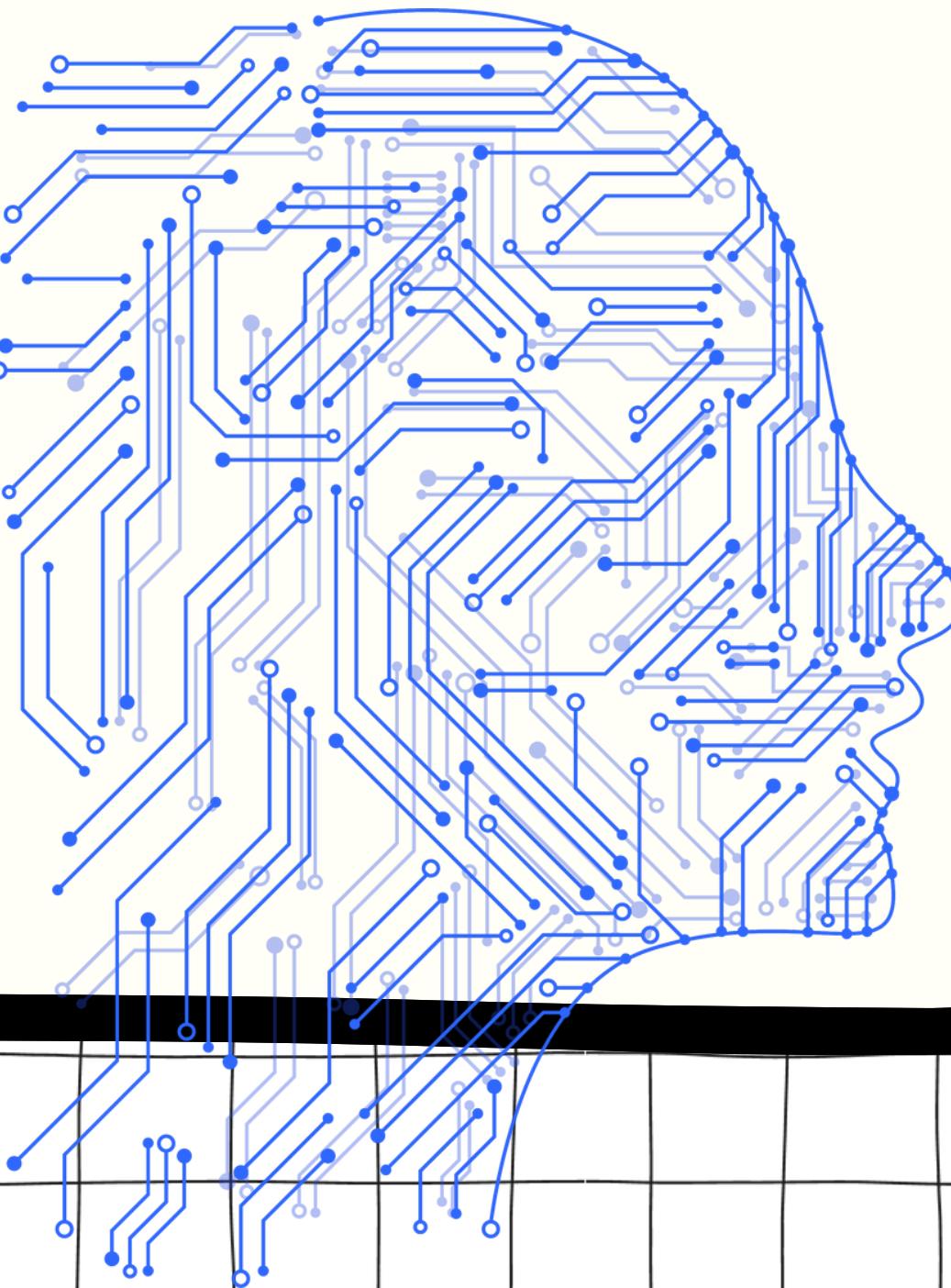
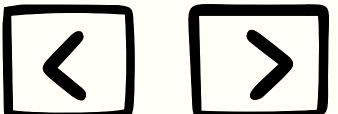


Machine Learning

Lecture:1



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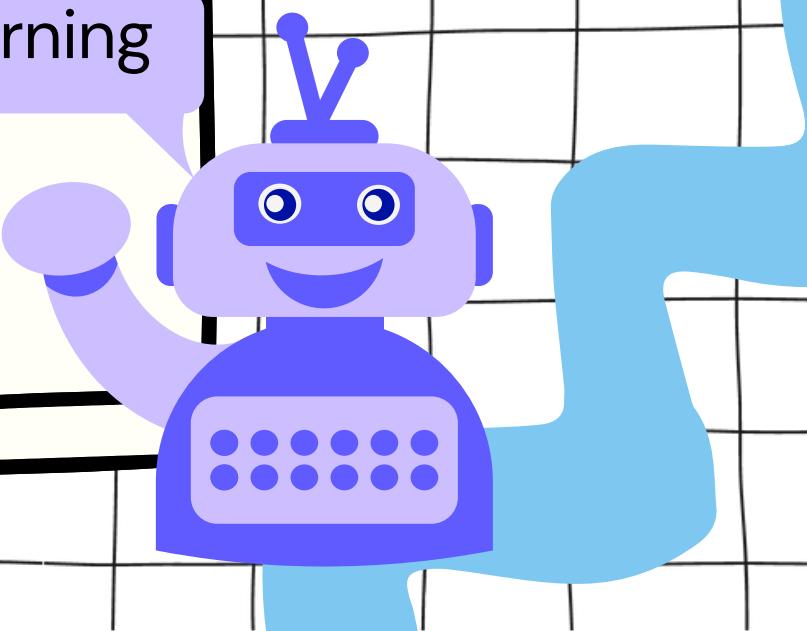
Types of Machine
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Why Machine Learning?



