A diagram of a learning process

Description automatically generated

Unsupervised Learning:

1. **K-Means Clustering:**

**Objective: Group similar data points into clusters.**

**Use case: Customer segmentation, image segmentation, anomaly detection.**

**Example: If you have customer data, K-means clustering can help identify distinct groups of customers based on their purchasing behavior.**

1. **Principal Component Analysis (PCA):**

**Objective: Reduce the dimensionality of the data while retaining as much variance as possible.**

**Use case: Feature reduction, visualization, noise reduction.**

**Example: PCA can be used to reduce the dimensionality of a dataset with many correlated features.**

1. **Association Rule Mining (e.g., Apriori algorithm):**

**Objective: Discover interesting relationships between variables in large datasets.**

**Use case: Market basket analysis, recommendation systems.**

**Example: Finding associations between products frequently bought together in a retail dataset.**