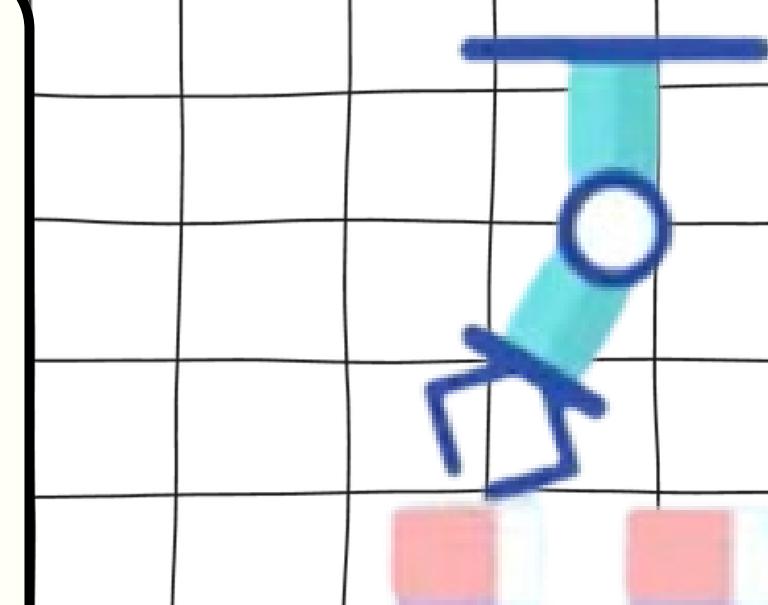


with Artificial  
Intelligence

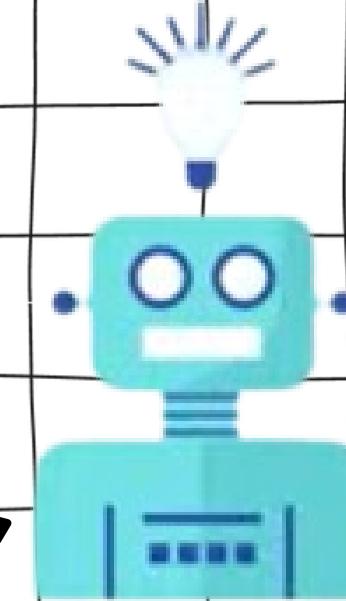
Machine  
Learning



Learn



Predict

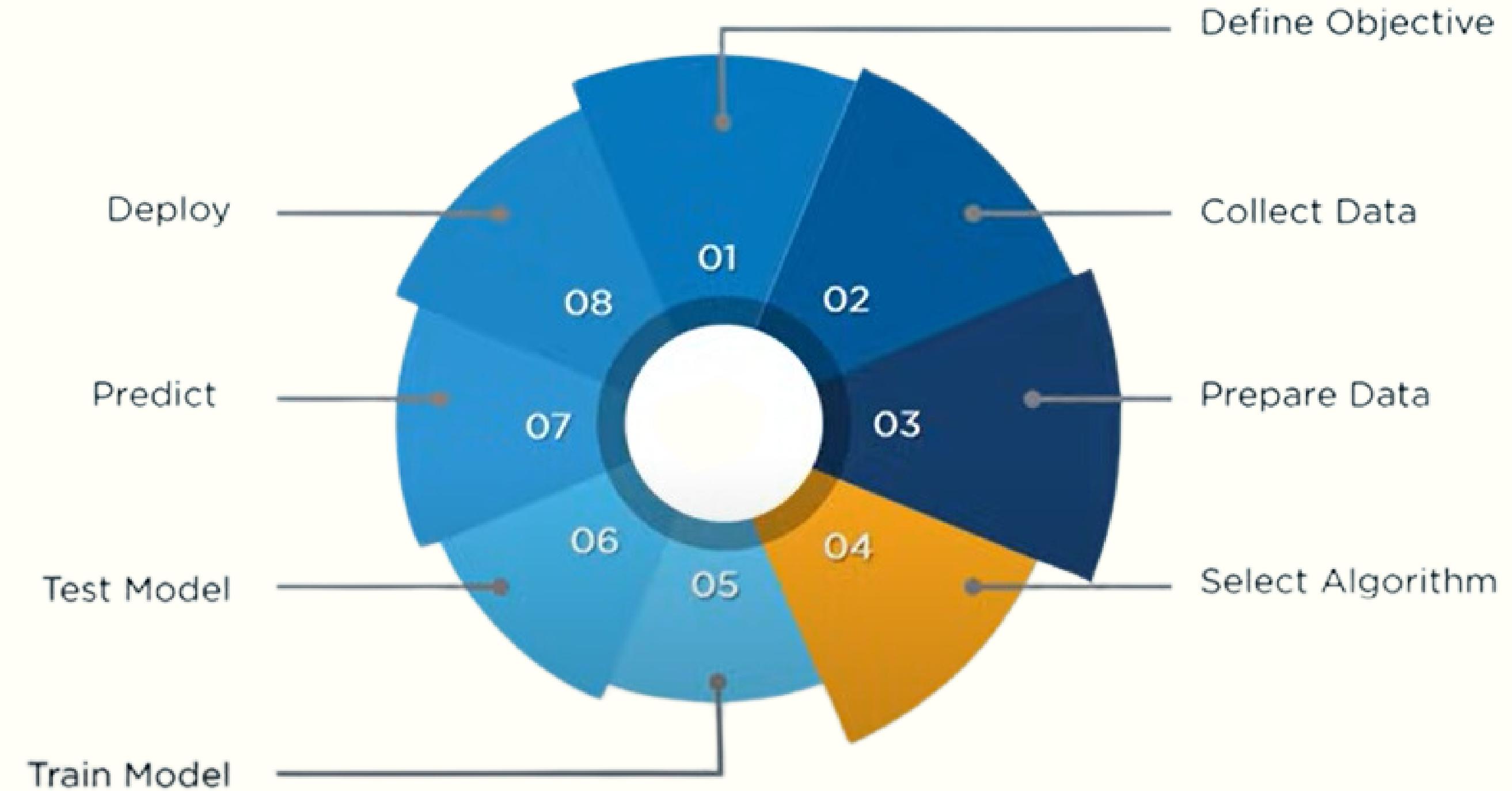


Improves

...

# What is Machine Learning?

...



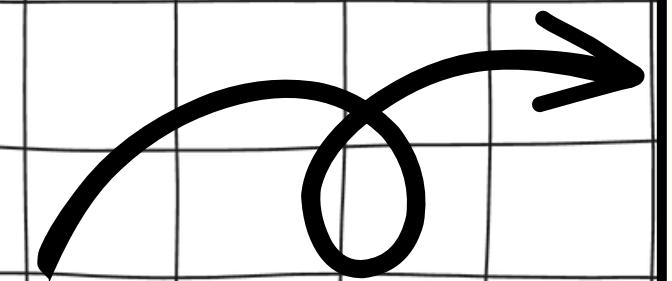
*Do you want to  
predict a category?*

What Machine  
Learning  
does??

The stock price will  
increase or decrease. It can  
goes **down** or **up** that  
means **0 or 1**



*Do you want to  
predict a quantity?*



...

**What Machine  
Learning  
does??**

*Predict the age of a  
person based on height,  
weight, health and other  
factors*

***It is called  
Regression.***



What Machine  
Learning  
does??

*Finding groups of customers with similar behavior given a large database of customer containing their demographics and past buying records.*

