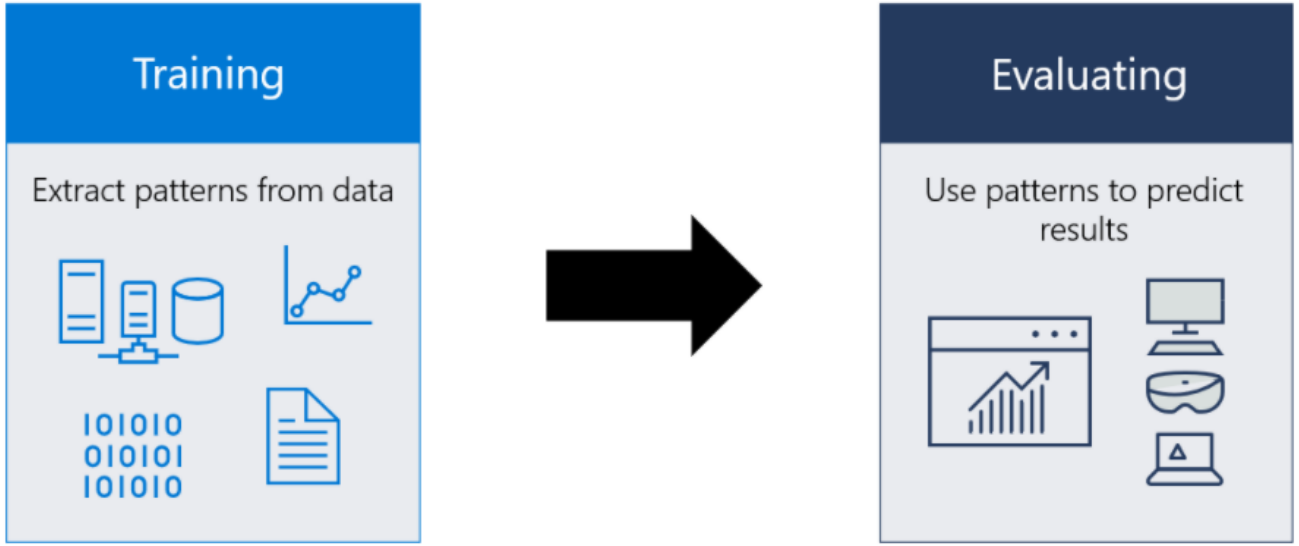
AFRICA DATA SCHOOL

Machine learning Models

What is a machine learning model?

A machine learning model is a file that has been trained to recognize certain types of patterns. You train a model over a set of data, providing it an algorithm that it can use to reason over and learn from those data.

For example, let's say you want to build an application that can recognize a user's emotions based on their facial expressions. You can train a model by providing it with images of faces that are each tagged with a certain emotion, and then you can use that model in an application that can recognize any user's emotion.



When to use Machine Learning

Good machine learning scenarios often have the following common properties:

- They involve a repeated decision or evaluation which you want to automate and need consistent results.
- It is difficult or impossible to explicitly describe the solution or criteria behind a decision.
- You have labeled data, or existing examples where you can describe the situation and map it to the correct result.

There are four types of machine learning algorithms:

Supervised learning

In supervised learning, the machine is taught by example. The operator provides the machine learning algorithm with a known dataset that includes desired inputs and outputs, and the algorithm must find a method to determine how to arrive at those inputs and outputs.

Semi-supervised learning

Semi-supervised learning is similar to supervised learning, but instead uses both labelled and unlabelled data. Labelled data is essentially information that has meaningful tags so that the algorithm can understand the data, whilst unlabelled data lacks that information. By using this

combination, machine learning algorithms can learn to label unlabelled data.

