What is Machine Learning?

**Machine Learning** is a branch of artificial intelligence where machines are trained on specific datasets to identify patterns and relationships within the data. Based on this learning, the machine can then make predictions or decisions when given new input. The training data is often historical data, which helps the model understand trends and behaviors to improve its accuracy over time.

What is Supervised Machine Algo?

**Supervised Machine Learning** is a type of machine learning algorithm where both the input data and the corresponding output are known. The model is trained using this labeled data, meaning each input is correctly mapped to its output. This allows the machine to learn from the data and make accurate predictions on new, unseen inputs. It’s important to note that in supervised learning, the data **must** be labeled — if the data is unlabeled, it falls under **unsupervised learning**, not supervised.

What is Classification and Regression?

A **classification algorithm** is used in supervised learning when the output variable is **categorical**, meaning it belongs to a specific class or category. The goal is to classify the input data into one of the predefined classes.

A **regression algorithm** is used in supervised learning when the output variable is **continuous**, meaning it can take any real value. The goal is to predict a numerical value based on input data.

Based on the type of output, different machine learning algorithms are used. If the output is **categorical** (i.e., belongs to a specific class or category), **classification algorithms** are applied. If the output is **continuous** (i.e., a real-valued number), **regression algorithms** are used. Choosing the right algorithm depends on whether the goal is to classify data into categories or predict a continuous value.