

SUPERVISED AND UNSUPERVISED LEARNING



simplilearn^X

$$a(bc) = (ab)c$$

$$a+b = b+a$$

$$a(b+c) = ab+ac$$

$$f(x) \leq 5$$
$$x^2 - 4x + 5 \leq 5$$
$$x^2 - 4x + 5 = 0$$

$$n(C) = 84$$

$$n(B \cup C) = n(B) + n(C) - n(B \cap C)$$

$$\text{He} = 4.002602$$

$$\text{Na} = 22.989769$$

$$\text{Ar} = 39.948$$



$$(100^2)a + 100b$$

$$10000a + 100b - 5$$



Machine Learning

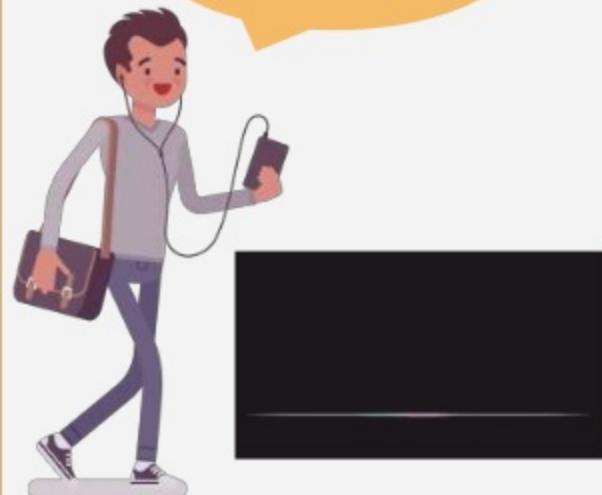
Hey SIRI, how far is the
nearest subway?



User

Machine Learning

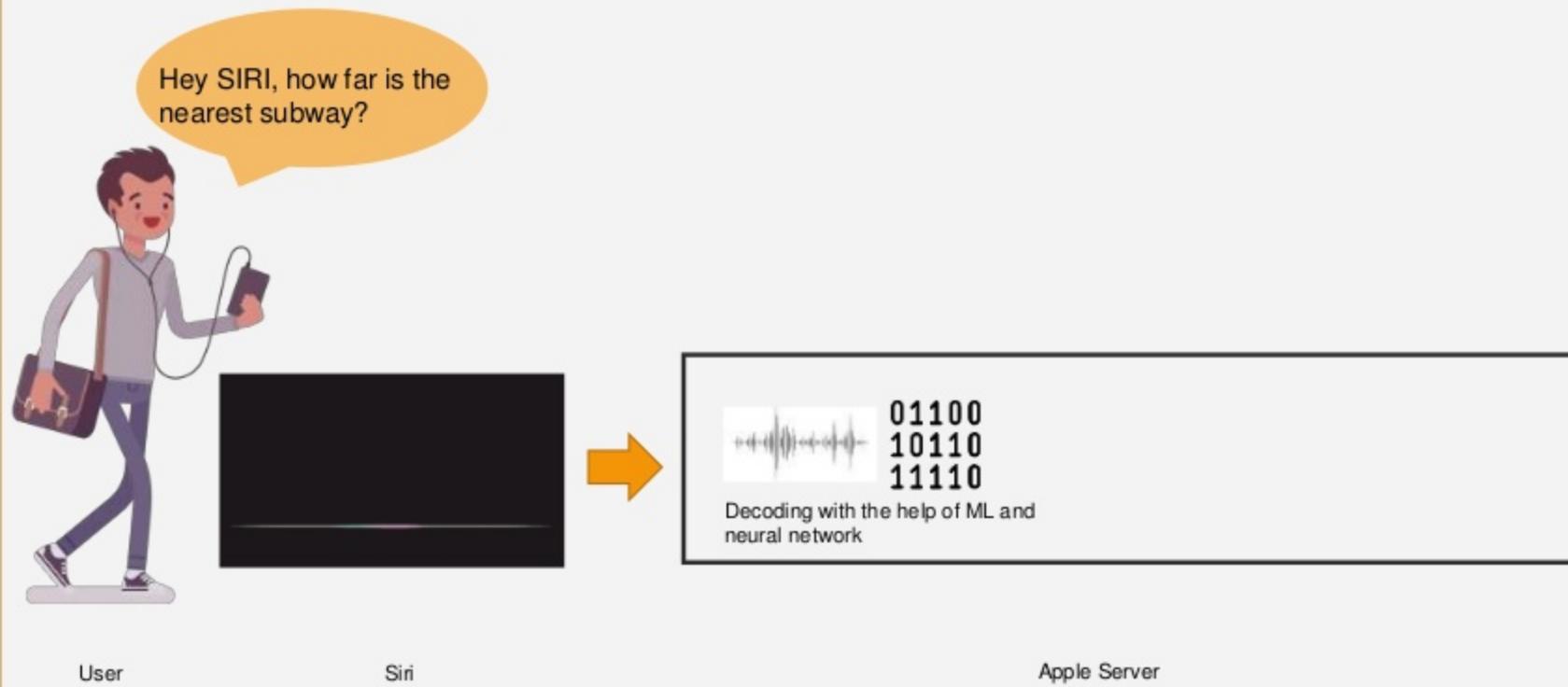
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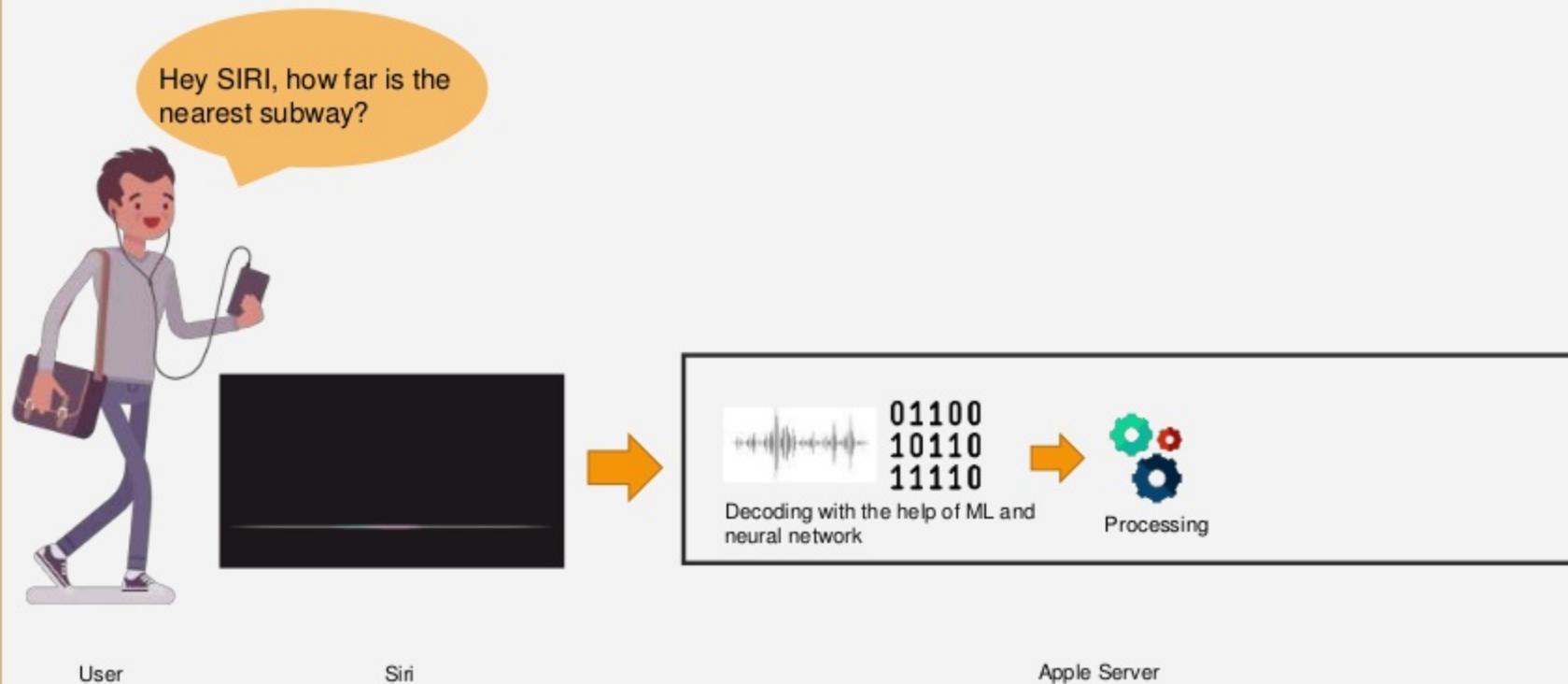
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Siri

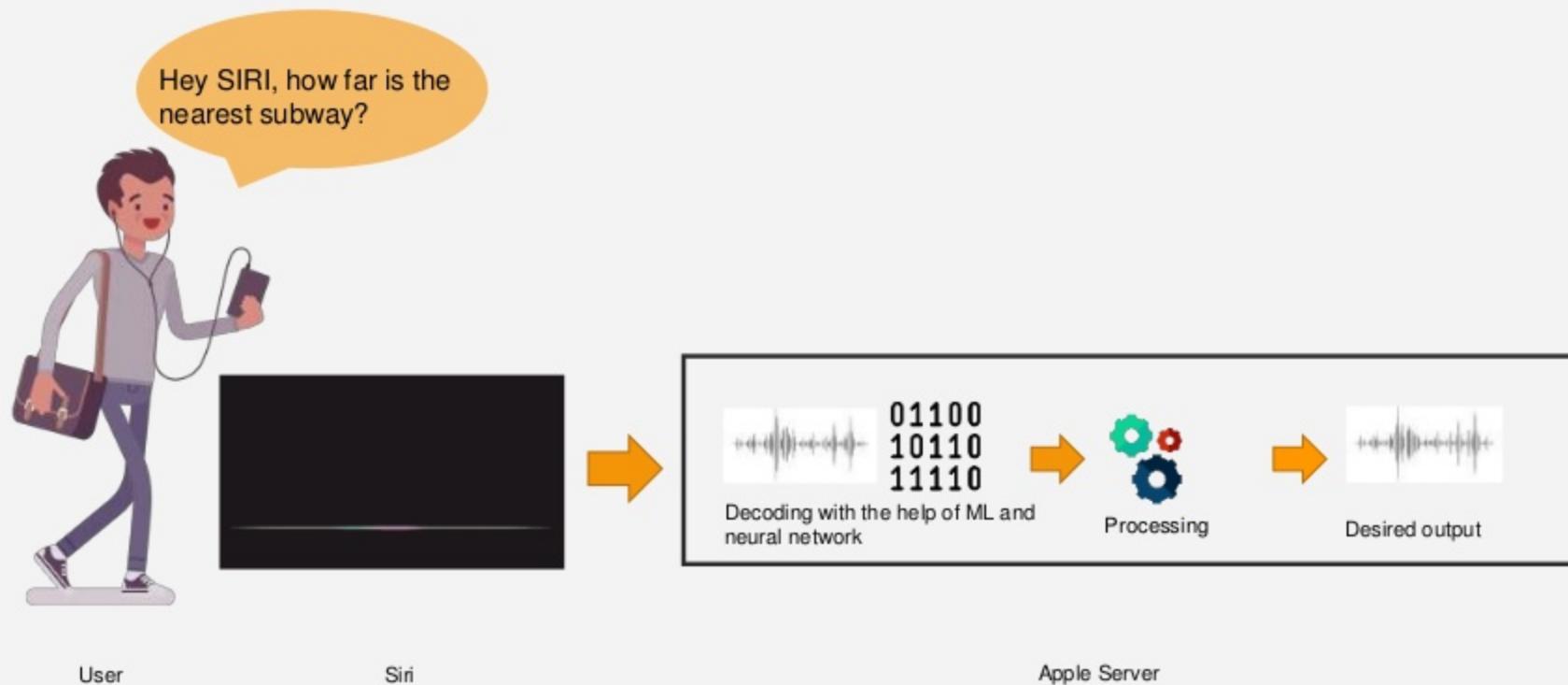
Machine Learning



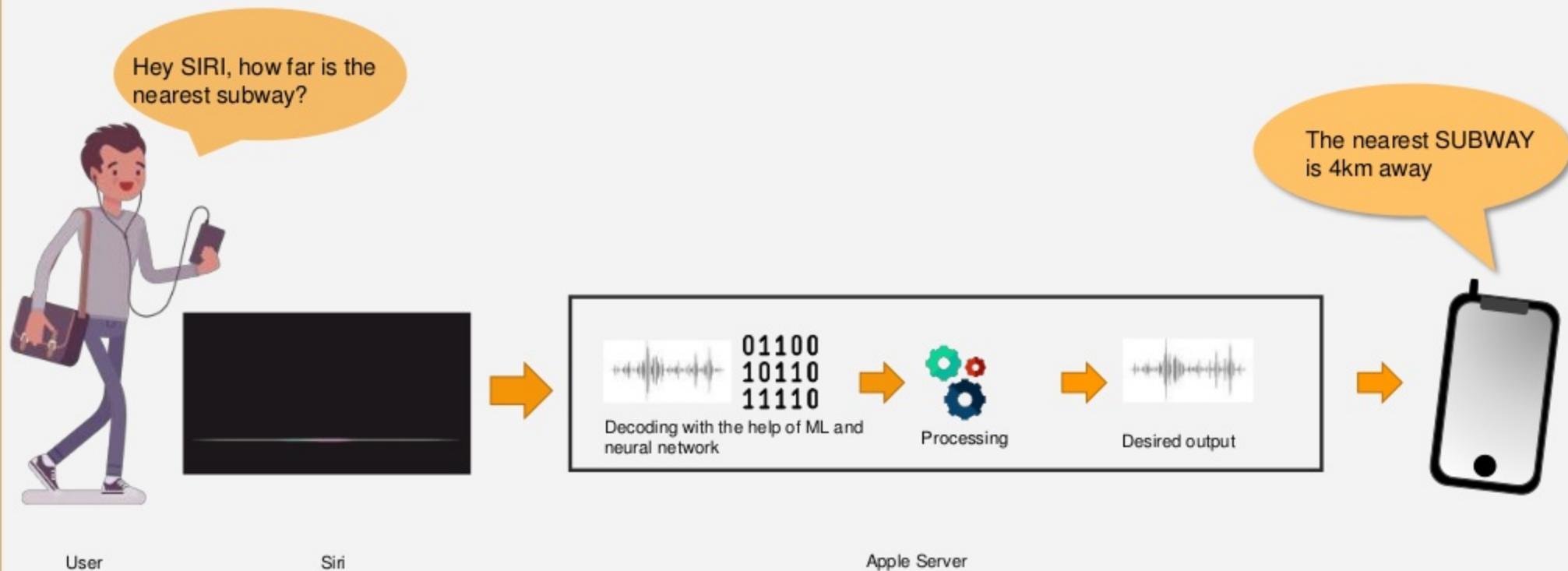
Machine Learning



Machine Learning



Machine Learning



What is Machine Learning?

