Unsupervised Learning

- The training data is unlabeled.
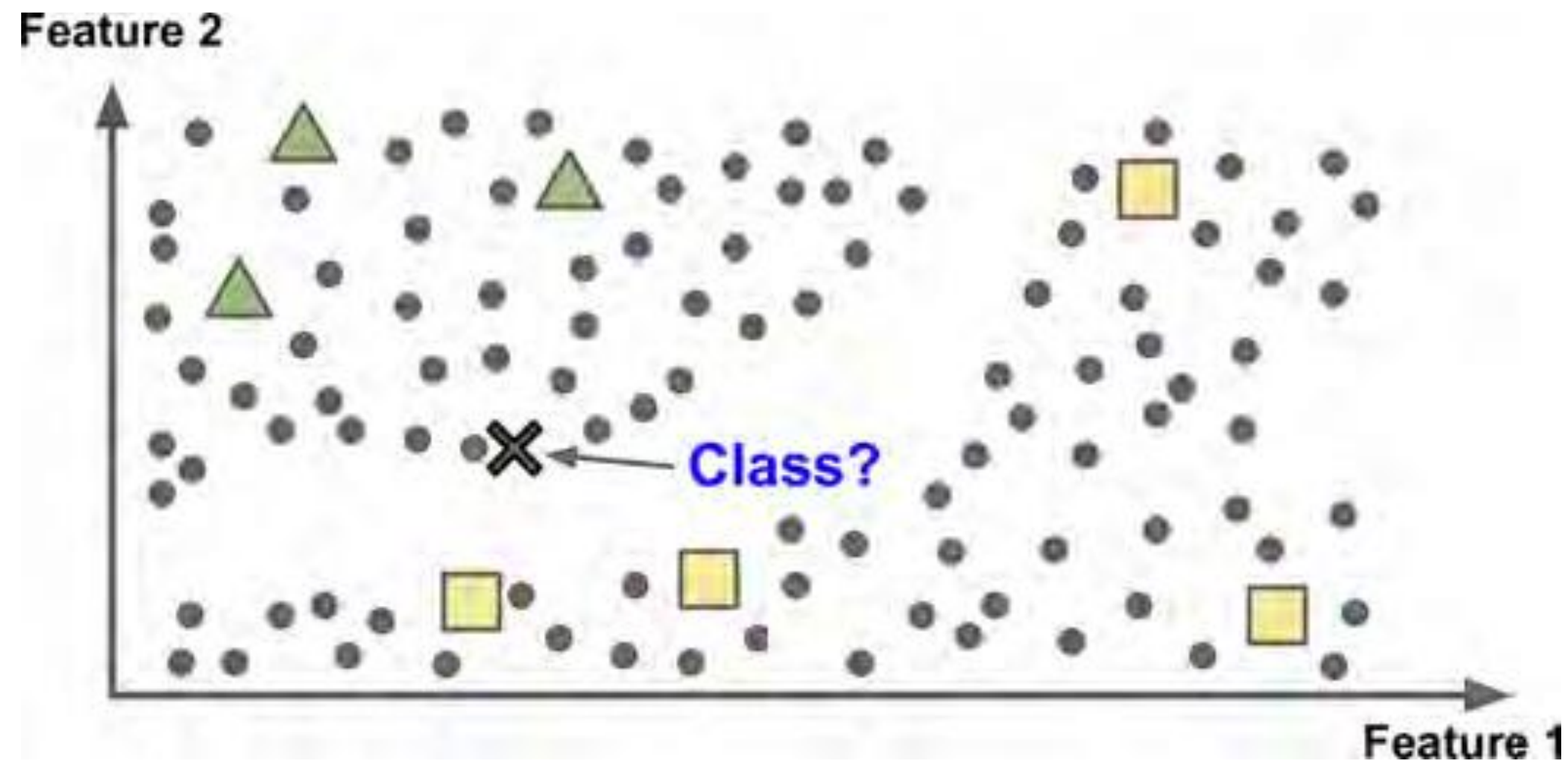
Supervised Learning

Clustering
- k-Means
- Hierarchical Cluster Analysis (HCA)
- Expectation Maximization