Because Machine
can drive your
car for you..

Why Machine Learning?



Because Machine
can detect eye
diseases..

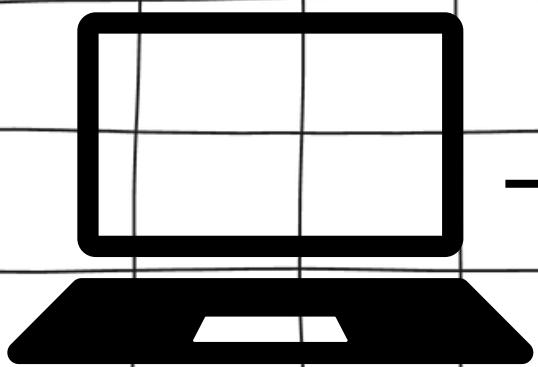
why Machine Learning?



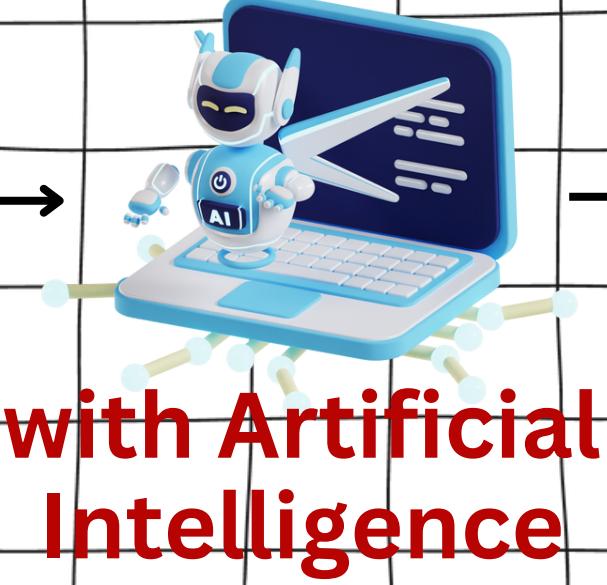
Because Machine
can unlock your
phone with your
face.

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.