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

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Past Data



What is Machine Learning?

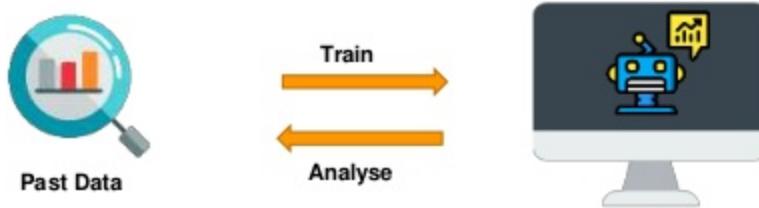
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Data is processed

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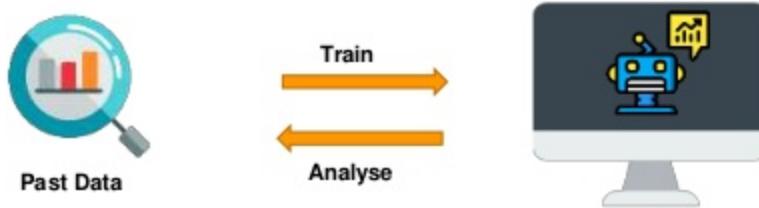


Data is processed

System Learns

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Data is processed

System Learns

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Data is processed

System Learns

Machine Learning makes predictions and decisions based on past data

Types of Machine Learning

Machine Learning



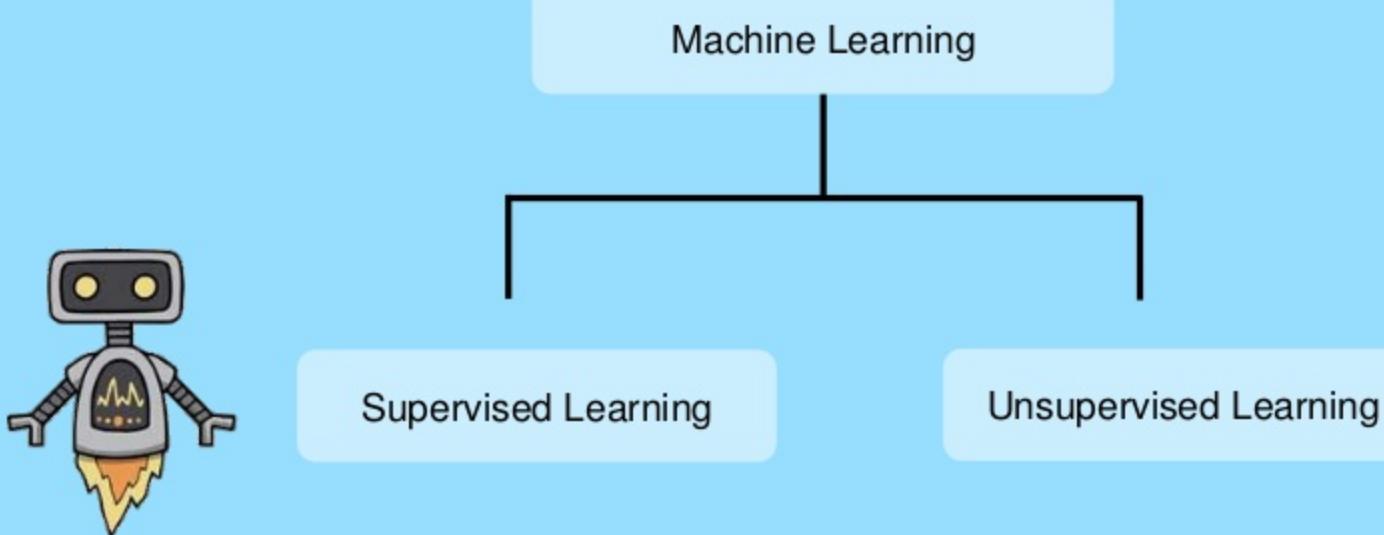
Types of Machine Learning



Machine Learning

Supervised Learning

Types of Machine Learning



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Supervised Learning

$$= \log_b x + \log_b y$$

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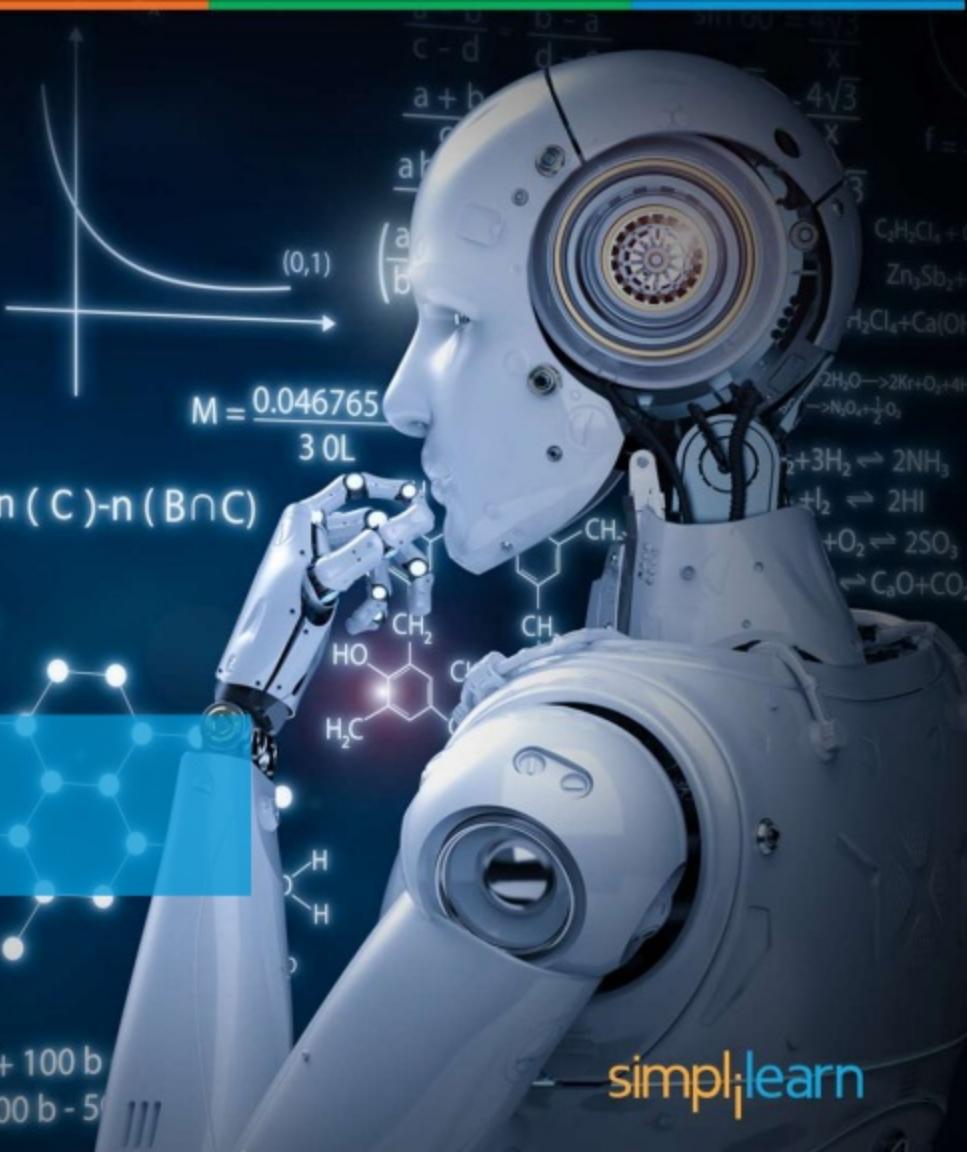
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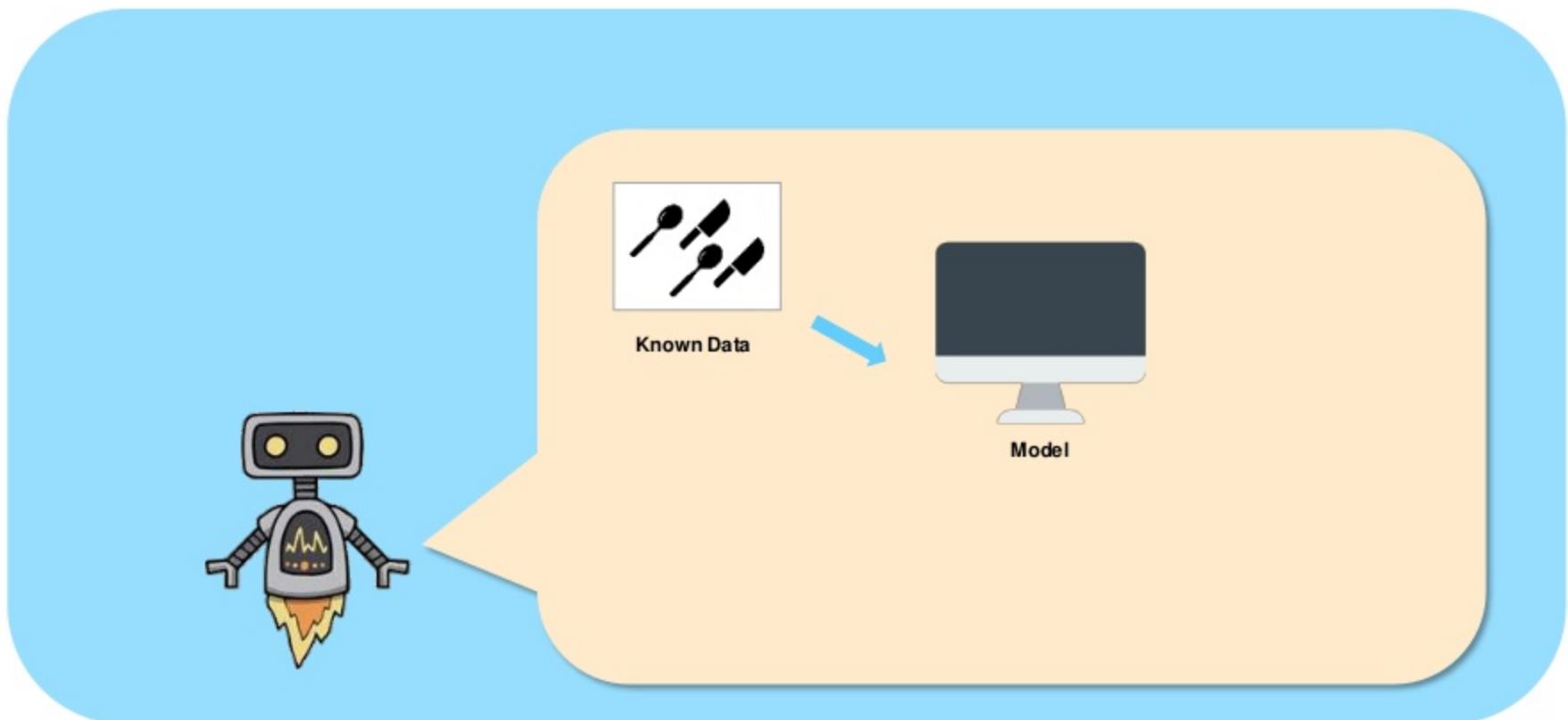


