**Supervised Learning**

**Definition:**

* **Supervised learning** involves training a model on a dataset where the correct output is known.
* The goal is to uncover the underlying relationship between the input and output.

**Types:**

1. **Regression**: Predicting a continuous output.
2. **Classification**: Predicting a discrete output.

**Examples:**

**Example 1: Real Estate Market**

* **Regression**: Predicting house price based on size (continuous output).
* **Classification**: Classifying if the house sells for more or less than the asking price (discrete categories).

**Example 2:**

(a) **Regression**: Predicting a person's age based on their picture (continuous output). (b) **Classification**: Predicting if a tumor is malignant or benign (discrete categories).

**Key Points:**

* **Regression Problems**: Mapping input variables to a continuous function; useful in predictions that require a quantitative response.
* **Classification Problems**: Mapping input variables to discrete categories; used for categorizing inputs into two or more classes.

By understanding whether a problem is a regression or classification task, the appropriate algorithms and methods can be applied to model and predict the desired outcomes. Supervised learning serves as a fundamental approach in machine learning, with broad applications across various domains.