DAY 11

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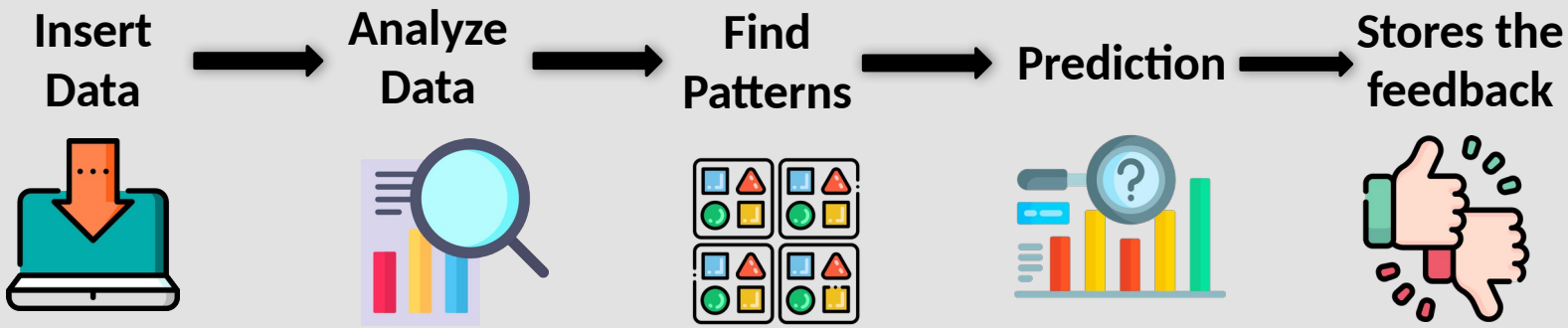
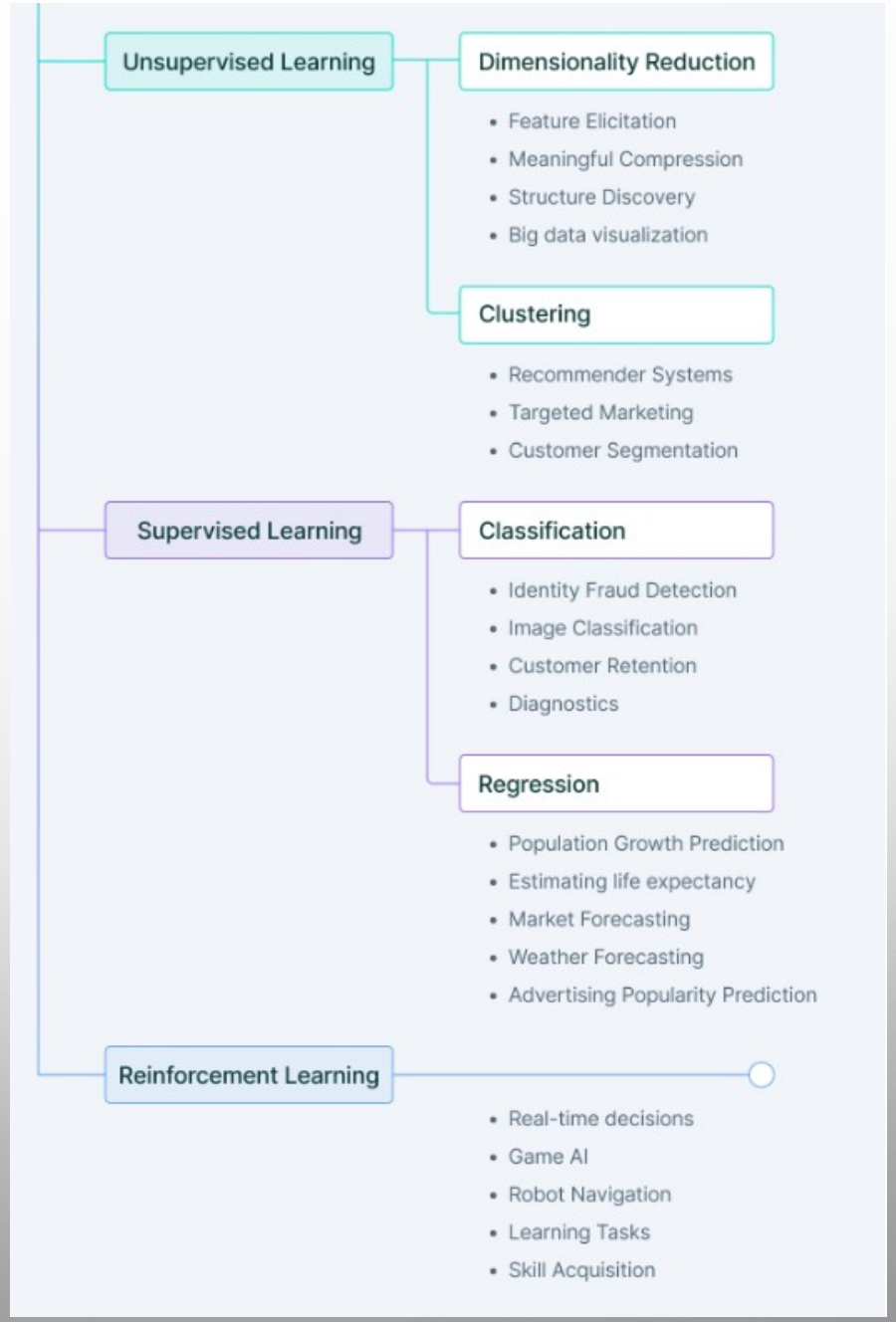
HOW DOES ML WORK?