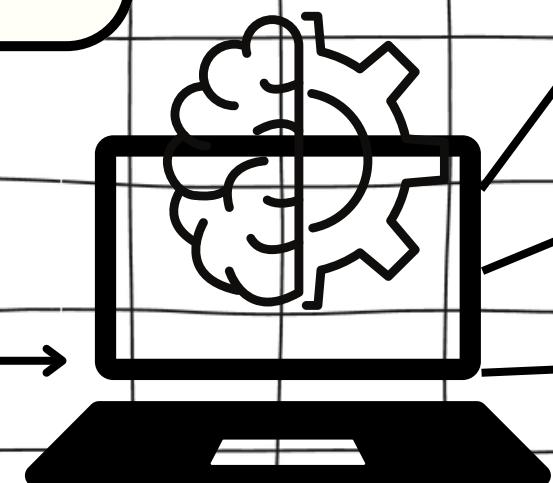


Ordinary
System

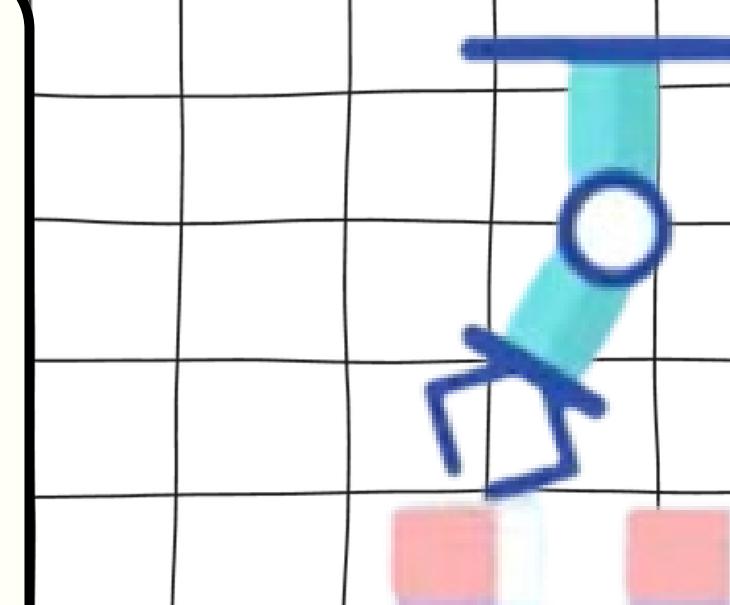


with Artificial
Intelligence

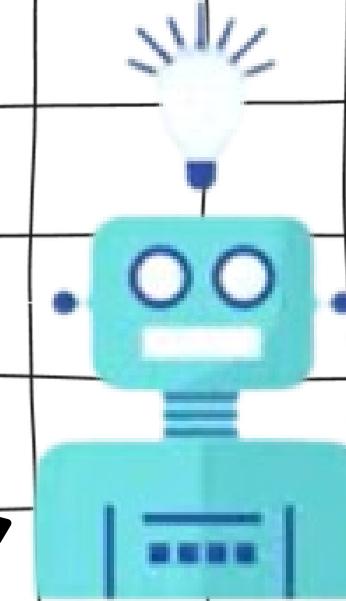
Machine
Learning



Learn



Predict

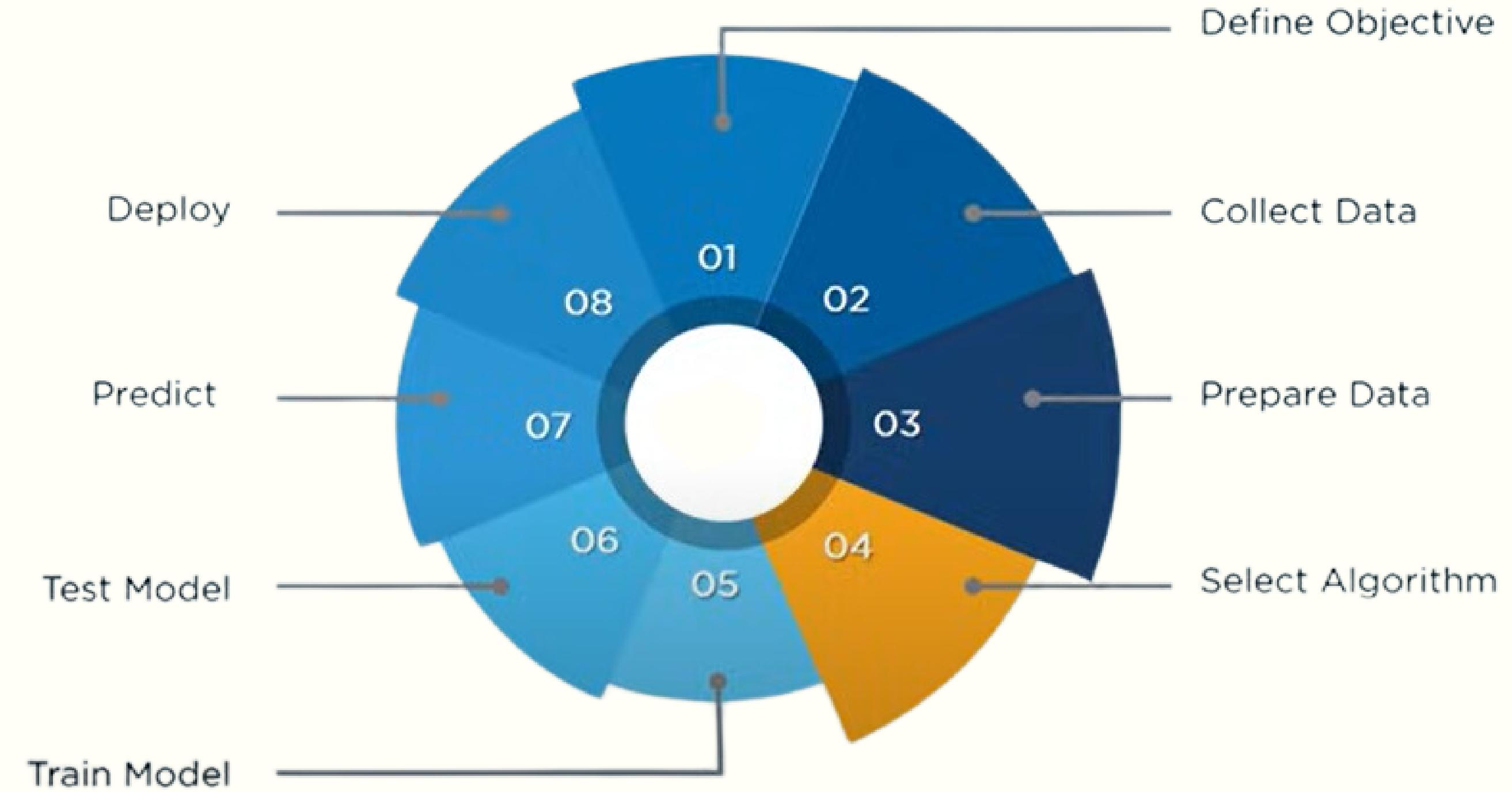


Improves

...

What is Machine Learning?

...



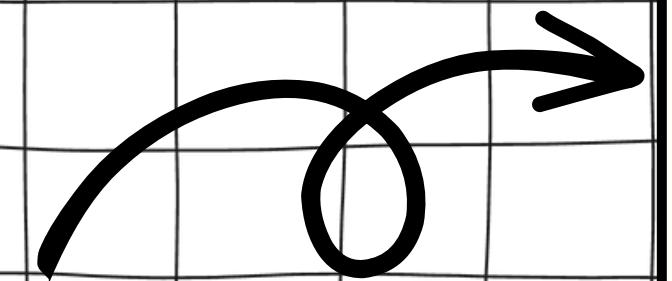
*Do you want to
predict a category?*

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.

