

## PRIOR KNOWLEDGE

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### Supervised and unsupervised learning:

In Supervised Learning, a machine is trained using 'labeled' data. Datasets are said to be labeled when they contain both input and output parameters. In other words, the data has already been tagged with the correct answer. Supervised machine learning is immensely helpful in solving real-world computational problems. The algorithm predicts outcomes for unforeseen data by learning from labeled training data. Therefore, it takes highly-skilled data scientists to build and deploy such models.

Unsupervised learning, also known as machine learning algorithms to analyze and cluster unlabeled datasets. These algorithms discover hidden patterns or data groupings without the need for human intervention. Its ability to discover similarities and differences in information make it the ideal solution for exploratory data analysis, cross-selling strategies, customer segmentation, and image recognition.

The image shows a YouTube video player interface. The video title is "Types of Unsupervised Learning" and the channel is "simplify learn". The video content is a diagram explaining unsupervised learning. A thought bubble from a robot character states: "Unsupervised Learning is basically of two types". The two types are listed in a table:

Type	Description
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

The video player shows a progress bar at 6:03 / 9:40. The YouTube logo and "simplify learn" branding are visible in the bottom right corner.

## Regression : –

Regression is the type of supervised machine learning, When the output is continuous like age, height etc. one of very popular regression algorithm is Linear Regression.

### Types of Regression :

- Linear Regression
- Ridge Regression

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# Regression

PREDICTORS → REGRESSION FUNCTION → RESPONSE

- Relationship: **Height - Weight?**
- Linear?

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## Clustering :

Clustering is unsupervised machine learning algorithm, it is used to group data point having similar characteristics as cluster. Clustering is divided into two groups

- Hard clustering – In hard clustering, the data point is assigned to one of the clusters only.
- Soft clustering – It provides a probability likelihood of a data point to be in each of the clusters

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# Clustering

- **Clustering:** grouping objects in clusters
  - *Similar* within cluster
  - *Dissimilar* between clusters
- **Example:** Grouping similar animal photos

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## Python Flask :

Flask Tutorial provides the basic and advanced concepts of the Python Flask framework. Our Flask tutorial is designed for beginners and professionals.

Flask is a web framework that provides libraries to build lightweight web applications in python. It is developed by Armin Ronacher who leads an international group of python enthusiasts (POCCO).

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# Installation - Flask

Installation

Once installed, new virtual environment is created in a folder

```
mkdir newproj
cd newproj
virtualenv venv
```

To activate corresponding environment, use the following:

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```
venv\scripts\activate
```

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5:12 / 35:50 • Installation - Flask

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I'm learning Flask!

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## **What is Flask?**

Flask is a web framework that provides libraries to build lightweight web applications in python. It is developed by Armin Ronacher who leads an international group of python enthusiasts (POCCO). It is based on WSGI toolkit and jinja2 template engine. Flask is considered as a micro framework.