*Do you want to discover structure in unexplored data?*

*It is called Clustering.*

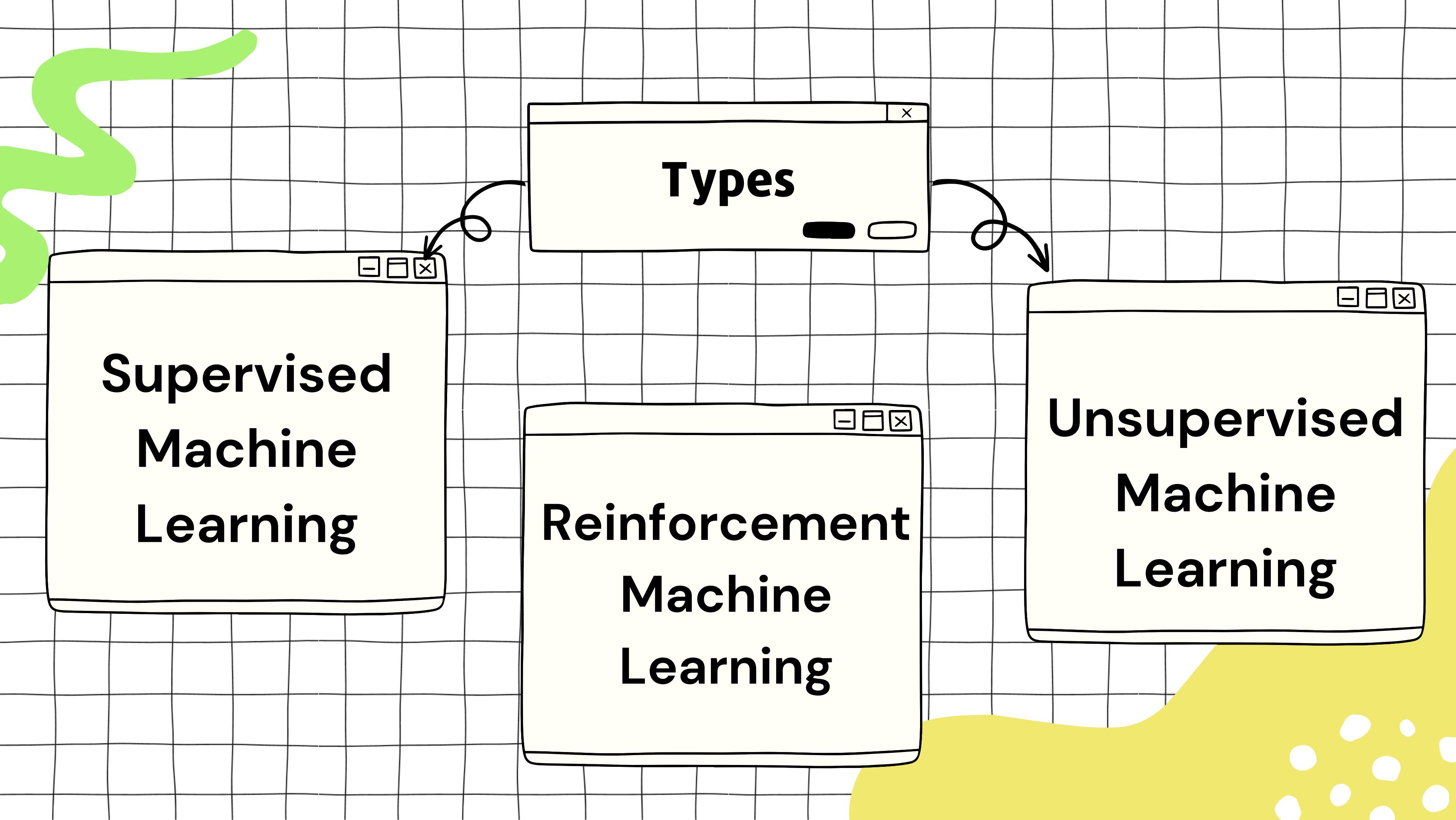


# Supervised Machine Learning

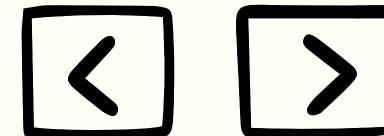
# Reinforcement Machine Learning

## Types

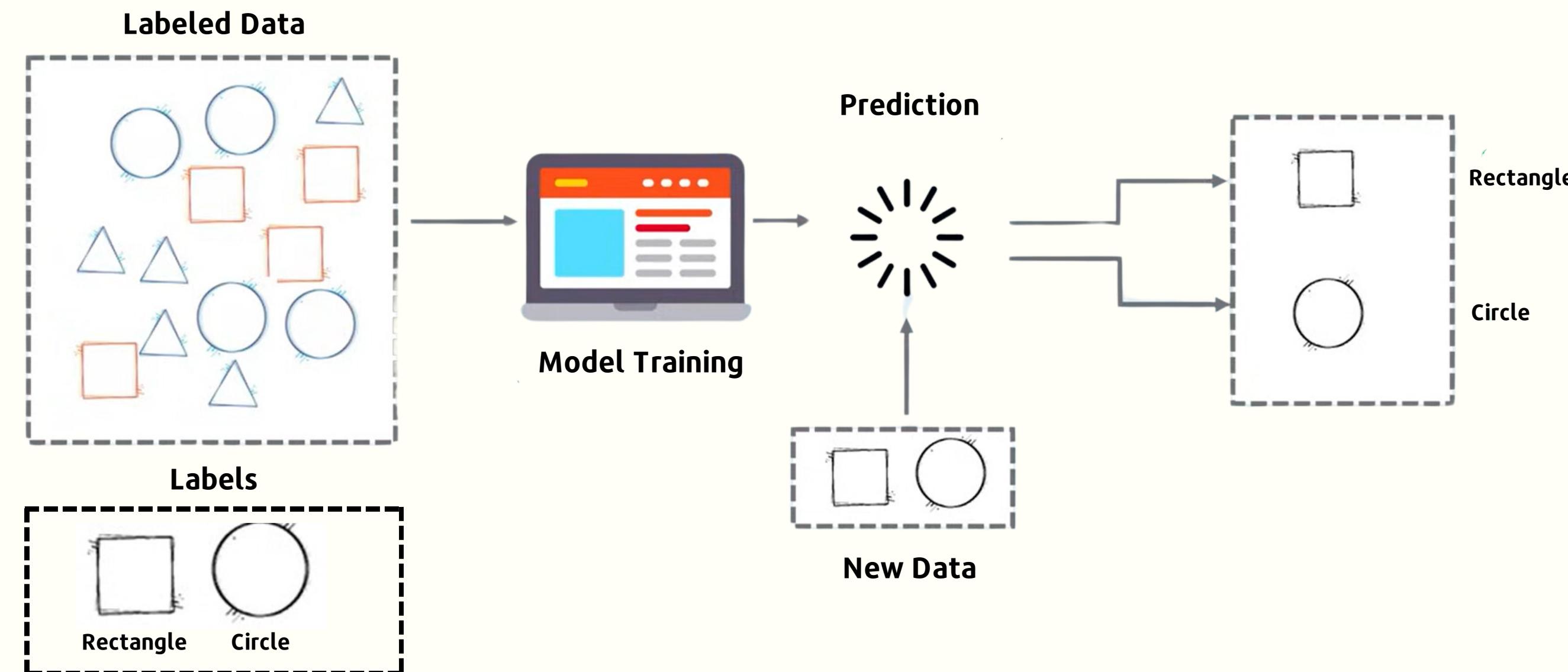