Visualization and dimensionality reduction
- Principal Component Analysis (PCA)
- Kernel PCA
- Locally-Linear Embedding (LLE)
- t-distributed Stochastic Neighbor Embedding (t-SNE)

Association rule learning
- Apriori
- Eclat
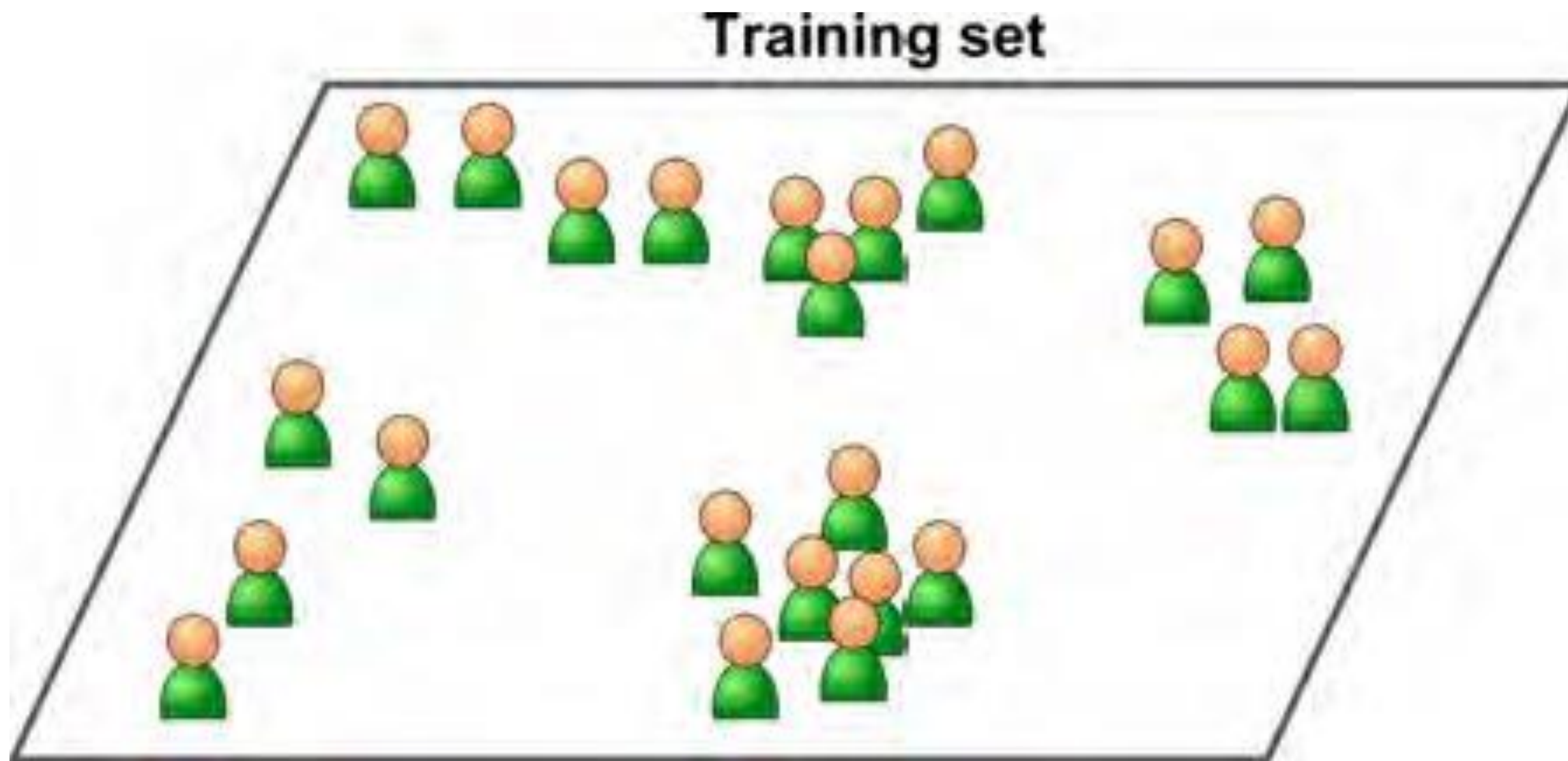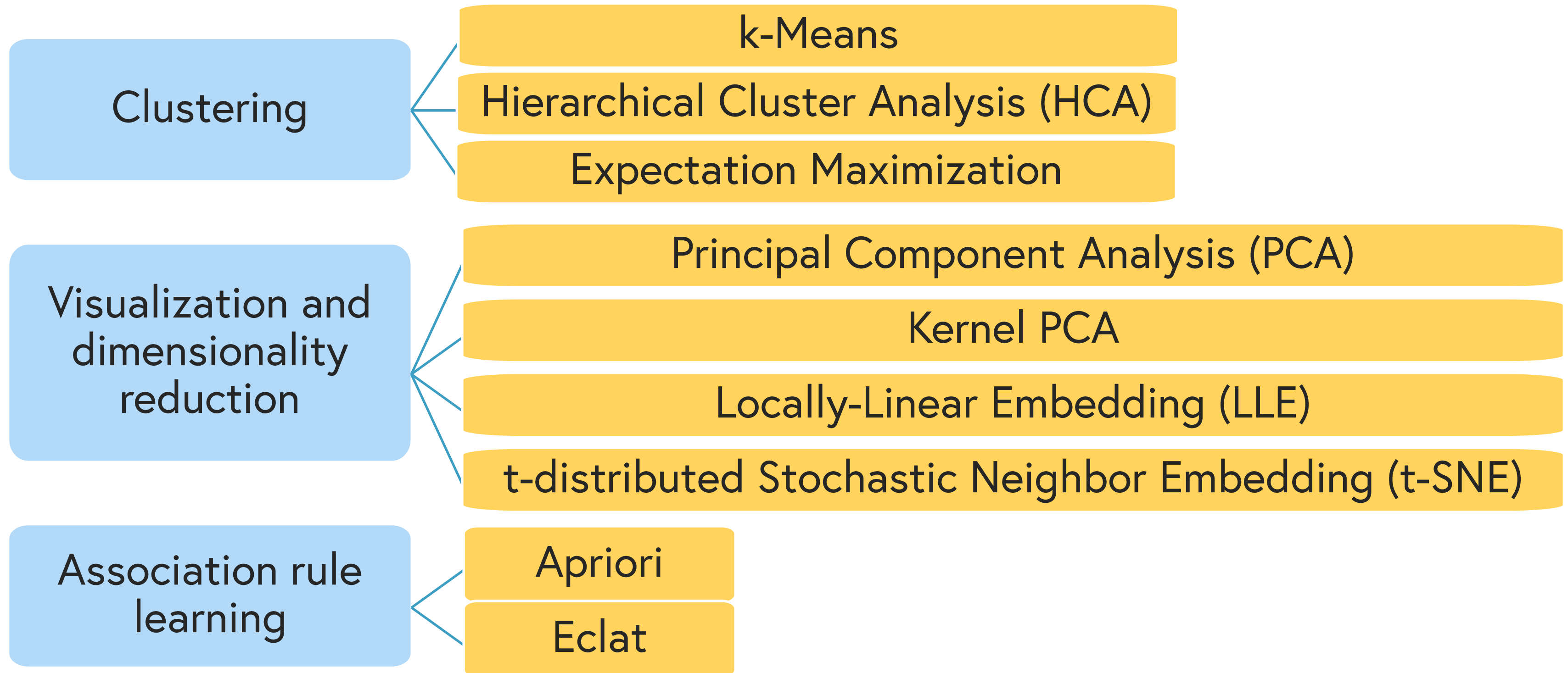
Semisupervised Learning