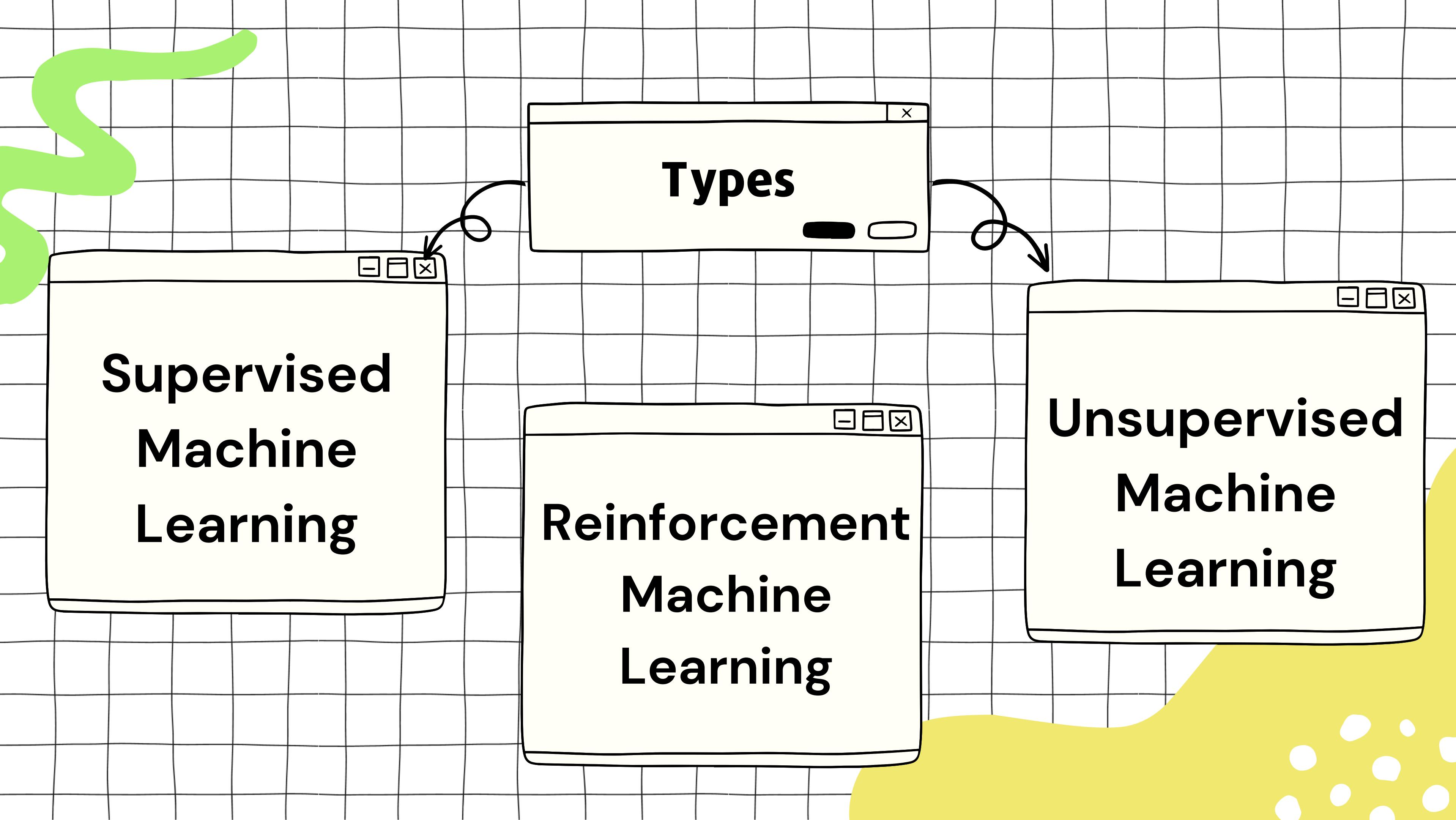


Supervised Machine Learning

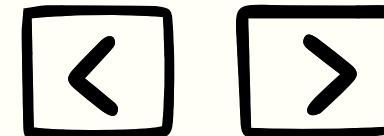
Reinforcement Machine Learning

Types

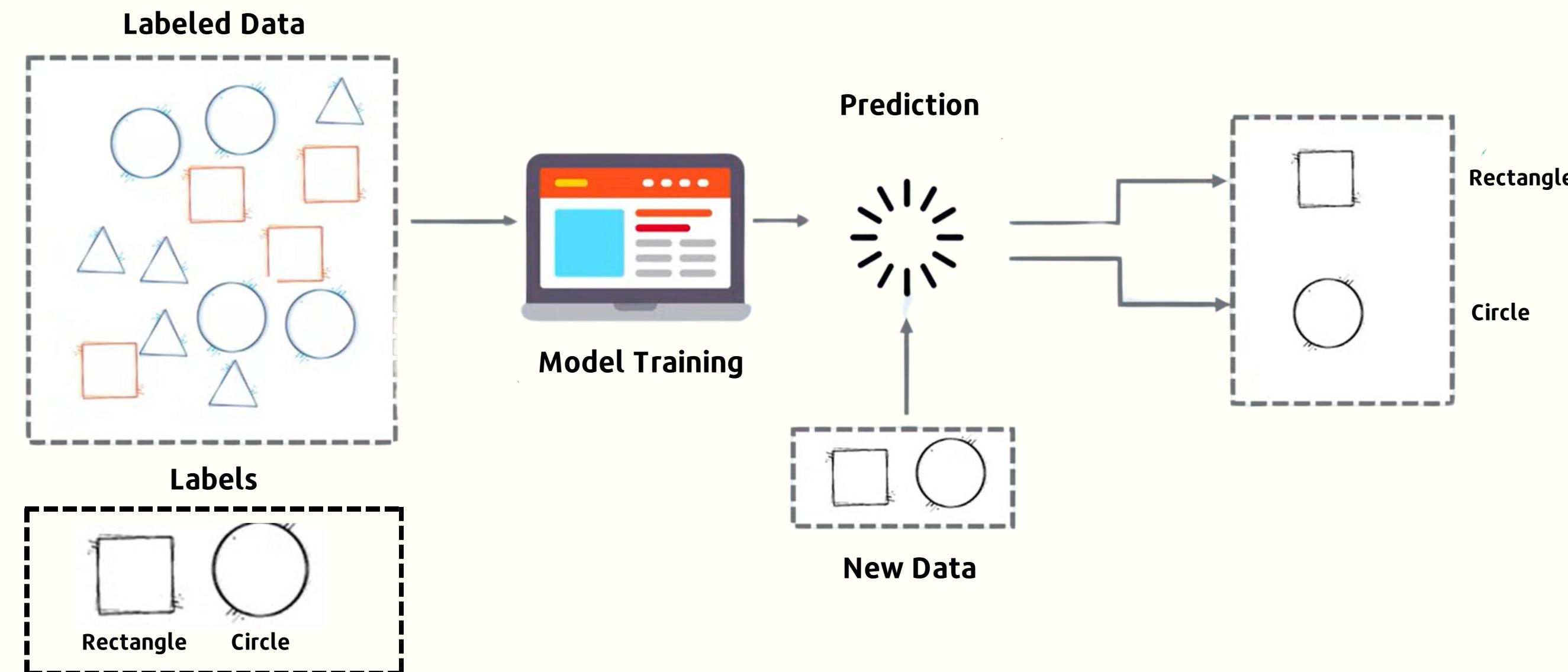
Unsupervised Machine Learning