# Unsupervised Machine Learning

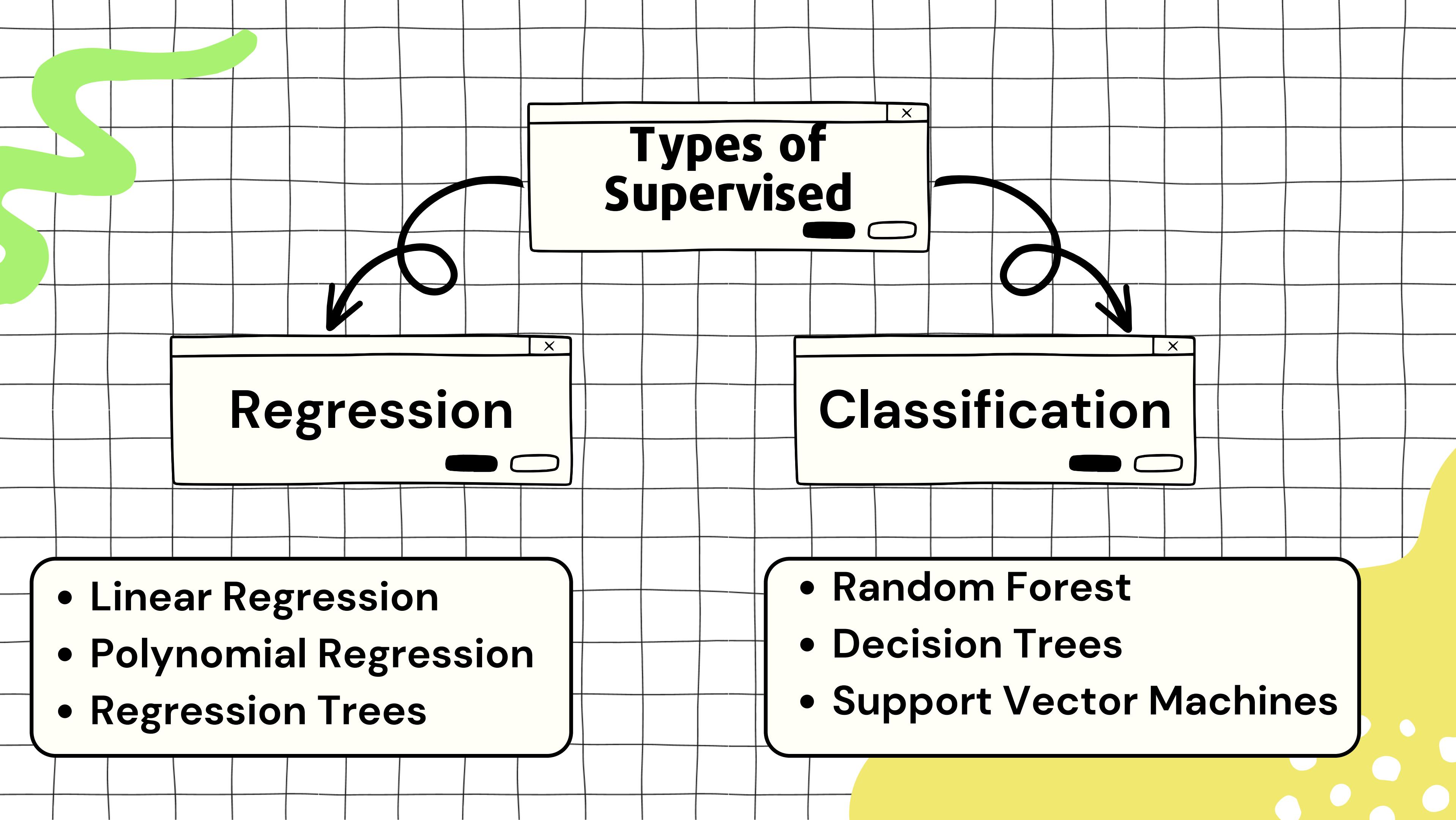


# Supervised Machine Learning



In supervised learning, we train the machine using data which is well “labeled” i.e. some input data is already tagged with correct answer and this algorithm learn from labeled training data that helps us to predict further outcomes.