Supervised Learning

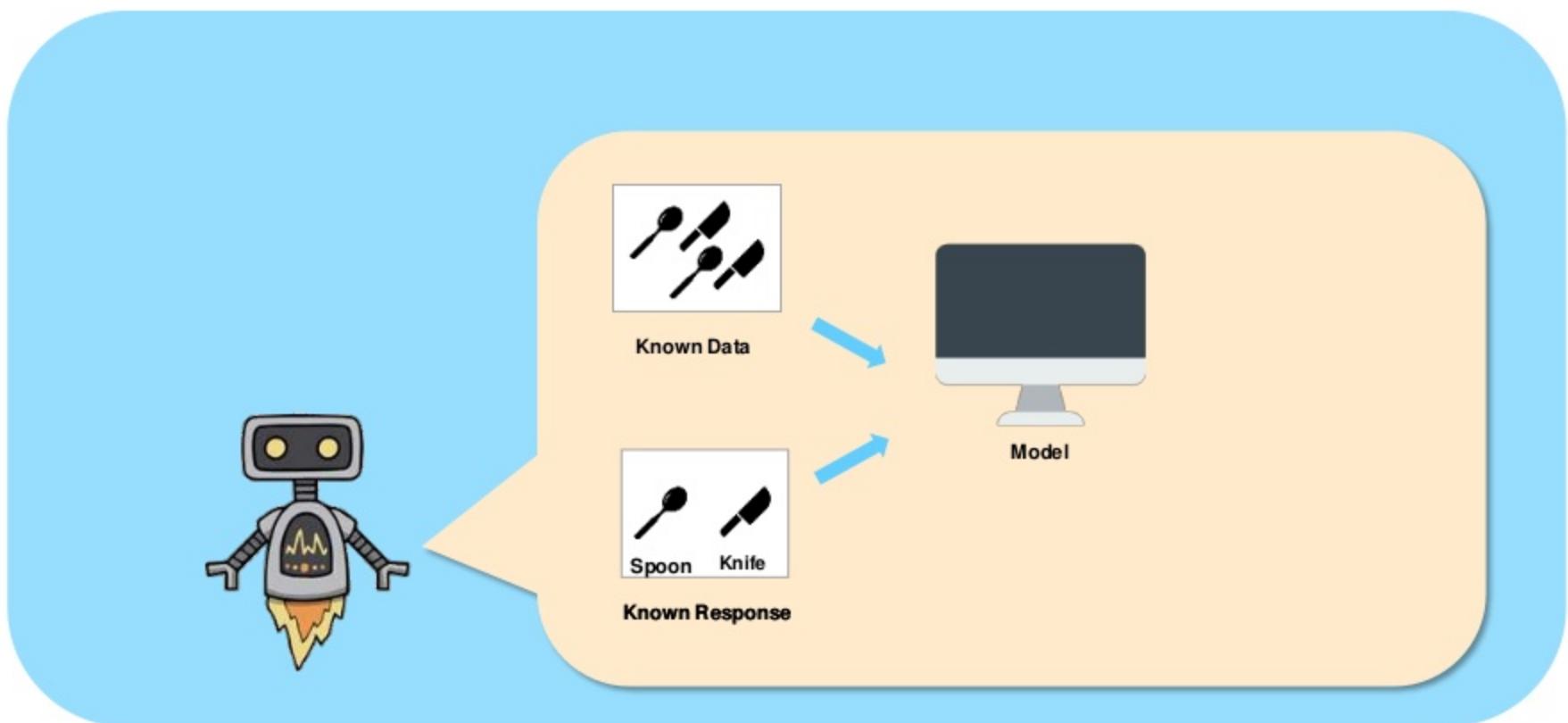


In Supervised Learning, a model is able to predict with the help of labeled dataset

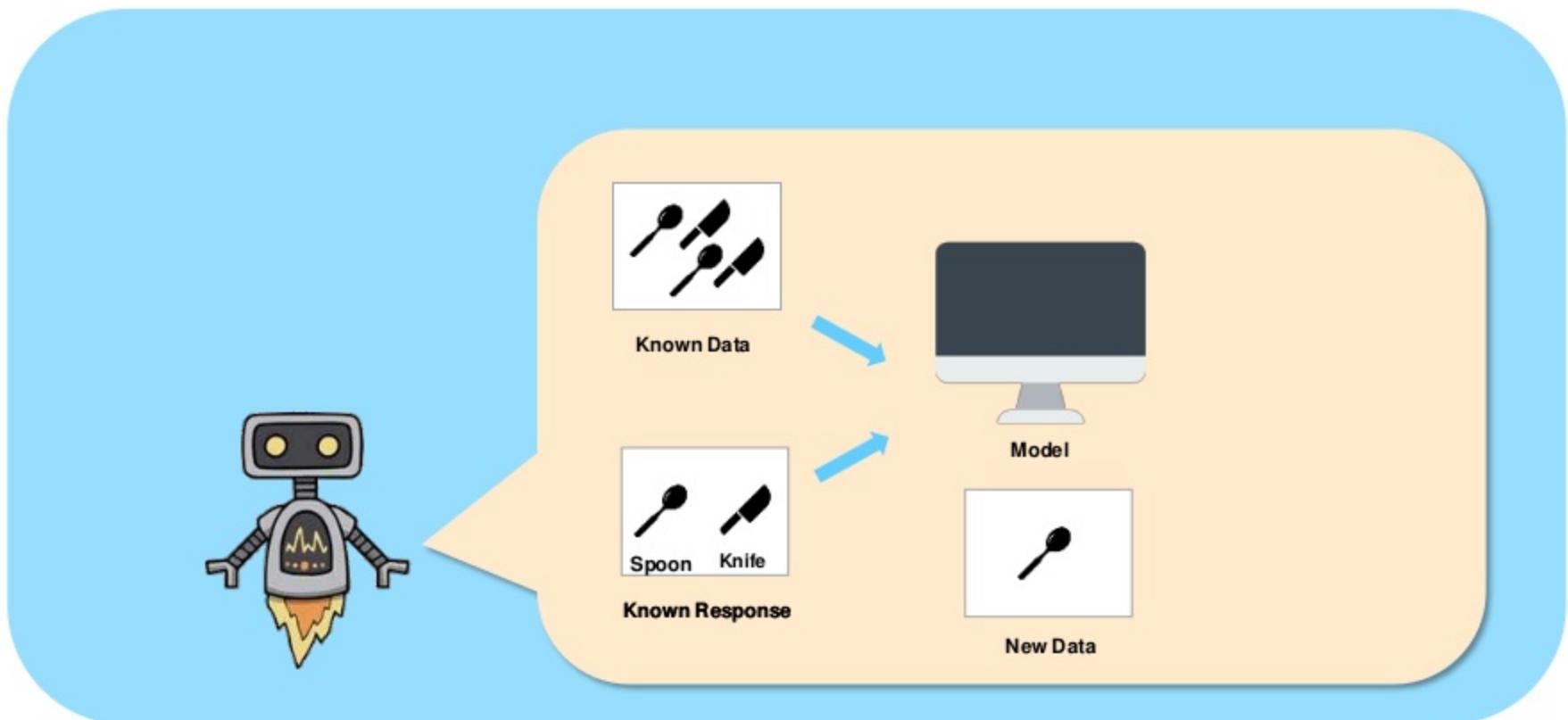
Supervised Learning



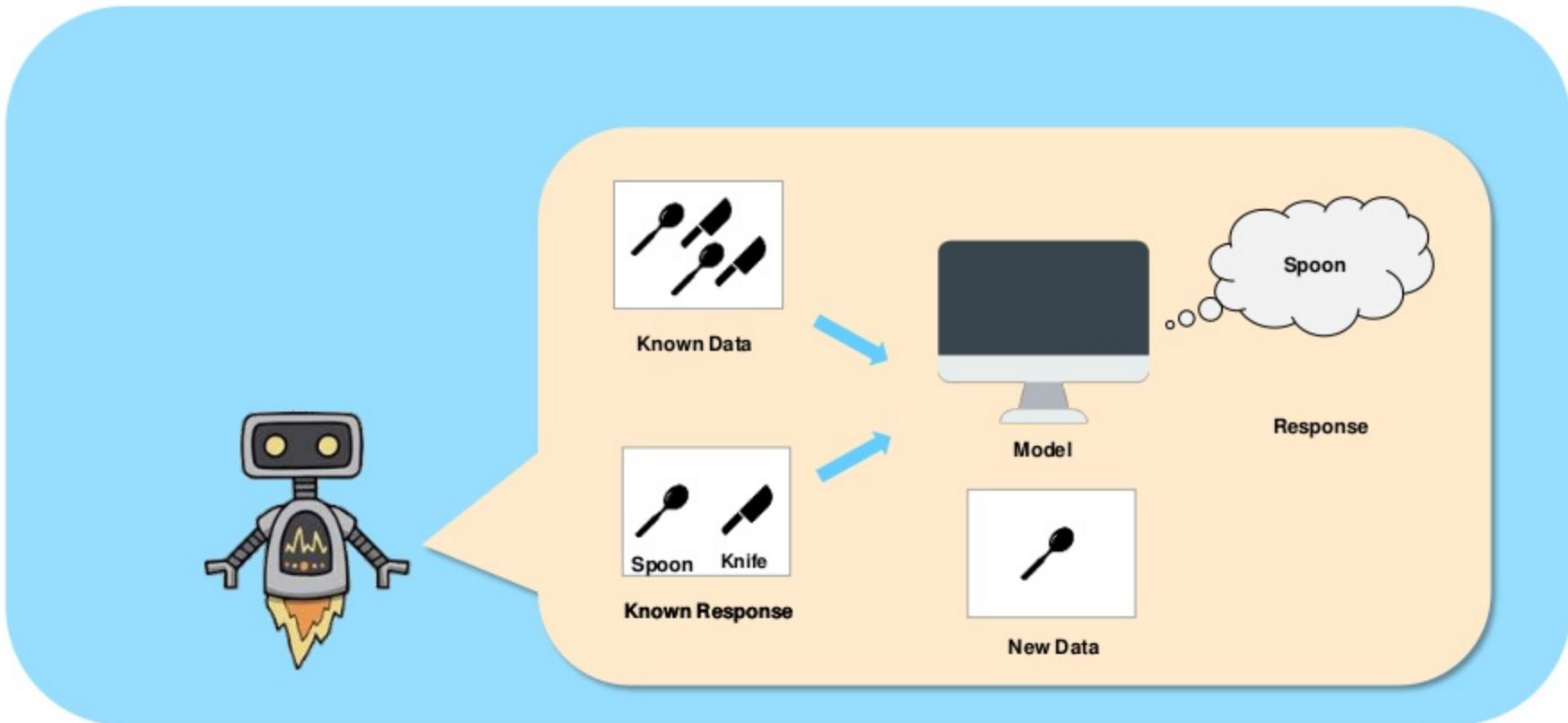
Supervised Learning



Supervised Learning



Supervised Learning



Types of Supervised Learning

Supervised Learning is basically of two types



Classification

When the output variable is categorical i.e. with 2 or more classes (yes/no, true/false), we make use of classification