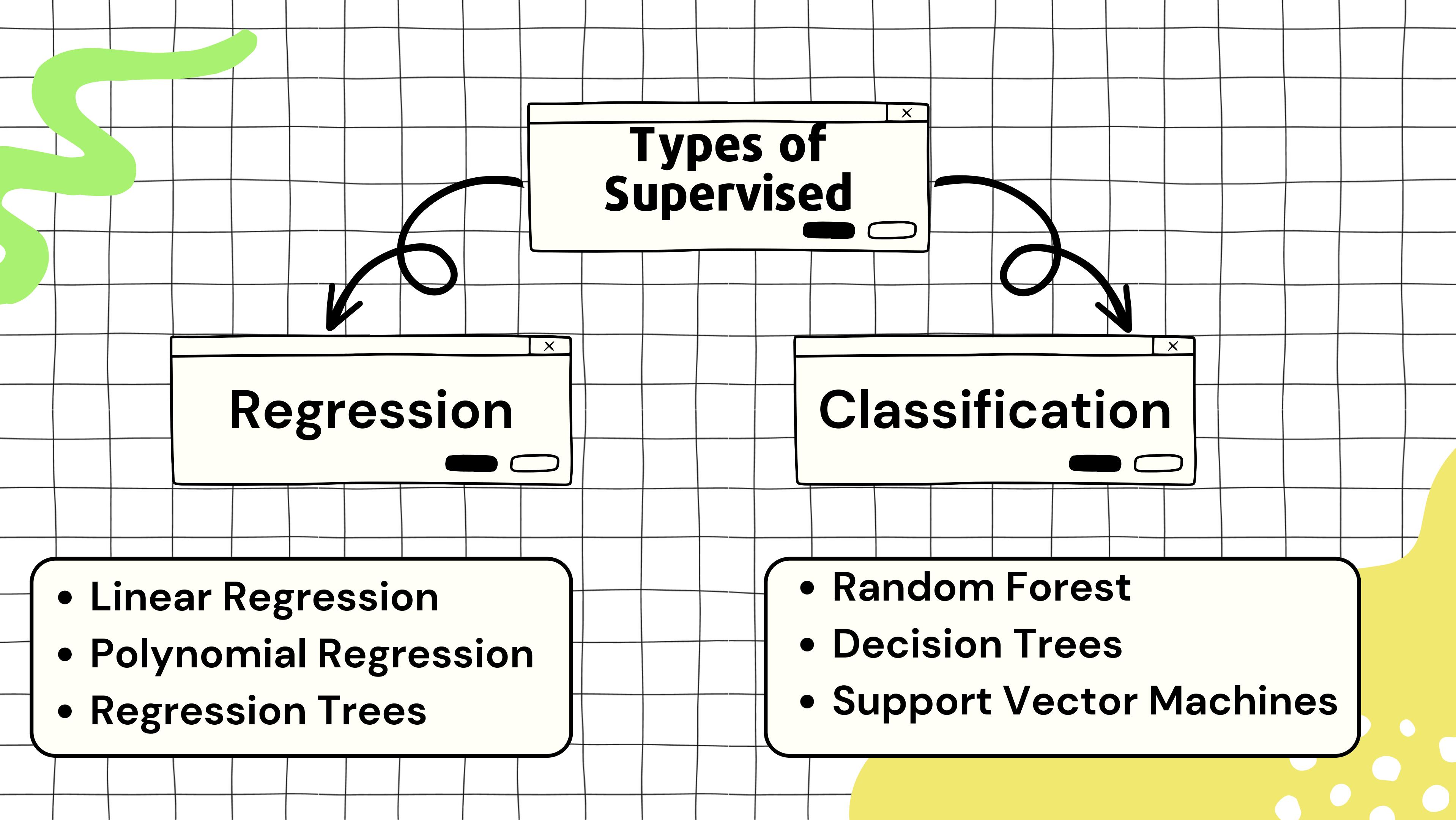


Supervised Machine Learning



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



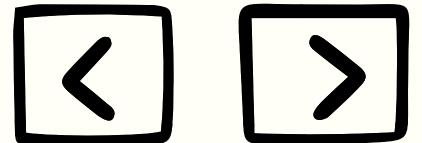
...

Have limited scope.