- Linear Regression
- Polynomial Regression
- Regression Trees

- Random Forest
- Decision Trees
- Support Vector Machines

## Advantages of Supervised Learning



...

*We have full control over  
what the machine is learning?*

*We can easily test and debug  
our model.*

*We can determine number of  
classes.*

## Disadvantages of Supervised Learning

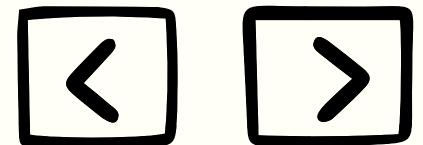


*Have limited scope.*

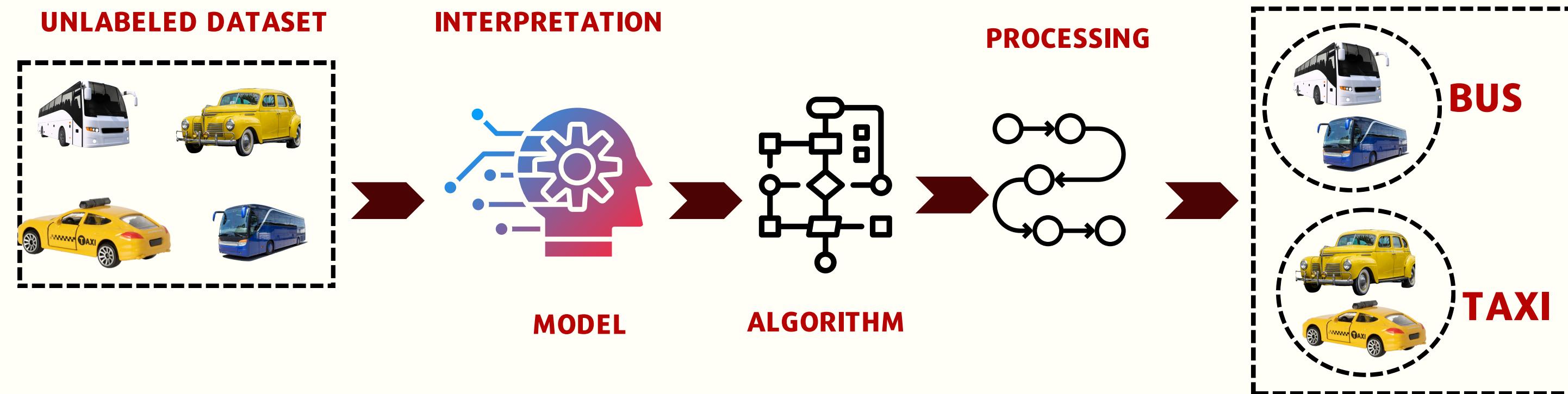
*Collecting labeled dataset is  
expensive and time consuming.*

*Wrong prediction.*

# Unsupervised Machine Learning



In Unsupervised learning, we train the machine using data which is “unlabeled” and models itself to find the hidden patterns and insights from the given data. There is no label in the data set.