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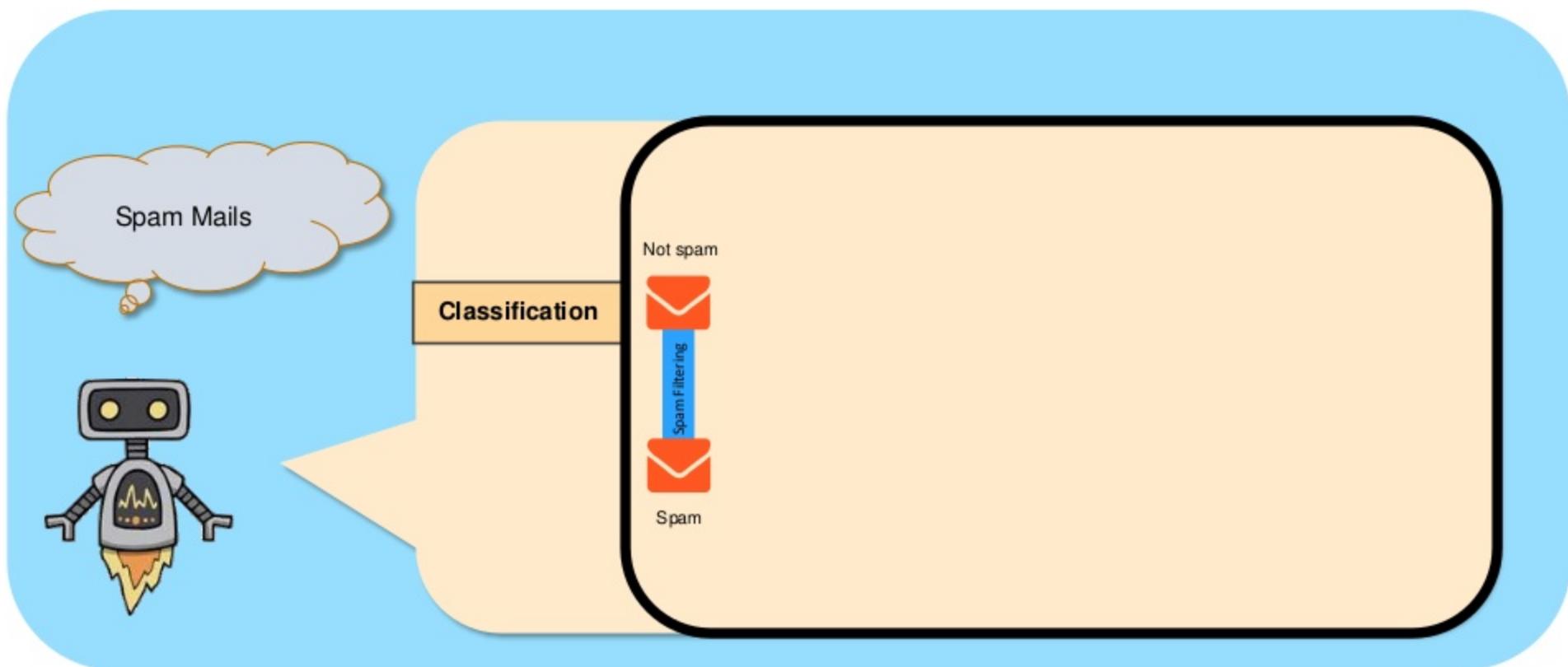
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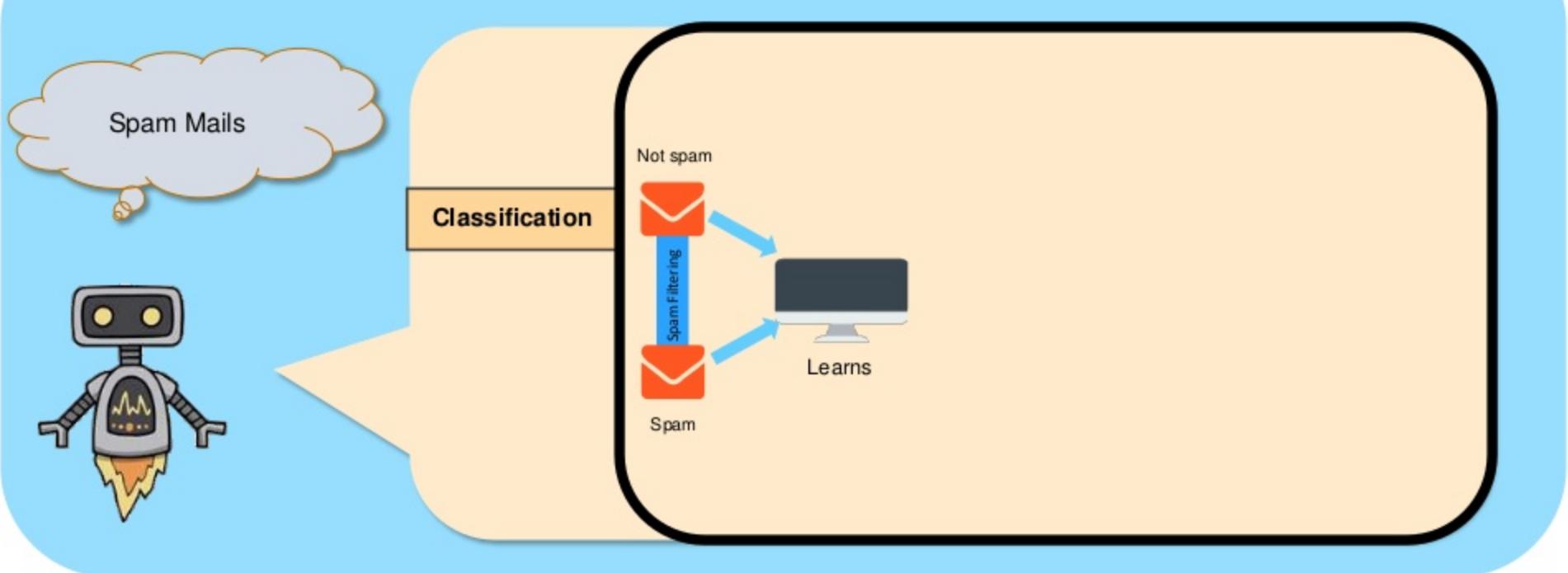
Regression

Relationship between two or more variables where a change in one variable is associated with a change in other variable