- Some algorithms can deal with partially labeled training data, usually a lot of unlabeled data and a little bit of labeled data.

Different Types of Learning

Training Data

Supervised Learning | All Labeled Data → Model
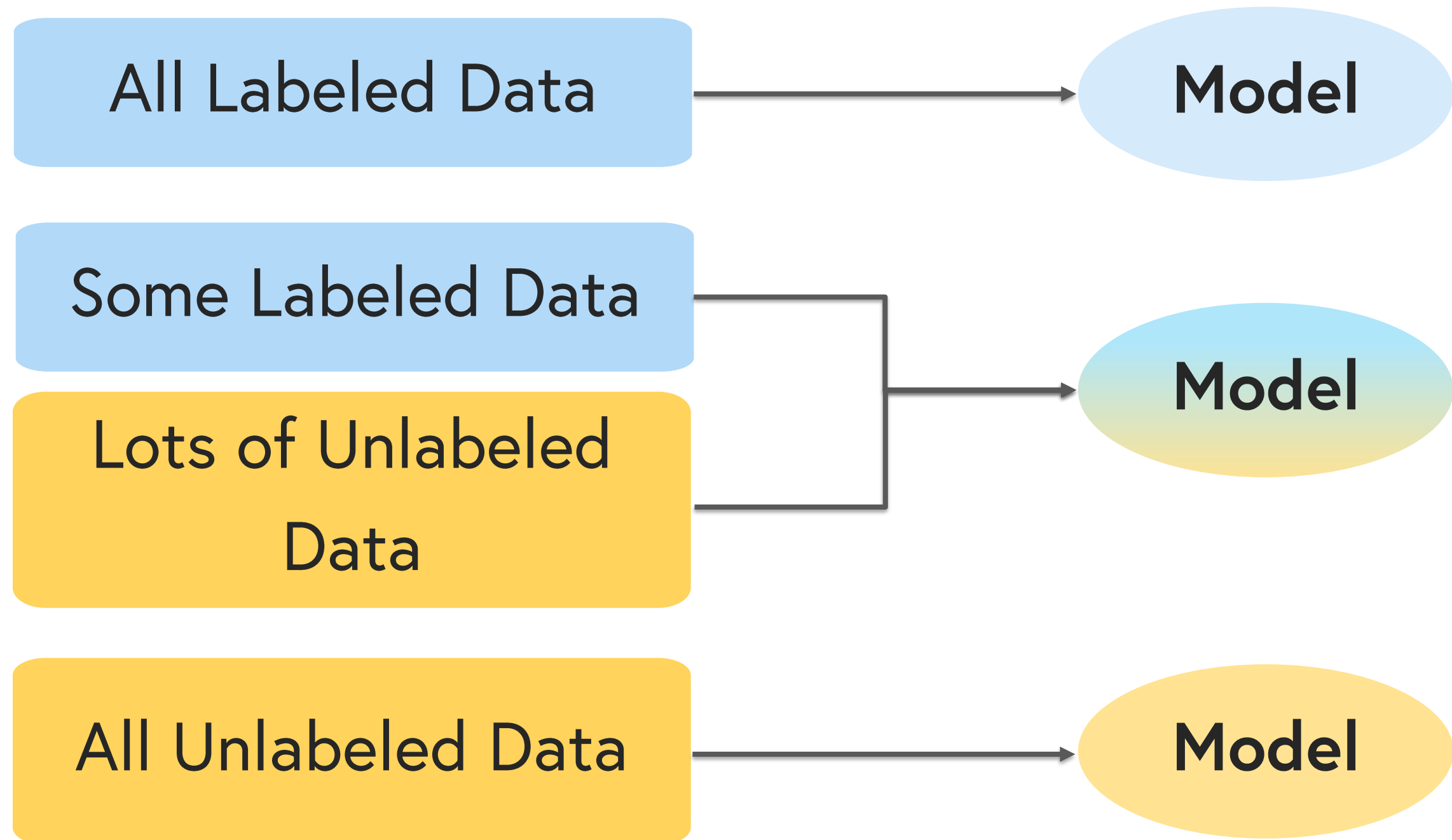
Semi-Supervised Learning | Some Labeled Data / Lots of Unlabeled Data → Model
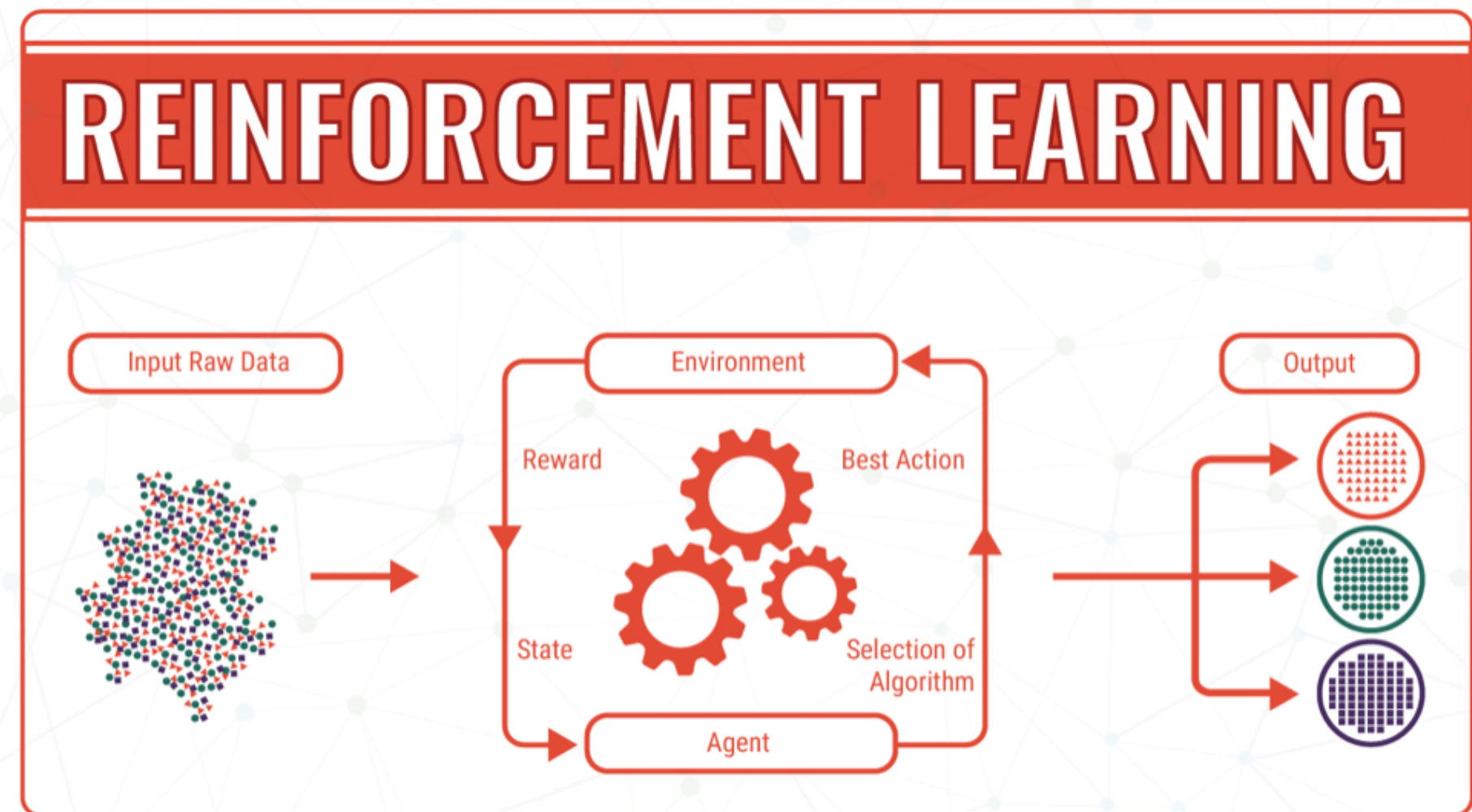
Unsupervised Learning | All Unlabeled Data → Model

Reinforcement Learning

- The learning system, called an agent in this context, can observe the environment, select and perform actions, and get rewards in return.

Natural Language Processing (NLP)

- A subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language.

- Challenges

  - Speech recognition

  - Natural language understanding

  - Natural-language generation

Natural Language Processing (NLP)

Text classification

Information retrieval

Natural Language Processing

Natural language understanding

Natural language generation