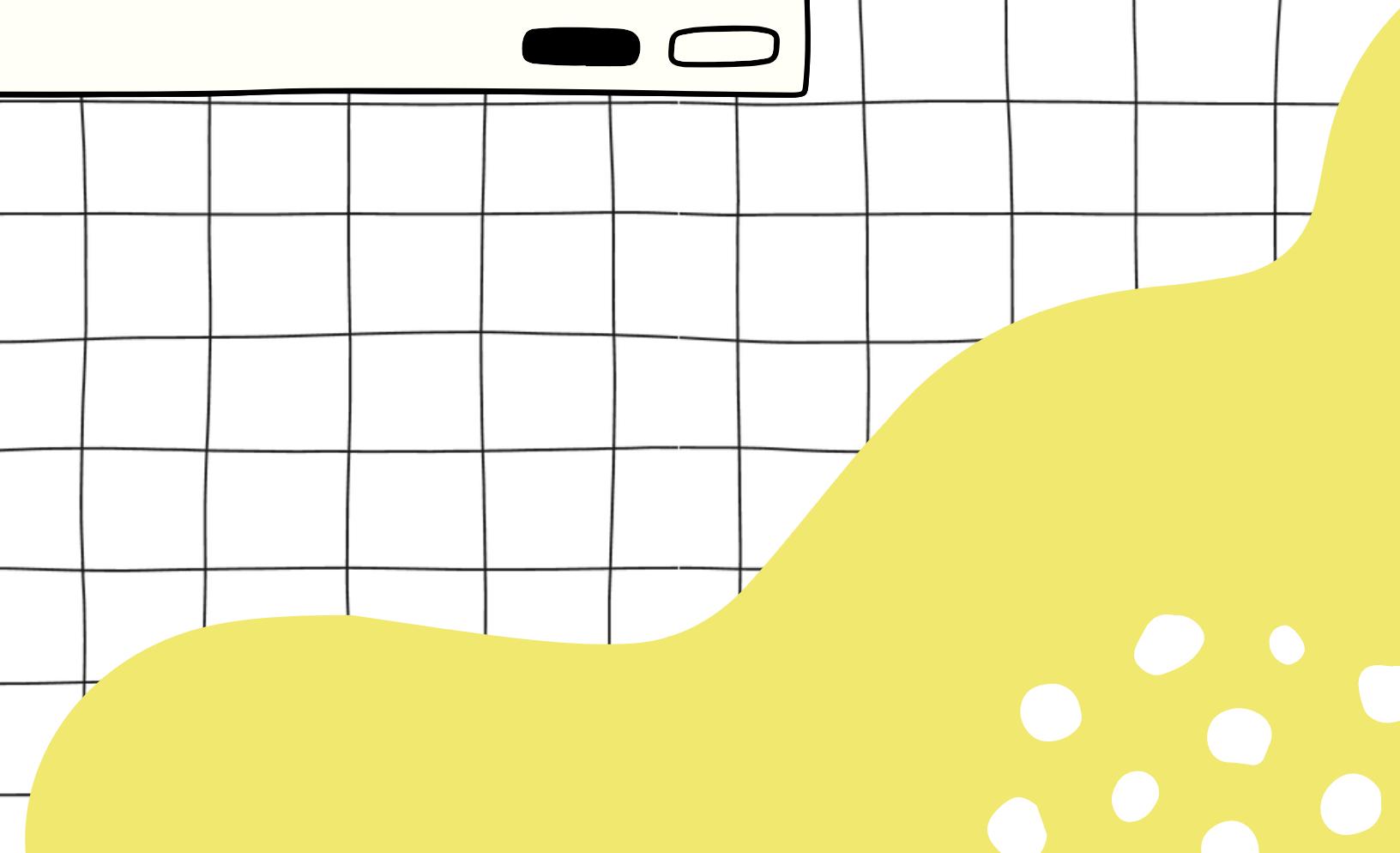
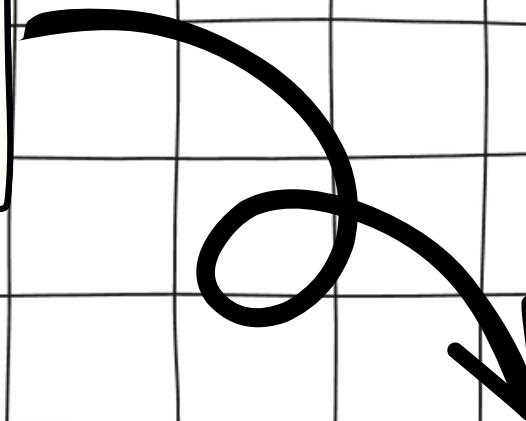
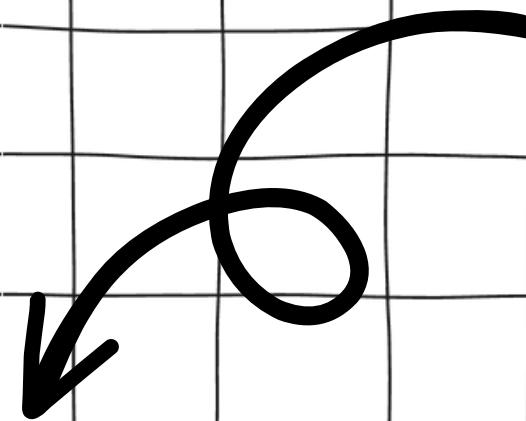
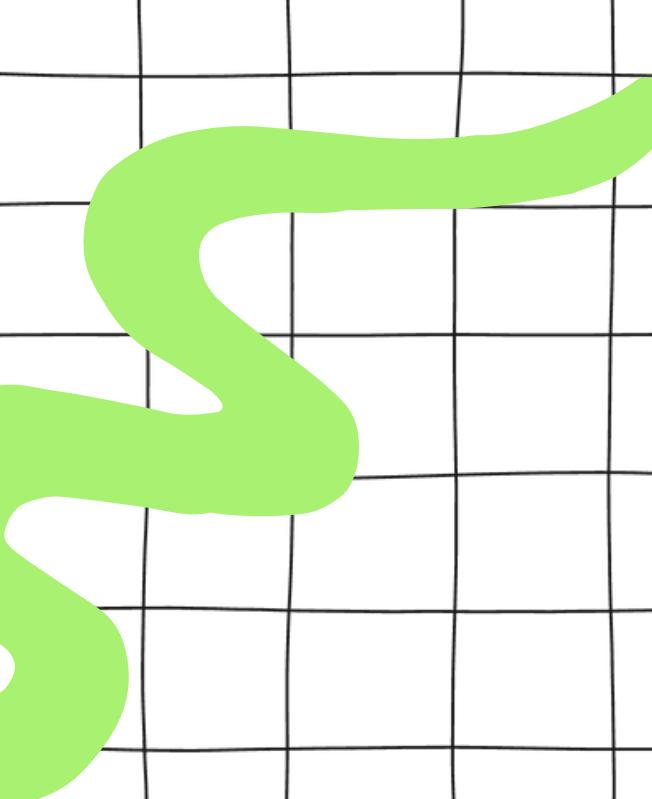