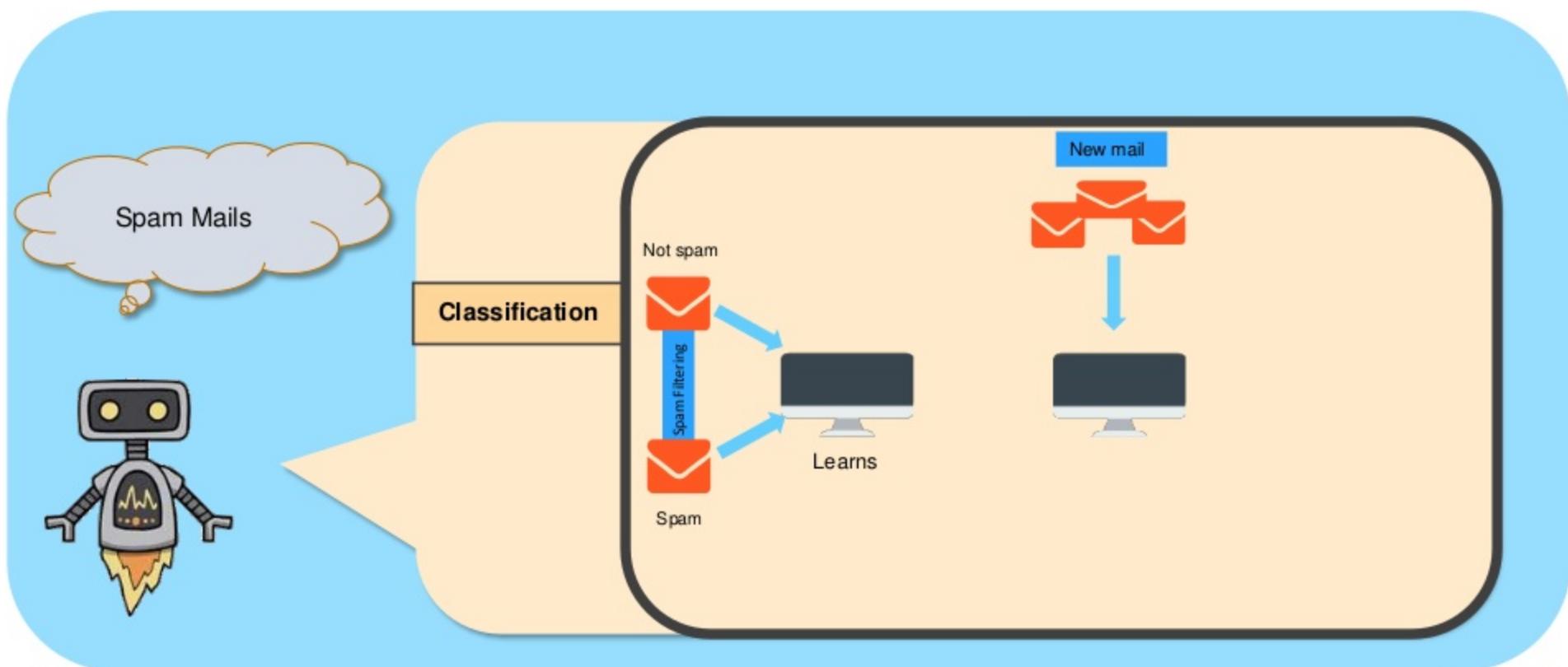
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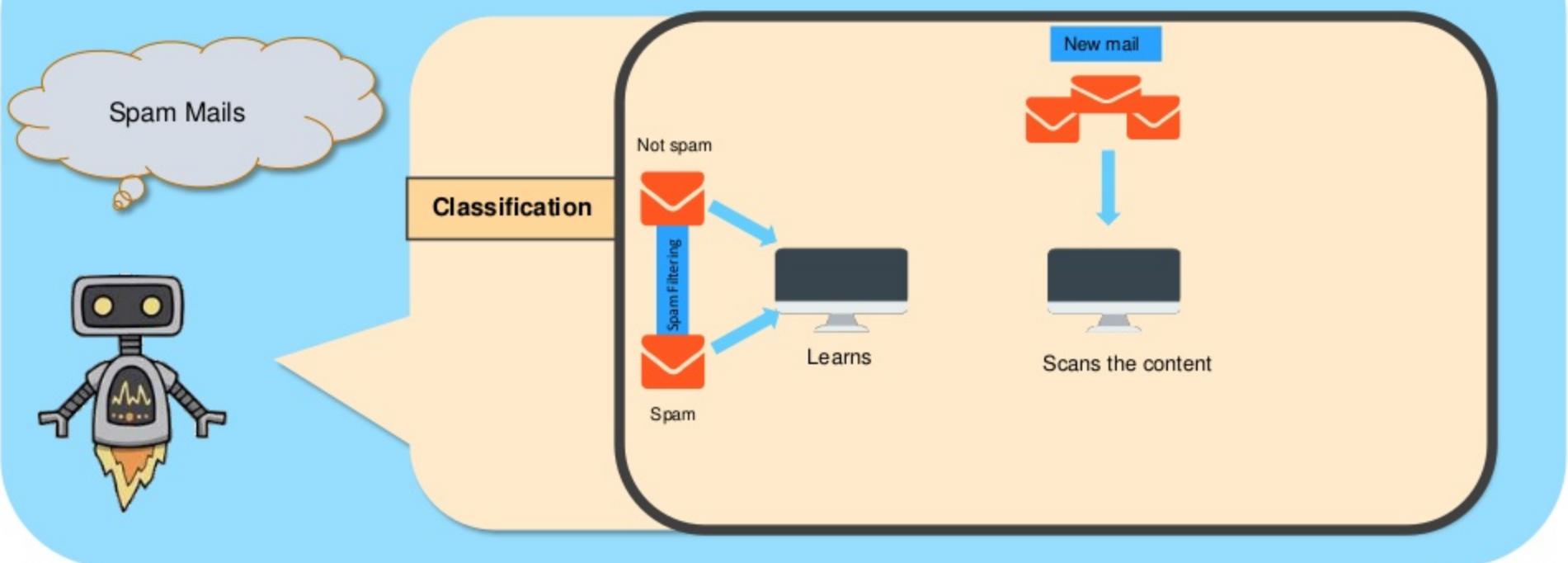
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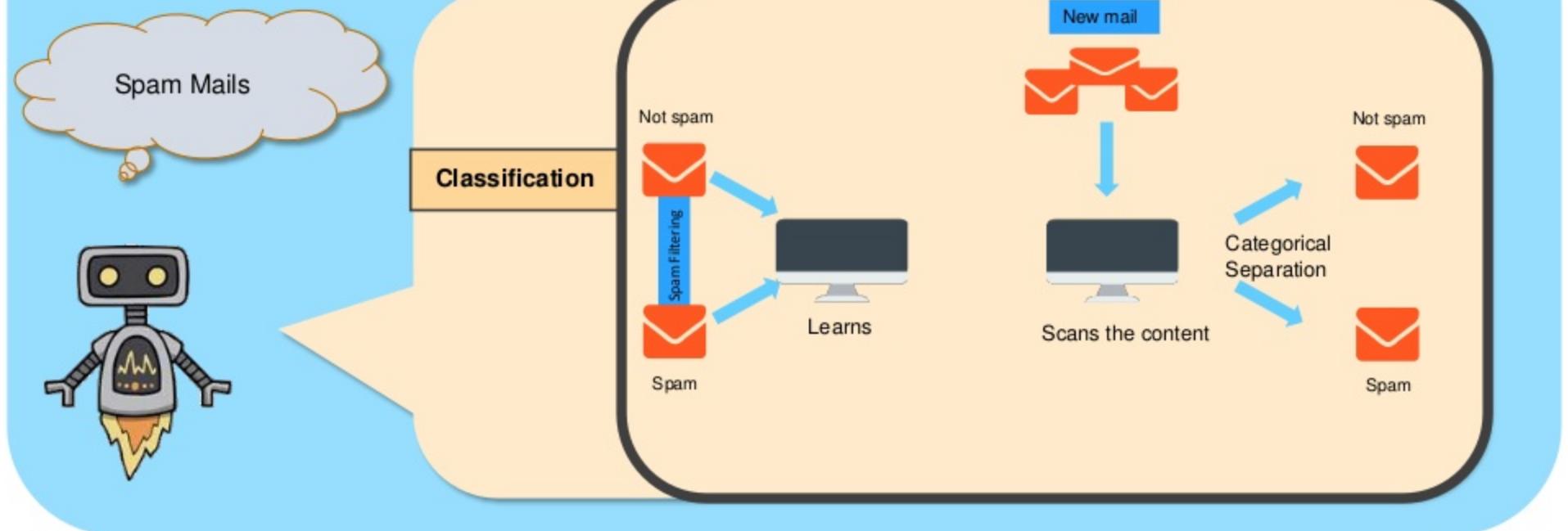
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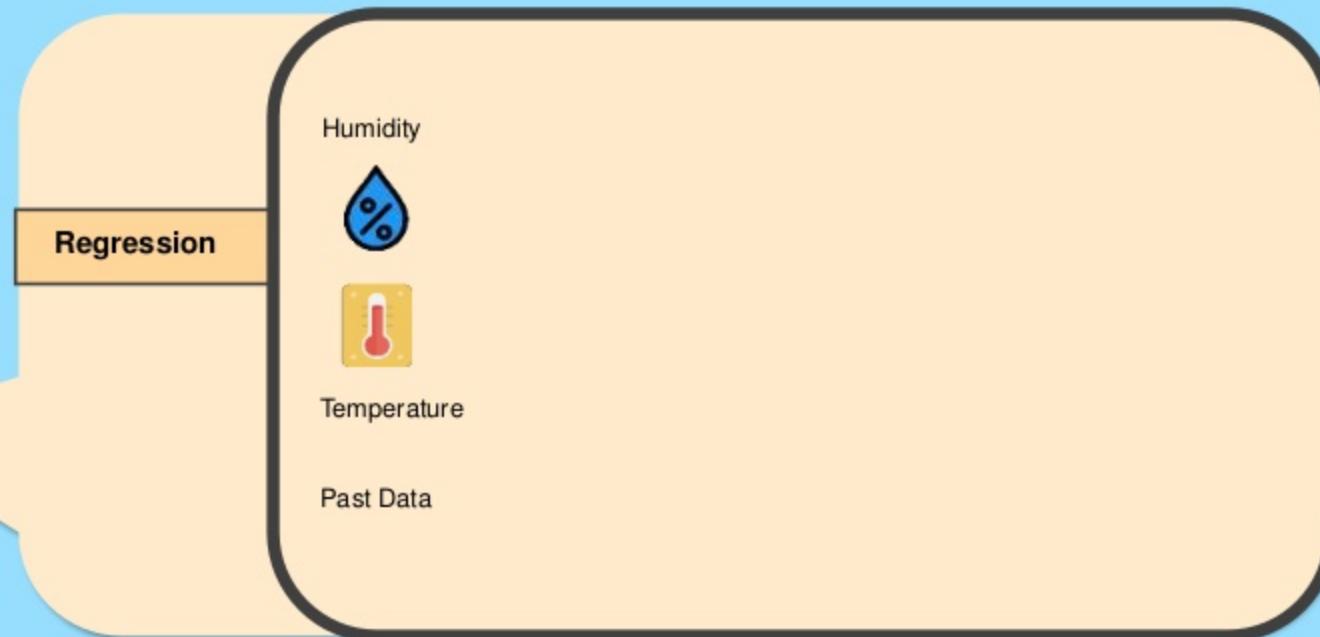
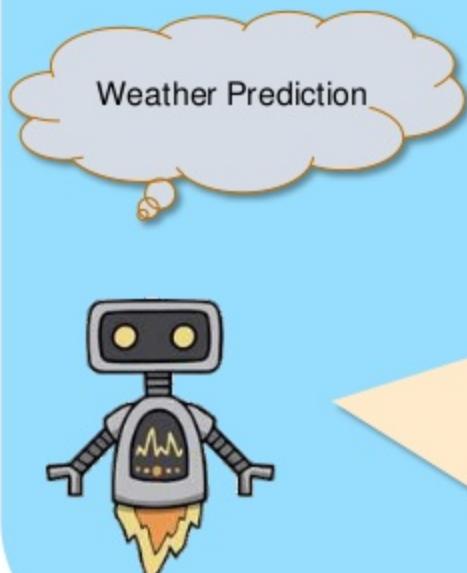
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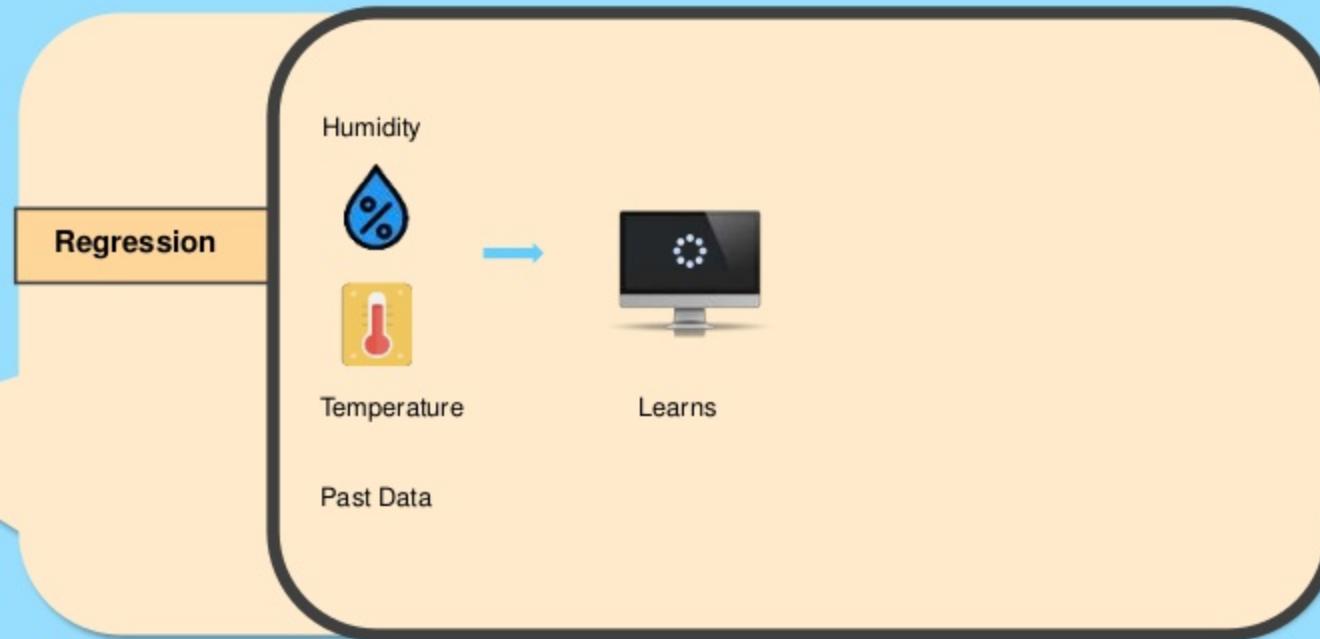
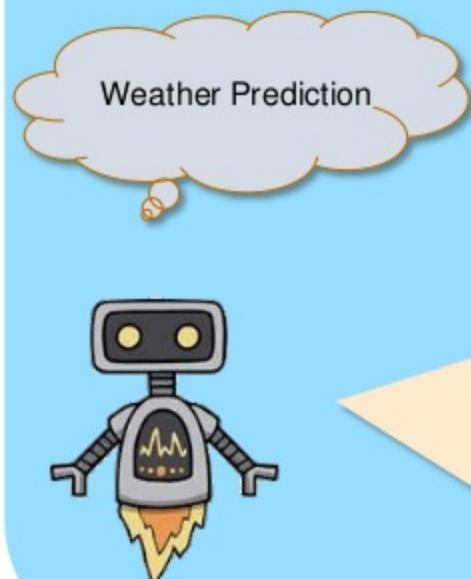
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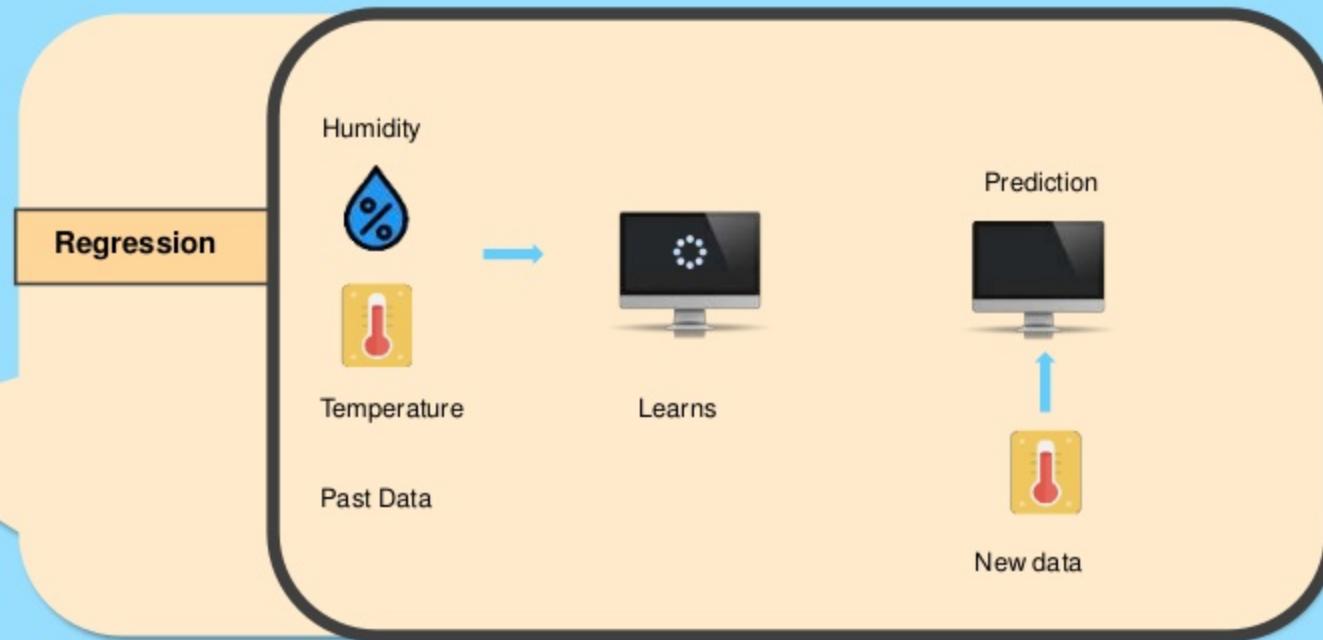
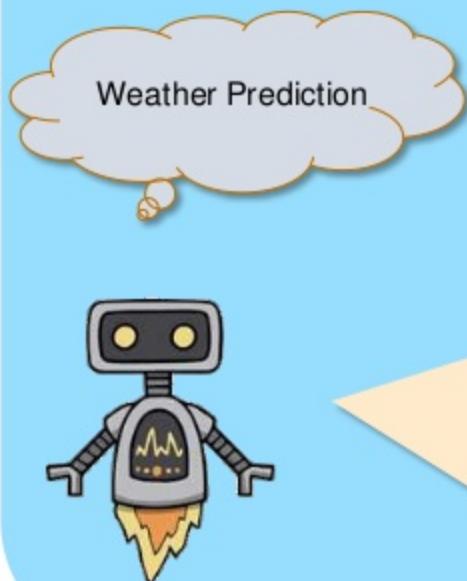
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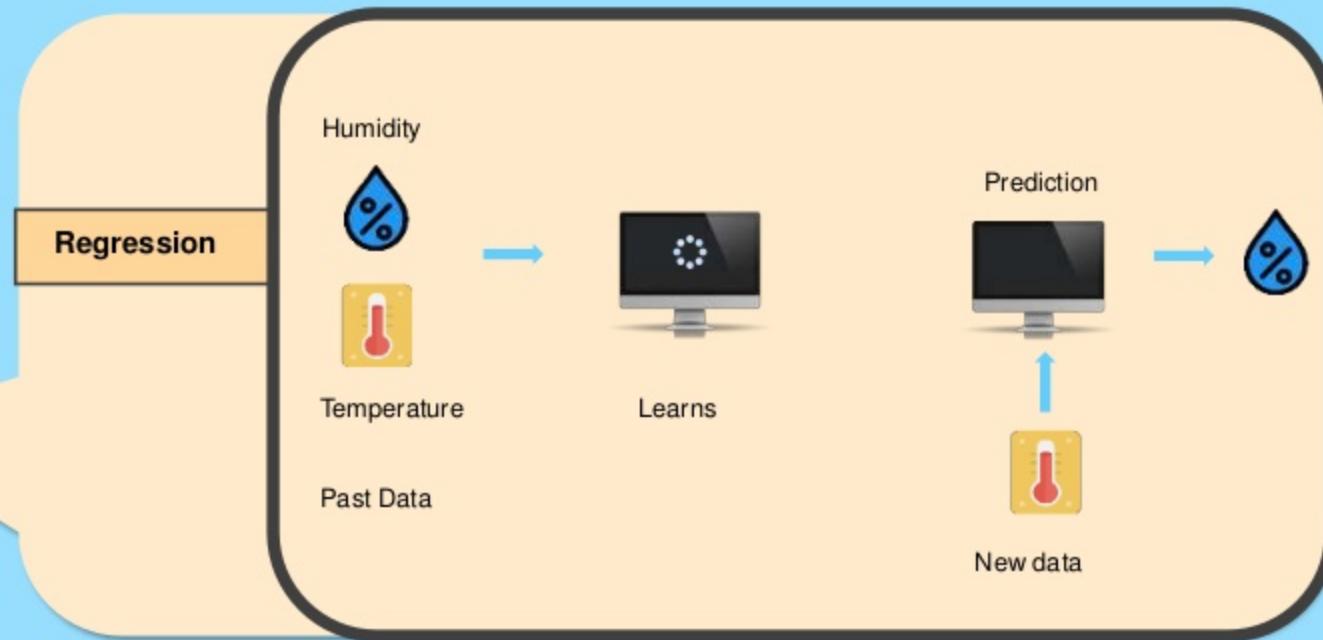
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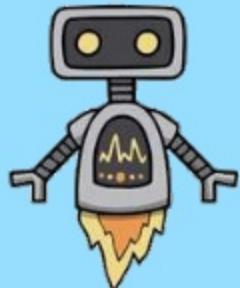