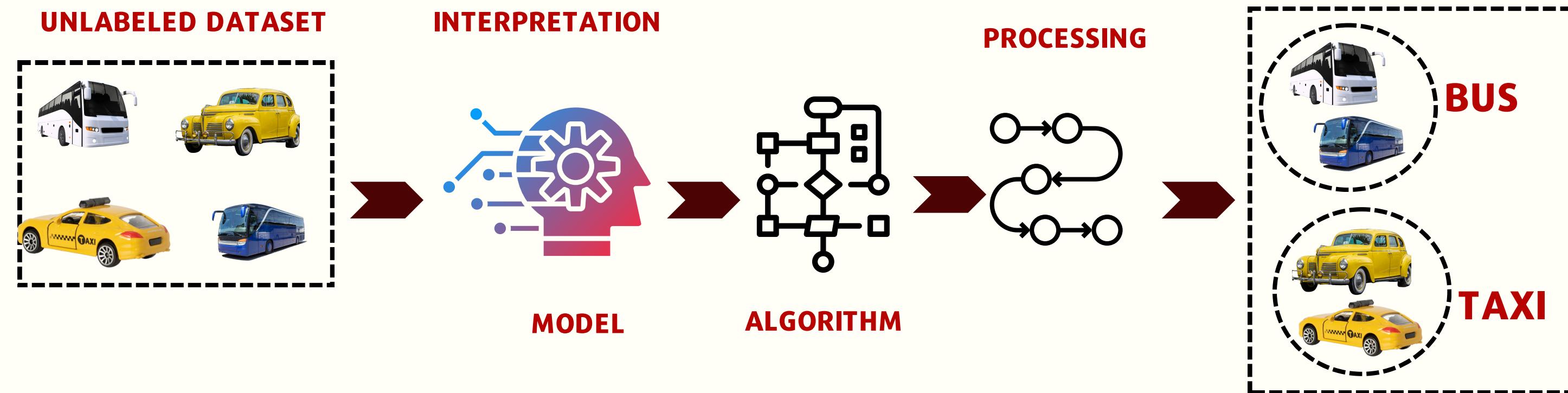
*Collecting labeled dataset is
expensive and time consuming.*

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.