The goal of unsupervised learning is to group unlabeled data according to the similarities, patterns and differences without any prior training of data.

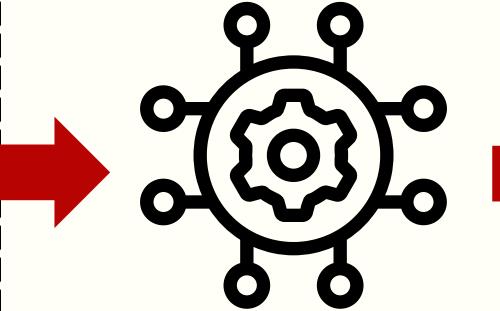
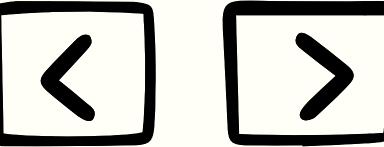
# Types of Unsupervised

Clustering

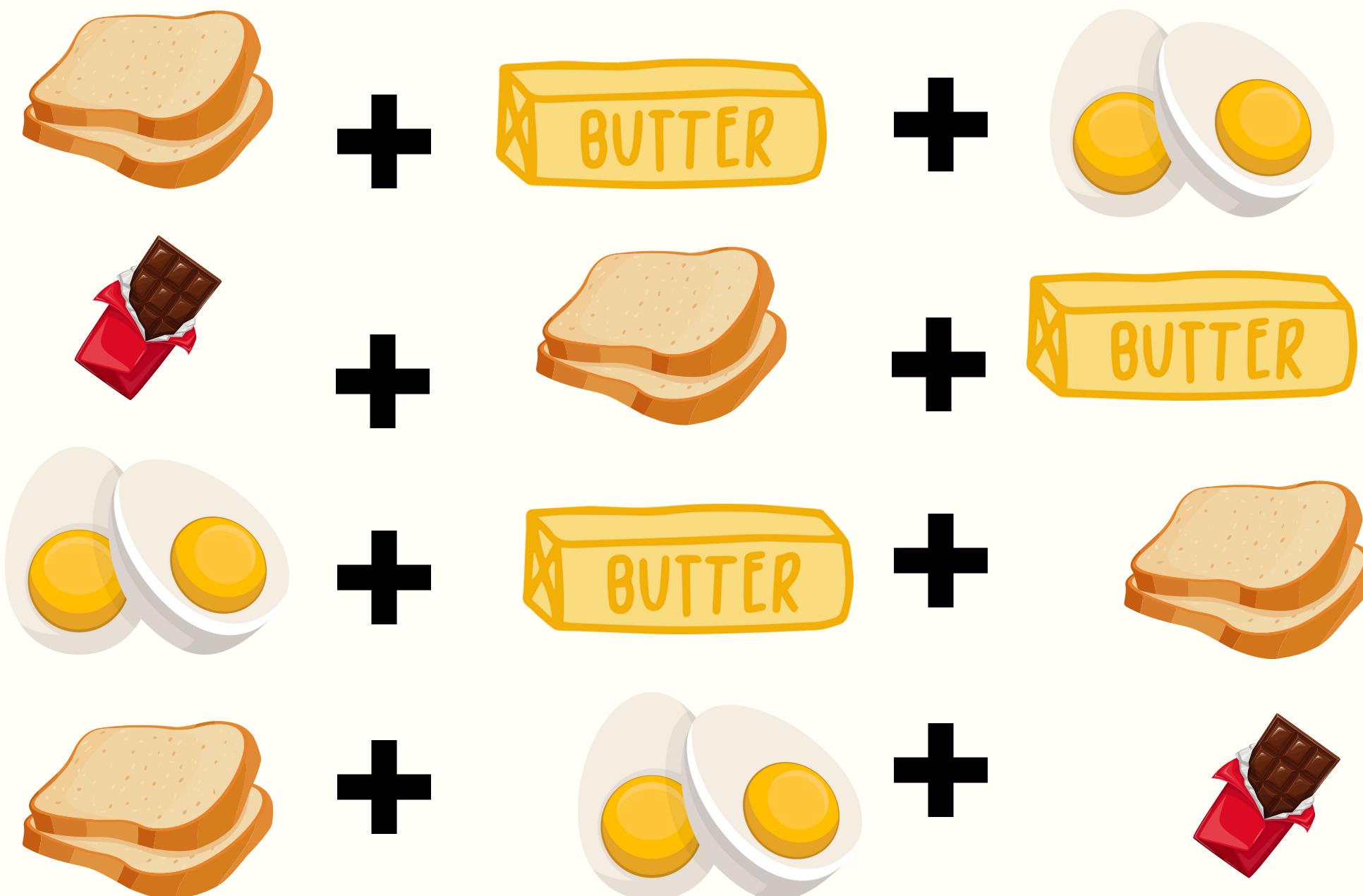
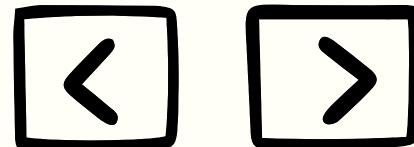
Association