Types of Supervised Learning



Types of Supervised Learning

Areas where Supervised Learning is used



Supervised Learning

Applications of Supervised Learning

Areas where Supervised Learning is used

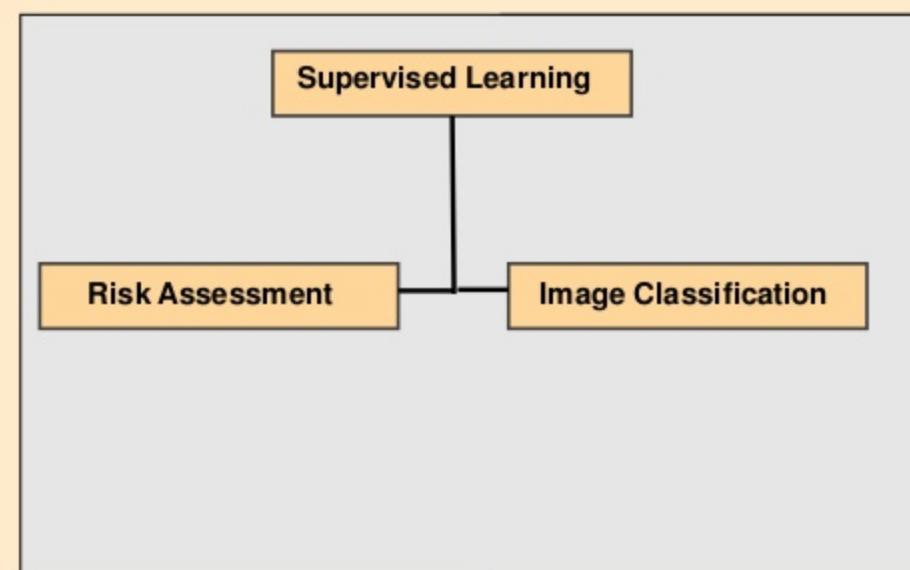


Supervised Learning

Risk Assessment

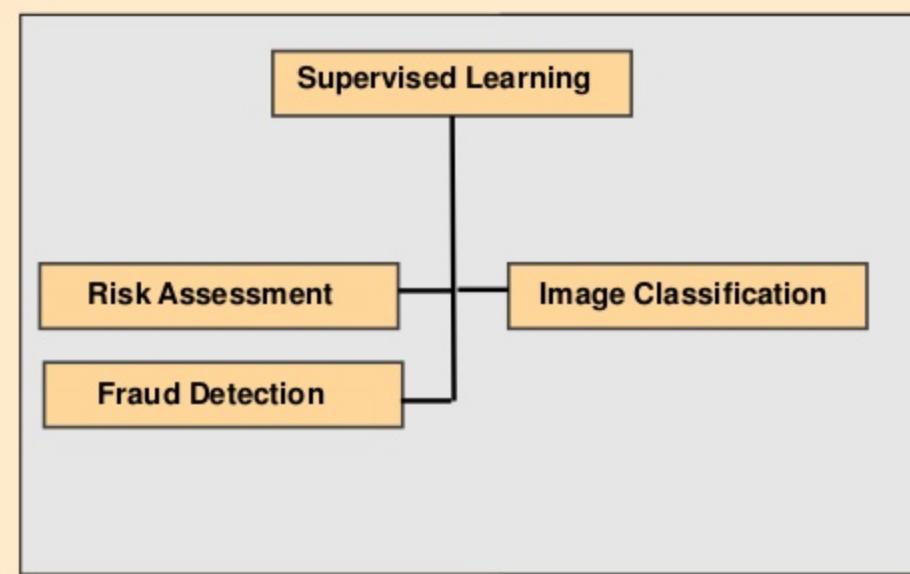
Applications of Supervised Learning

Areas where Supervised Learning is used



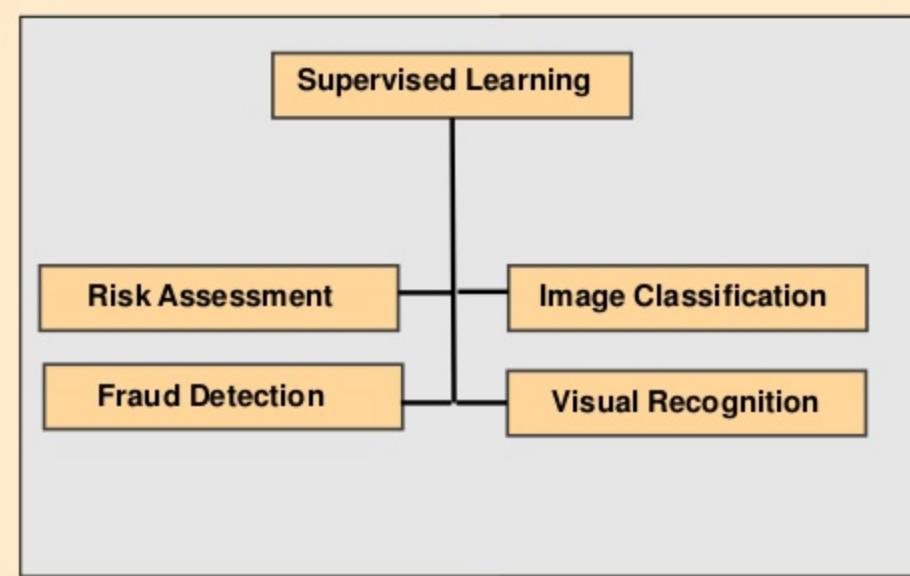
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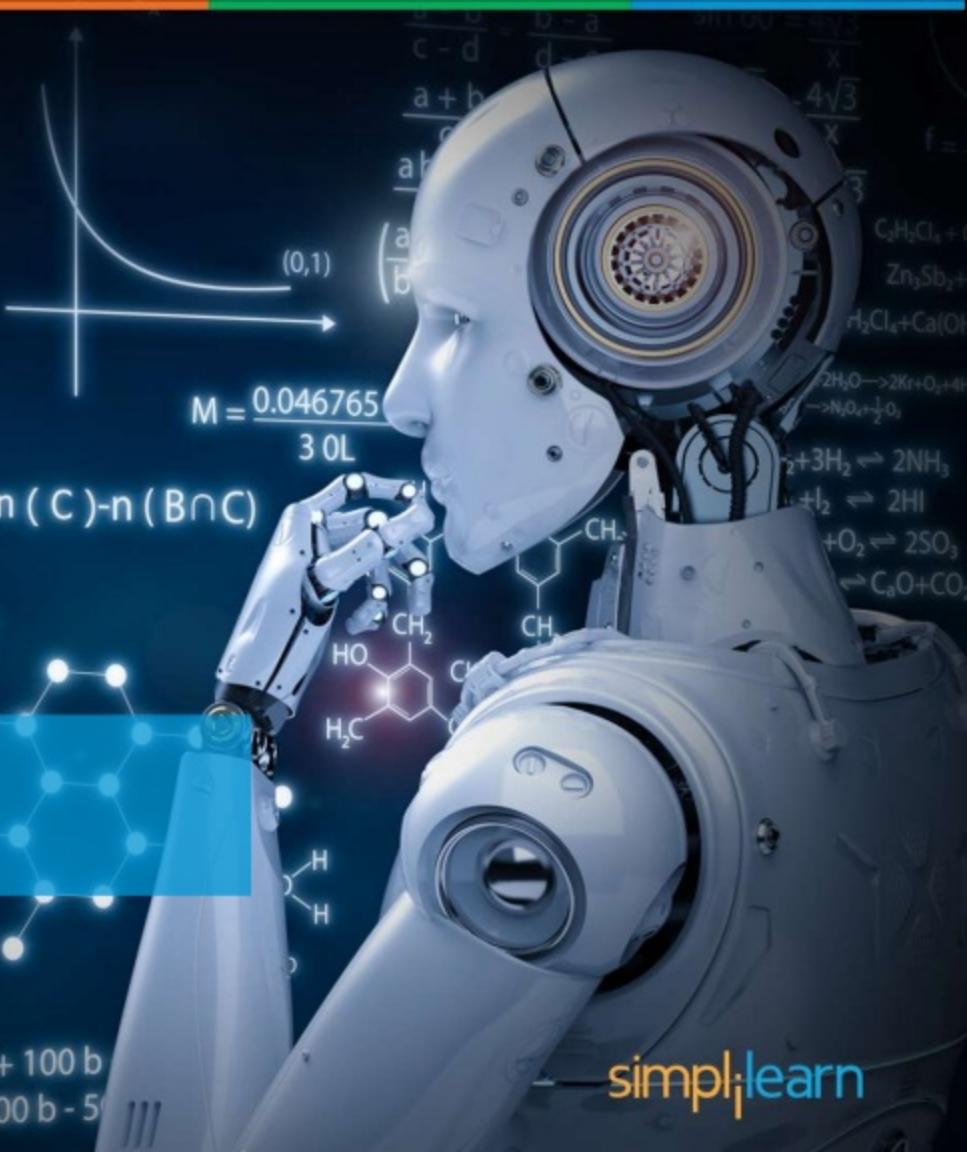
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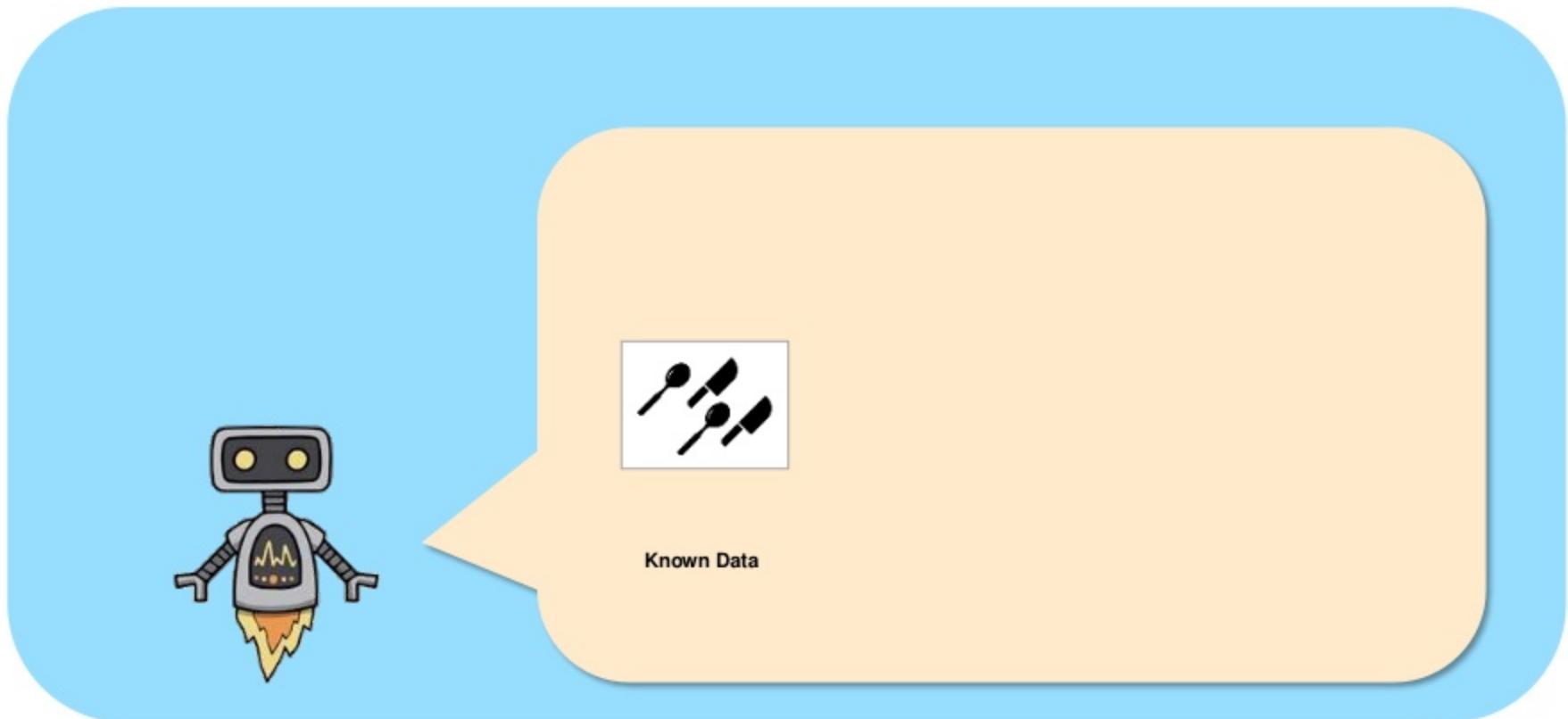