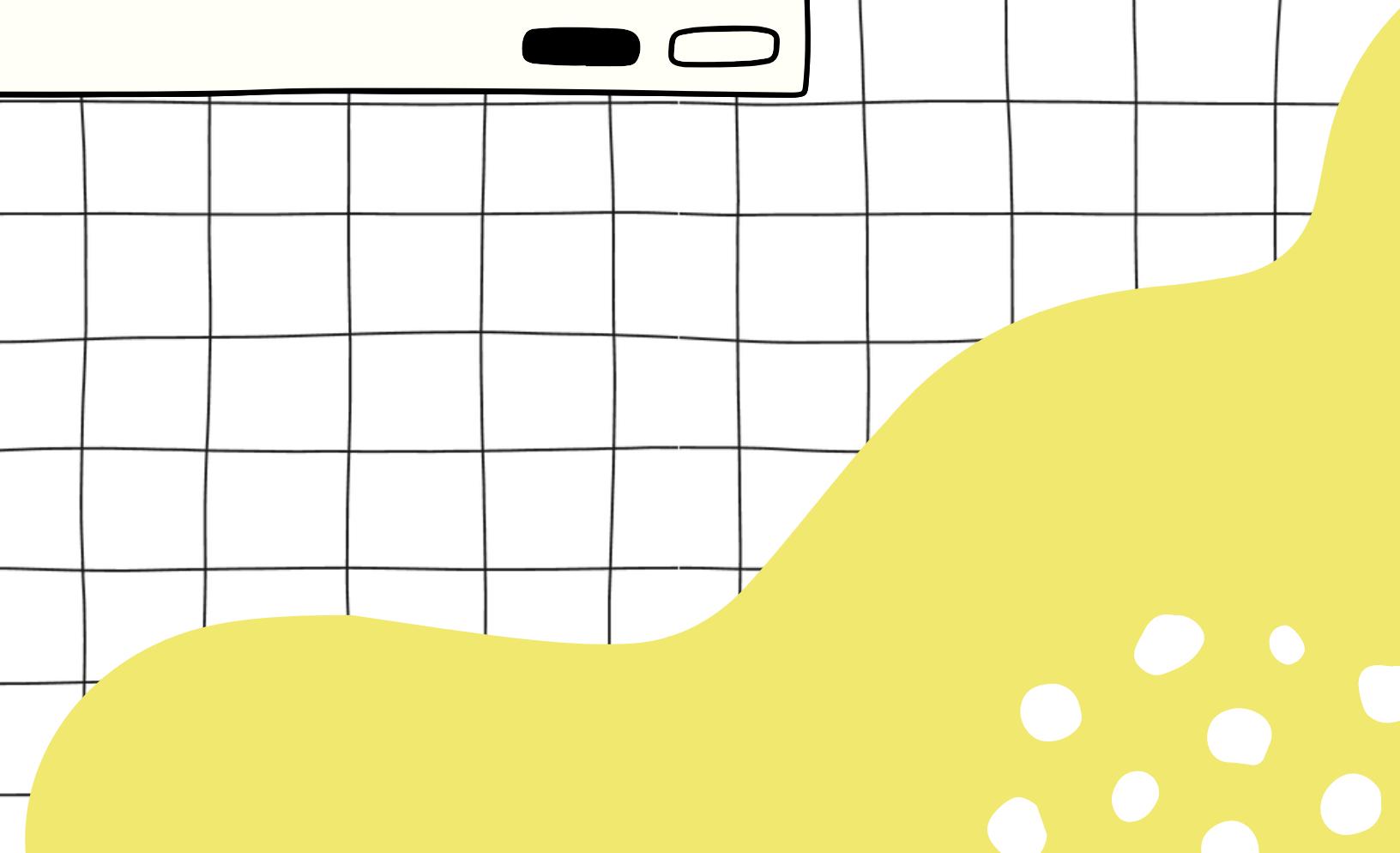
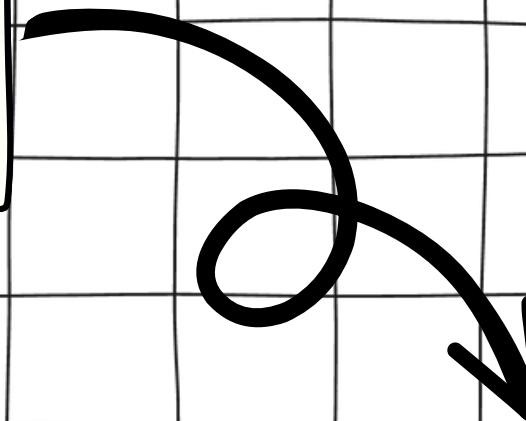
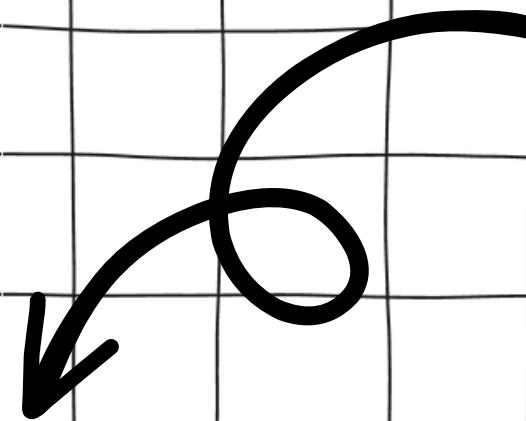
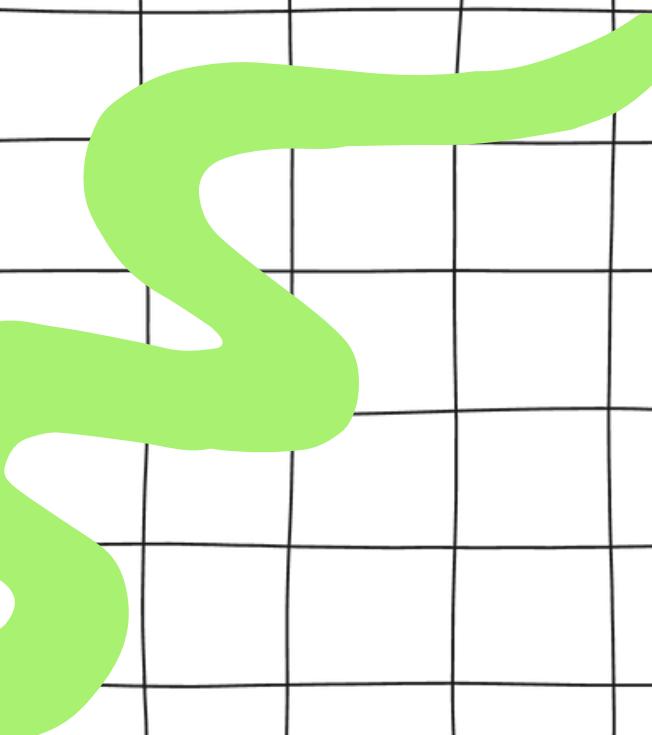