# Clustering



# Association



**The most frequently brought items are**



# Algorithms of Unsupervised Learning

...

*K-means Clustering*

*KNN (K-Nearest Neighbor)*

*Hierarchical Clustering*

*Neural Networks/ Deep Learning*

*Single Value Decomposition*

*Distribution Models*

*Principal Component Analysis*

## Advantages of Unsupervised Learning

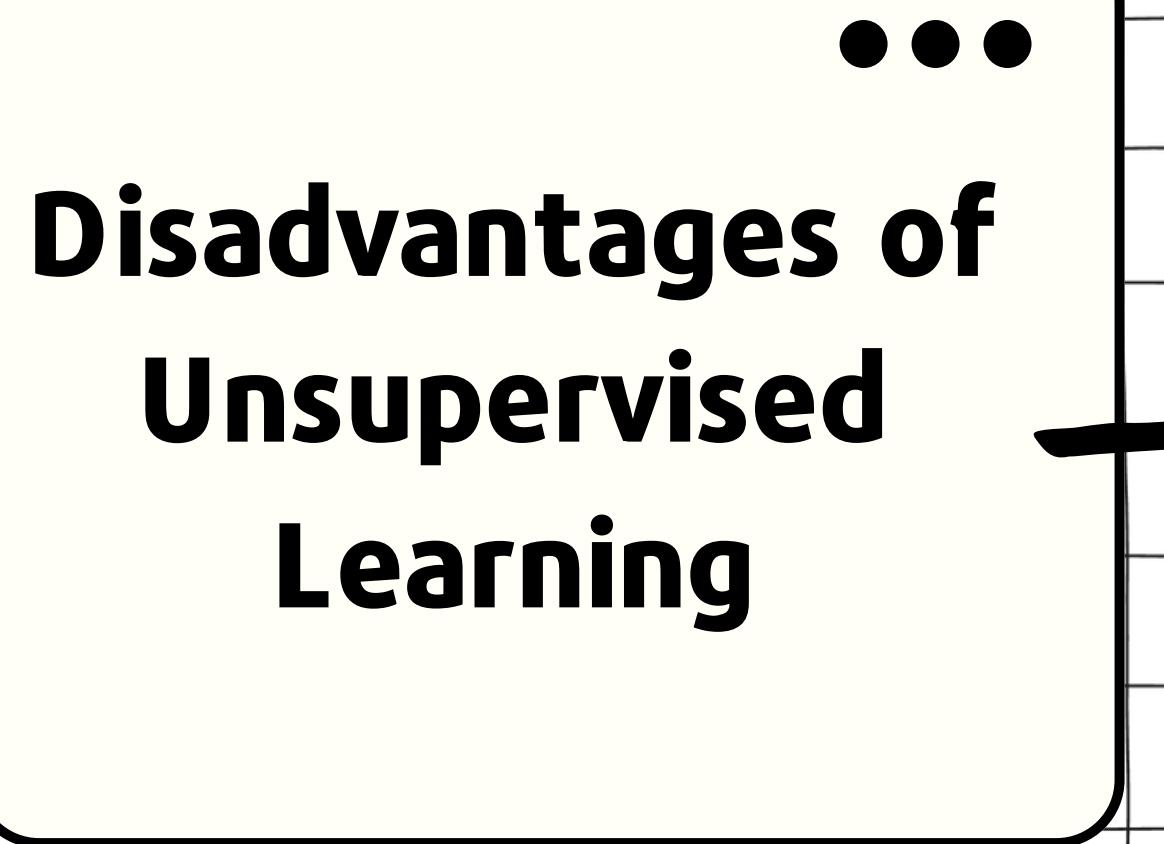


*It is used for more complex tasks.*

*It is helpful in finding patterns in data.*

*Saves a lot of manual work and expense.*

## Disadvantages of Unsupervised Learning



...

*Less accuracy.*

*Time consuming.*

*More the features and more the  
complexity.*