Unsupervised Learning

In Unsupervised Learning, the algorithm is trained using data that is unlabeled



Unsupervised Learning



Unsupervised Learning

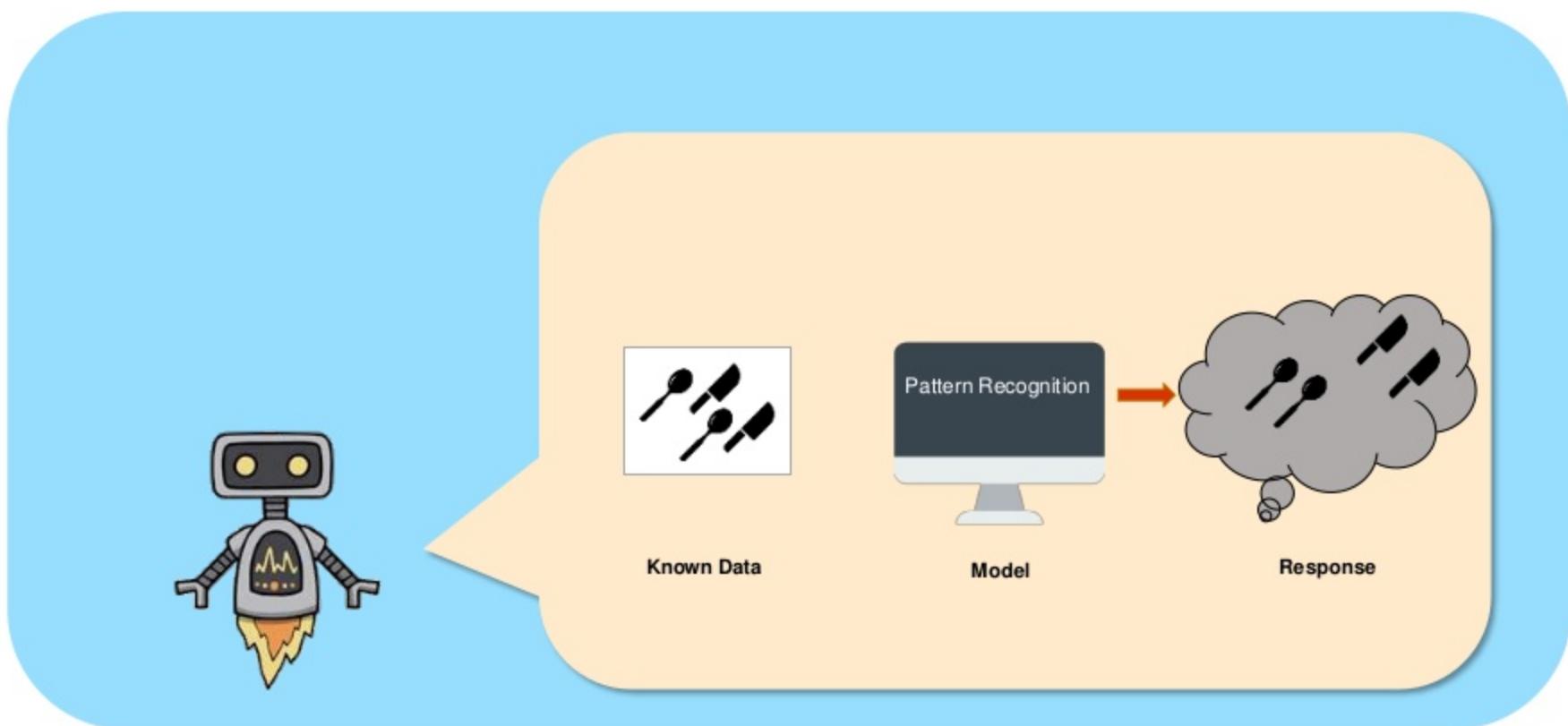


Known Data



Model

Unsupervised Learning



Types of Unsupervised Learning

Unsupervised Learning is basically of two types



Clustering

The method of dividing the objects into clusters which are similar between them and are dissimilar to the objects belonging to another cluster

Types of Unsupervised Learning

Unsupervised Learning is basically of two types



Clustering

The method of dividing the objects into clusters which are similar between them and are dissimilar to the objects belonging to another cluster

Association

Discovering the probability of the co-occurrence of items in a collection

Types of Unsupervised Learning



Clustering

Suppose a telecom company wants to reduce its customer churn rate by providing personalized call and data plans

Types of Unsupervised Learning



Clustering

Suppose a telecom company wants to reduce its customer churn rate by providing personalized call and data plans



Total Call duration



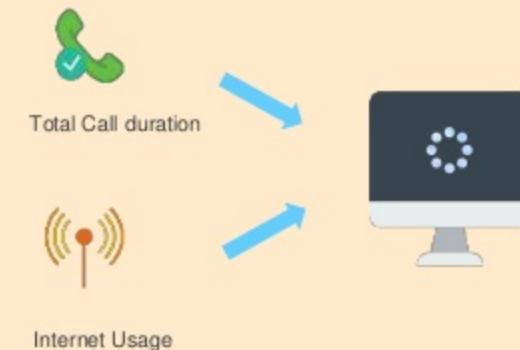
Internet Usage

Types of Unsupervised Learning



Clustering

Suppose a telecom company wants to reduce its customer churn rate by providing personalized call and data plans



Types of Unsupervised Learning



Clustering

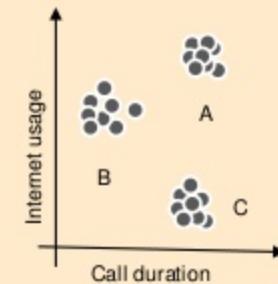
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Internet Usage



Types of Unsupervised Learning



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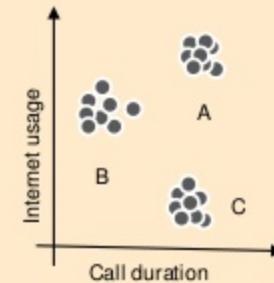
Total Call duration



Internet Usage



The model segments the customers with similar traits



Types of Unsupervised Learning



Clustering

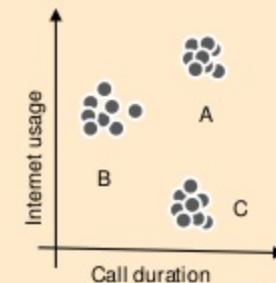
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Total Call duration



Internet Usage



The members in group B have high internet usage and low call duration and hence the company offers them the best data plans

Types of Unsupervised Learning



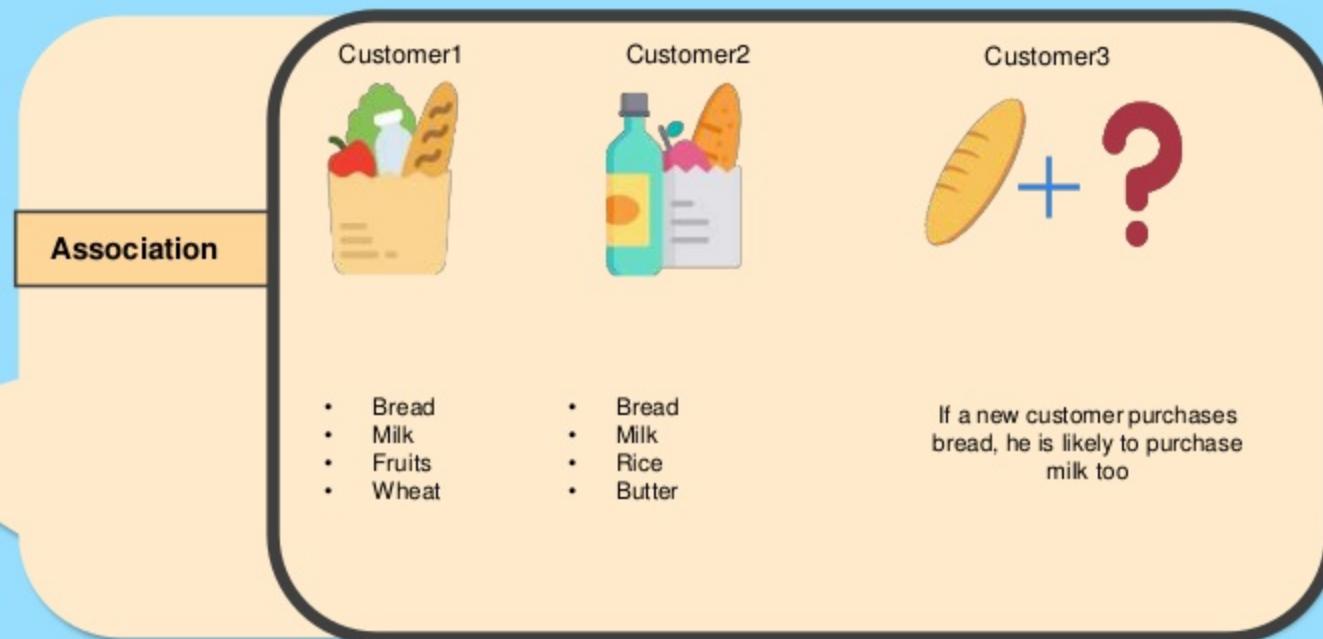
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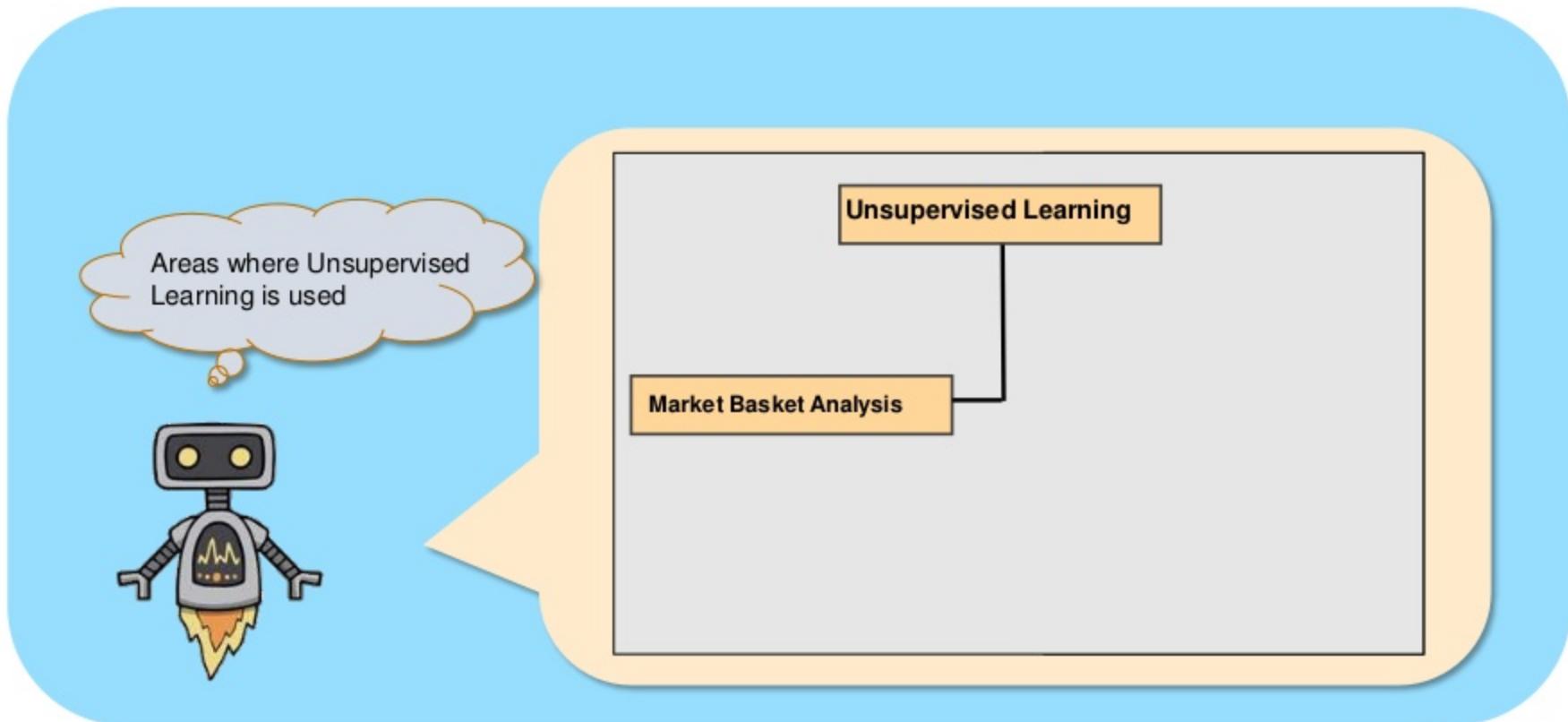
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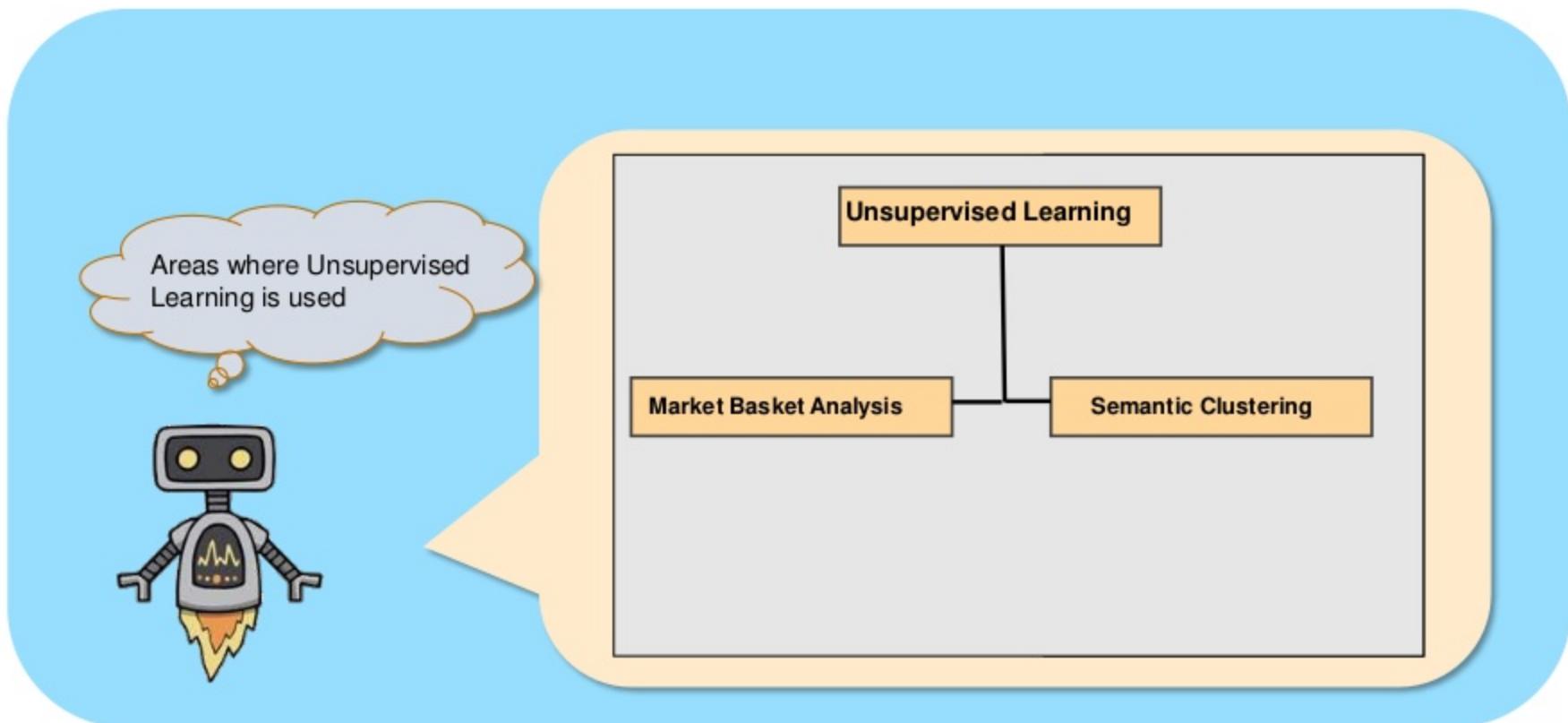
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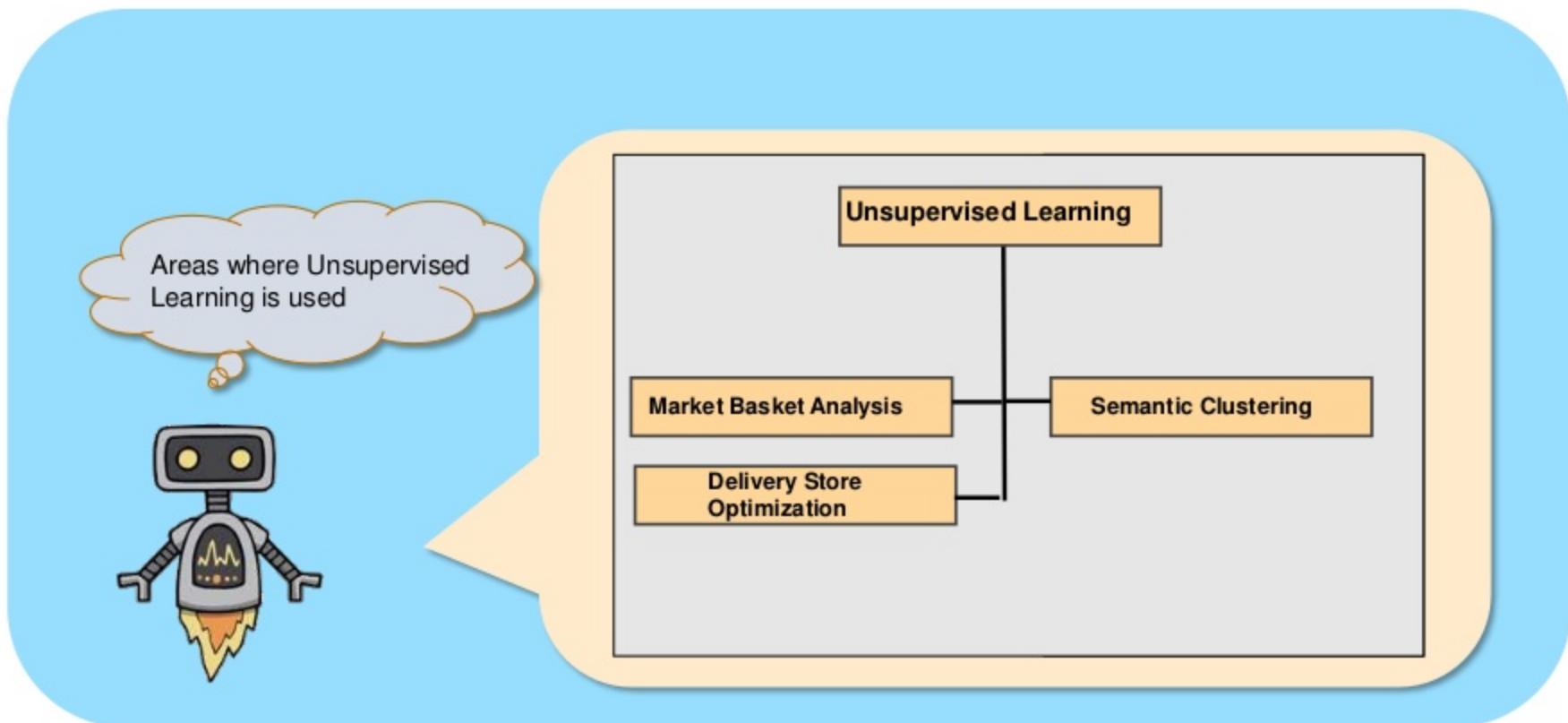
Applications of Unsupervised Learning