The goal of unsupervised learning is to group unlabeled data according to the similarities, patterns and differences without any prior training of data.

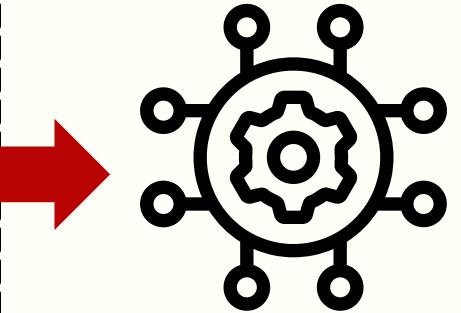
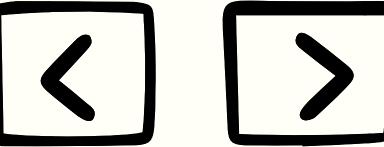
Types of Unsupervised

Clustering

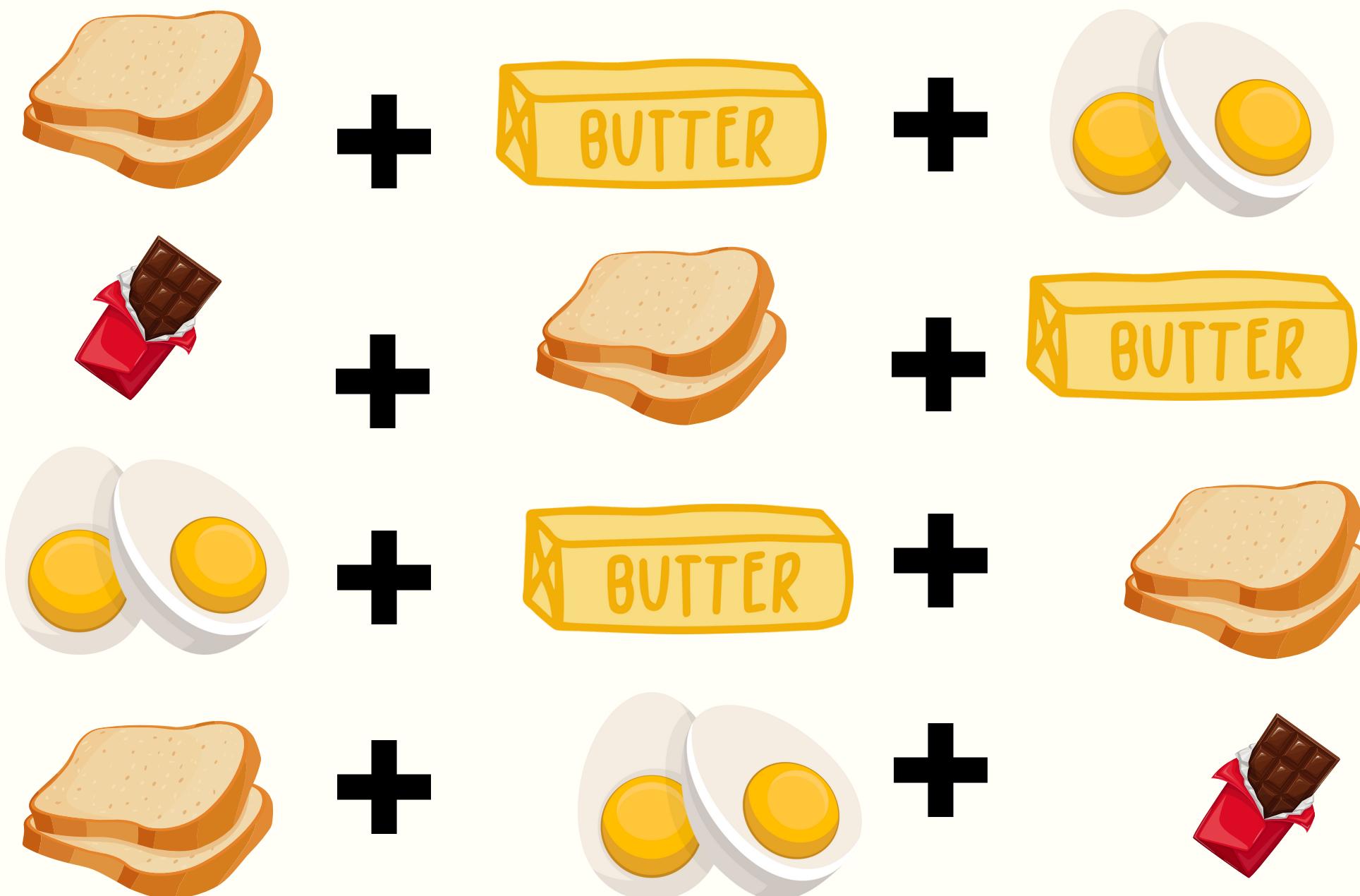
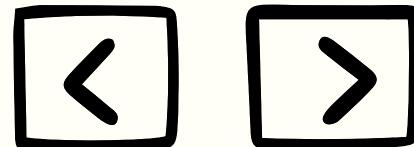
Association



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

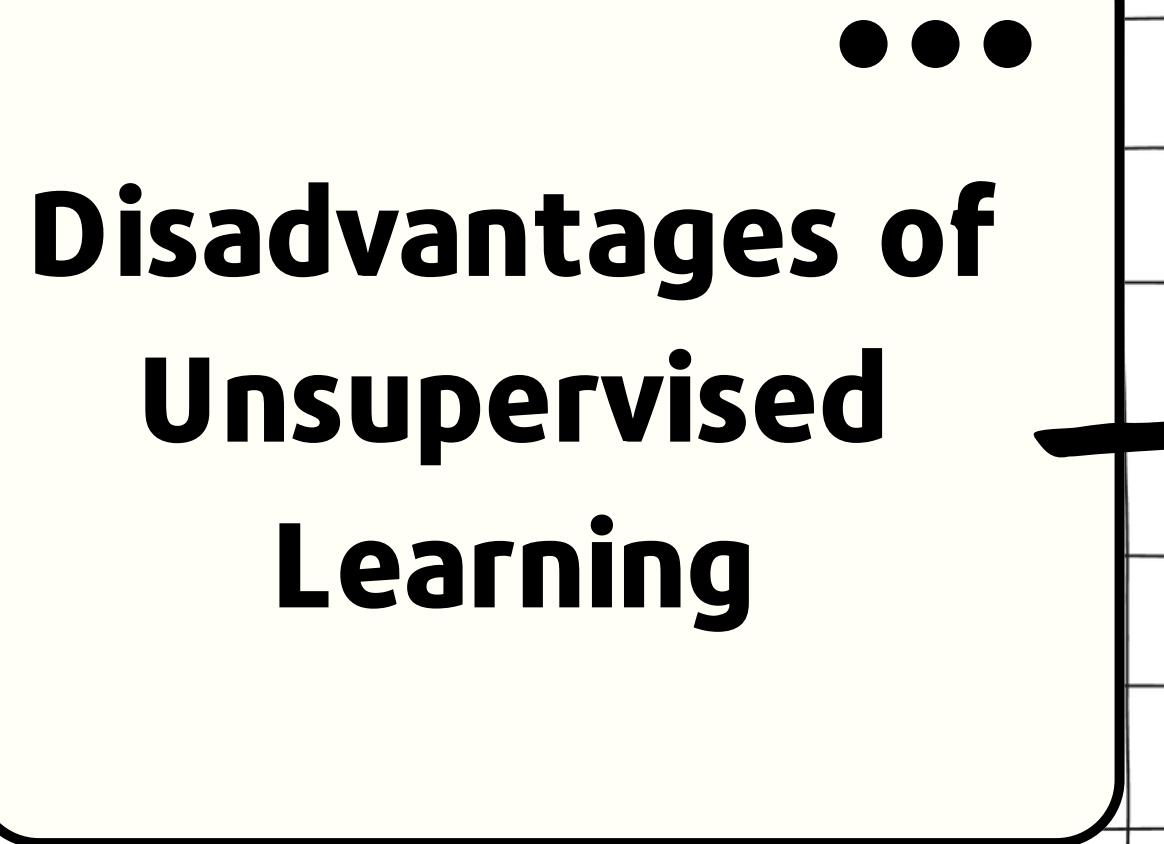


It is used for more complex tasks.

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.*