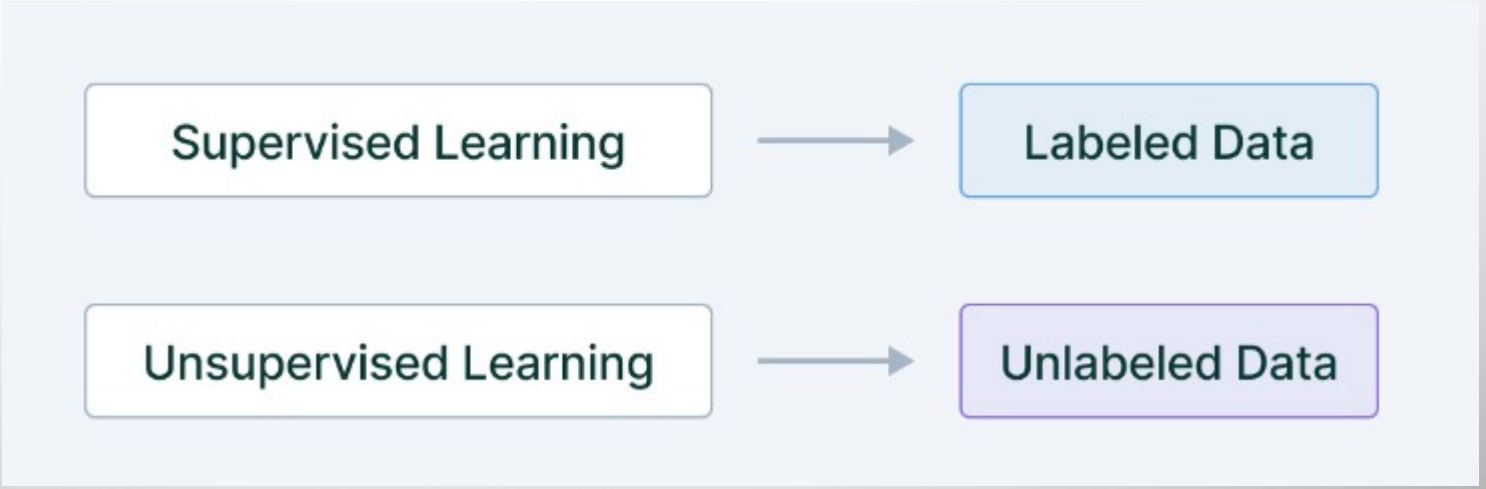


https://data-flair.training/blogs/machine-learning-tutorial/

TYPES OF ML

- Supervised learning
- Unsupervised learning
- Reinforcement learning


Unsupervised Learning
Dimensionality Reduction
Feature Elicitation
Meaningful Compression
Structure Discovery
Big data visualization
Clustering
Recommender Systems
Targeted Marketing
Customer Segmentation
Supervised Learning
Classification
Identity Fraud Detection
Image Classification
Customer Retention
Diagnostics
Regression
Population Growth Prediction
Estimating life expectancy
Market Forecasting
Weather Forecasting
Advertising Popularity Prediction
Reinforcement Learning
Real-time decisions
Game AI
Robot Navigation
Learning Tasks
Skill Acquisition


Supervised Learning
Labeled Data
Unsupervised Learning
Unlabeled Data

DATA

- ***Supervised Learning*** learns from the training dataset by iteratively making predictions on the data and adjusting for the correct answer.
- Supervised techniques deal with labeled data where the output data patterns are known to the system.
- ***Unsupervised Learning*** models work on their own to discover the inherent structure of unlabeled data.
- The unsupervised learning algorithm works with unlabeled data, in which the output is based solely on the collection of perceptions.

UNSUPERVISED LEARNING

- Identify patterns in data sets containing data points that are neither classified nor labeled.
- The algorithms are thus allowed to classify, label and/or group the data points contained within the data sets without having any external guidance in performing that task.
- Additionally, subjecting a system to unsupervised learning is one way of testing AI.

UNSUPERVISED MACHINE LEARNING METHODS

- **Clustering:** Clustering is a data mining technique which groups unlabeled data based on their similarities or differences
- **K-means clustering** is a common example of an exclusive clustering method where data points are assigned into K groups, where K represents the number of clusters based on the distance from each group’s centroid.
- **Association Rules:** An association rule is a rule-based method for finding relationships between variables in a given dataset. These methods are frequently used for market basket analysis, allowing companies to better understand relationships between different products.
- **Dimensionality reduction:** While more data generally yields more accurate results, it can also impact the performance of machine learning algorithms (e.g. overfitting) and it can also make it difficult to visualize datasets. Dimensionality reduction is a technique used when the number of features, or dimensions, in a given dataset is too high.

REINFORCEMENT LEARNING

- Reinforcement learning is a machine learning training method based on rewarding desired behaviors and/or punishing undesired ones.
- A reinforcement learning agent is able to perceive and interpret its environment, take actions and learn through trial and error.