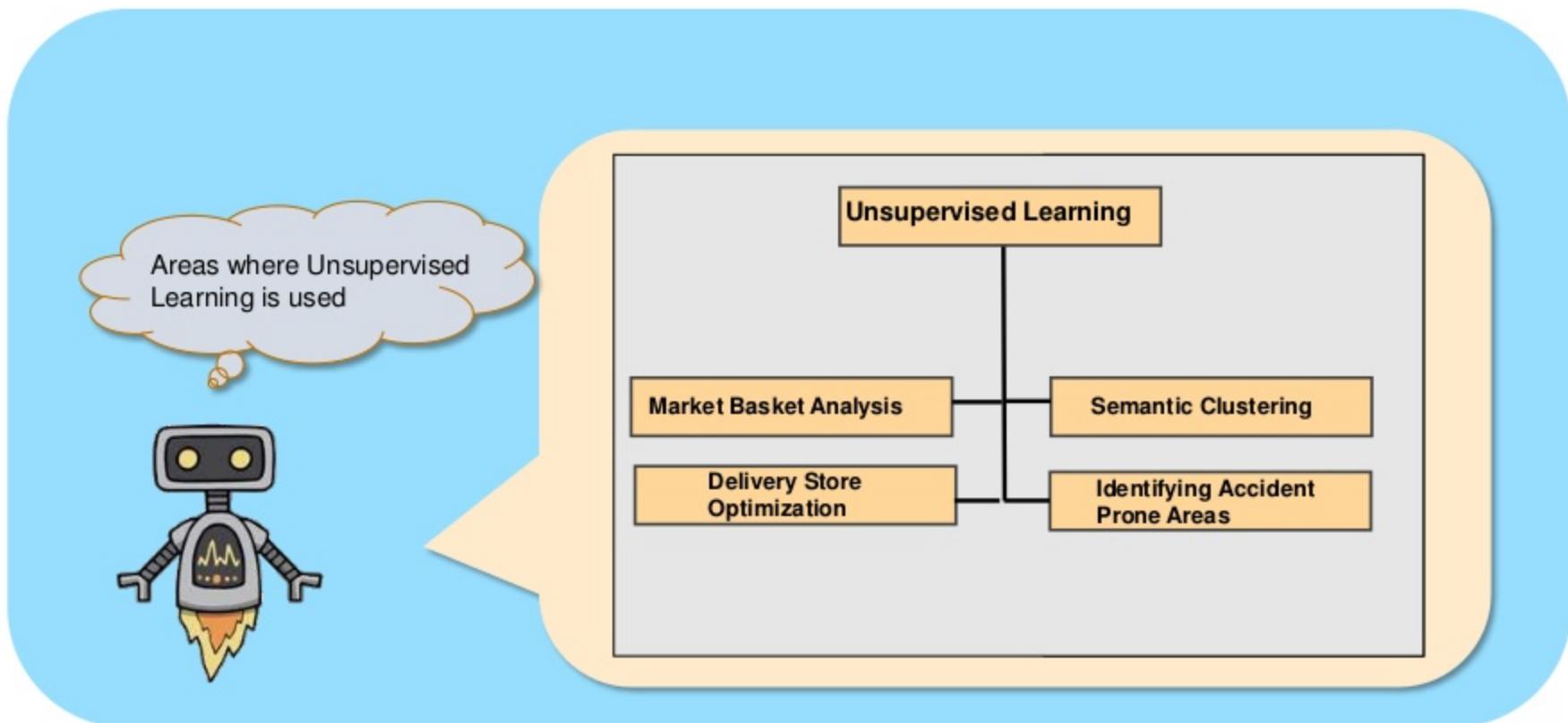
Applications of Unsupervised Learning



Applications of Unsupervised Learning



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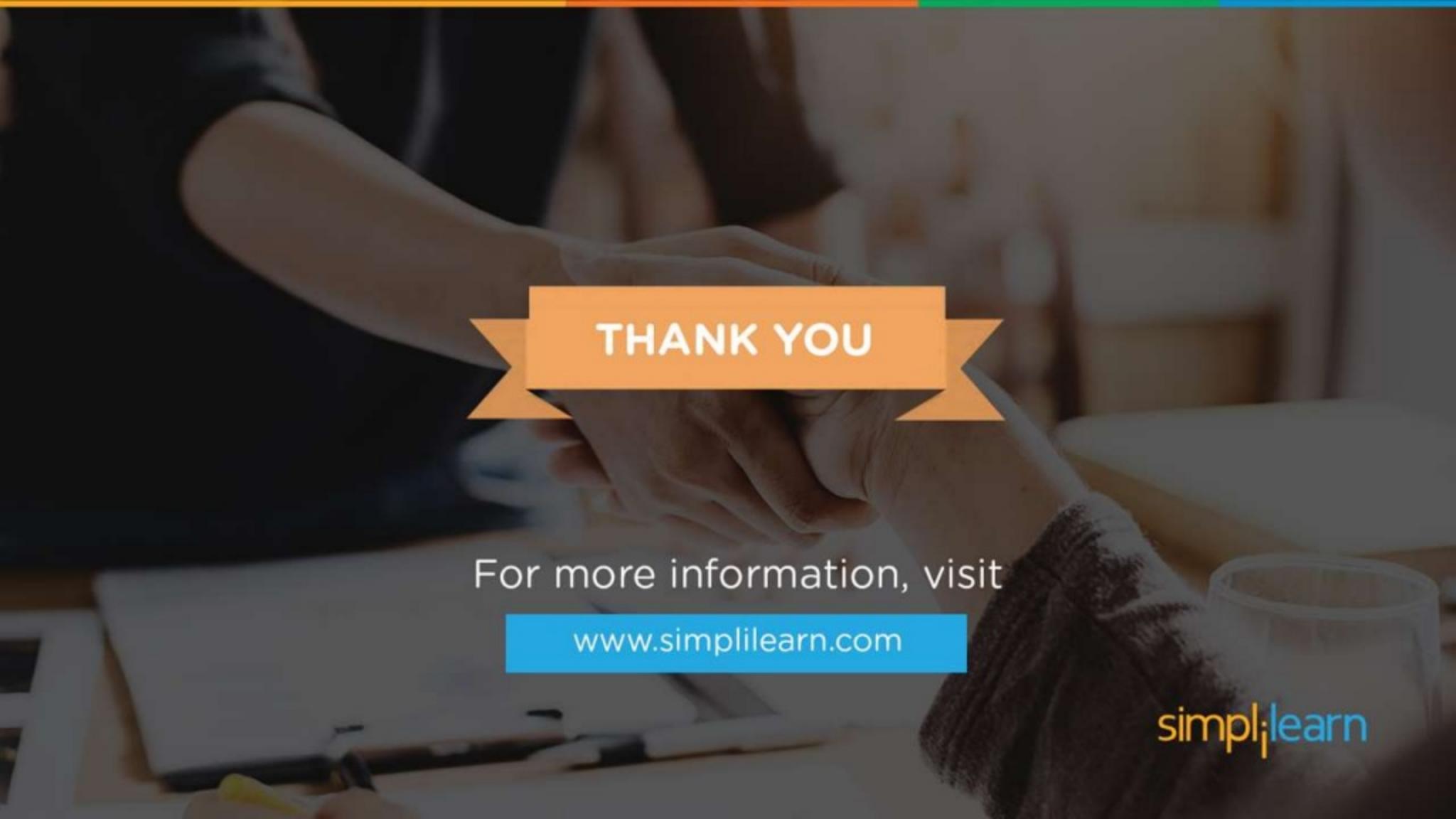


Recap

- Uses known and labeled data as input
 - Supervised learning has a feedback mechanism
 - Most commonly used supervised learning algorithms are decision tree, logistic regression, support vector machine
- Uses unlabeled data as input
 - Unsupervised learning has no feedback mechanism
 - Most commonly used unsupervised learning algorithms are k means clustering, hierarchical clustering, apriori algorithm

Supervised Learning

Unsupervised Learning



A close-up photograph of a person's hands working on a craft project, possibly knitting or crocheting, with a yellow ribbon banner overlaid containing the text "THANK YOU".

THANK YOU

For more information, visit

www.simplilearn.com

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