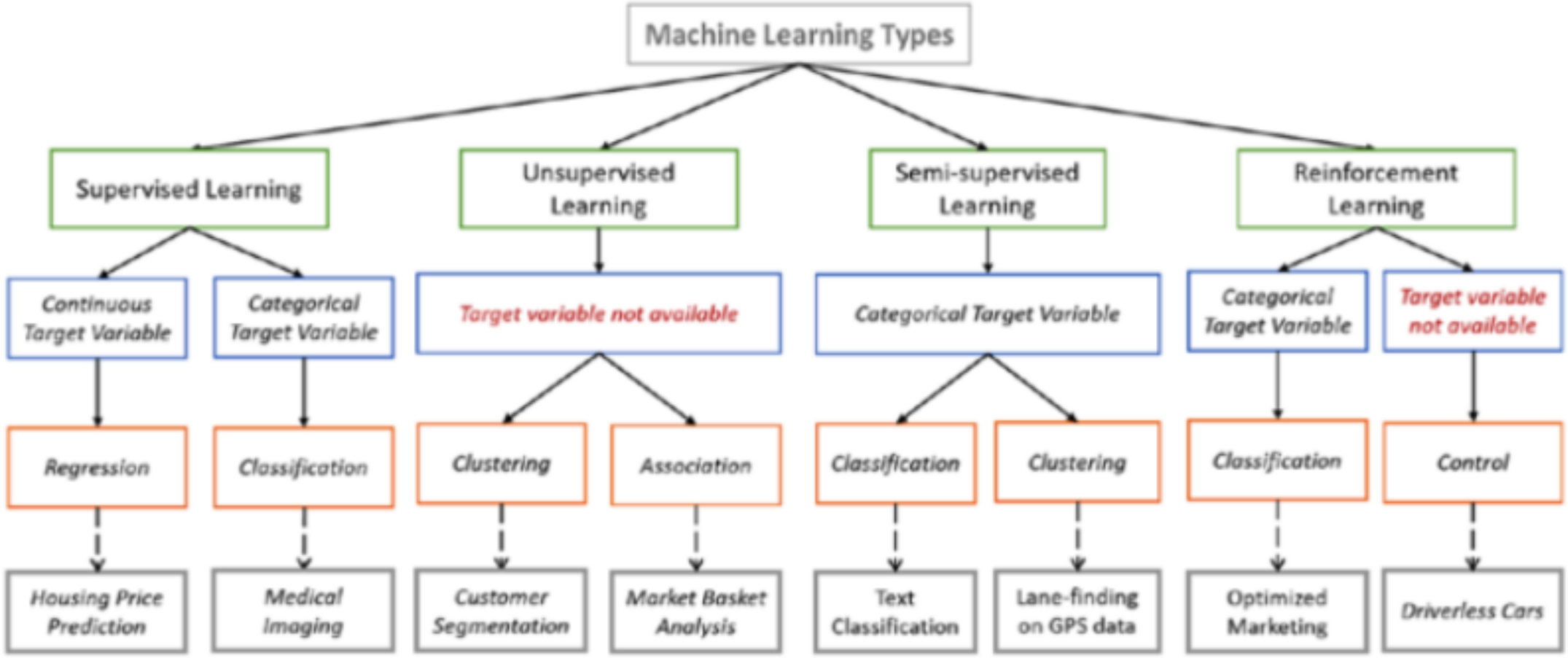
Unsupervised learning

Here, the machine learning algorithm studies data to identify patterns. There is no answer key or human operator to provide instruction. Instead, the machine determines the correlations and relationships by analysing available data.

Reinforcement learning

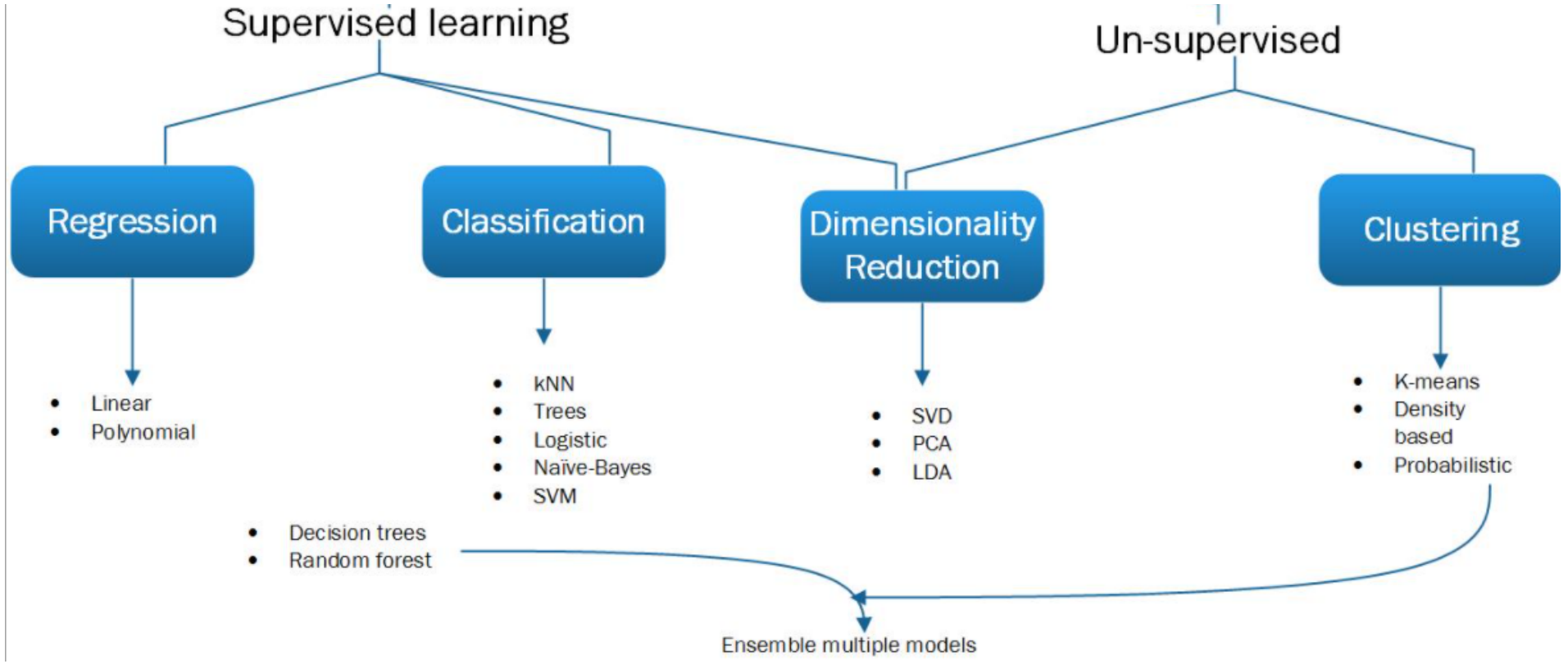
Method aims at using observations gathered from the interaction with the environment to take actions that would maximize the reward or minimize the risk. Reinforcement learning algorithm (called the agent) continuously learns from the environment in an iterative fashion. In the process, the agent learns from its experiences of the environment until it explores the full range of possible states.

Types of machine learning



https://en.proft.me/2015/12/24/types-machine-learning-algorithms/

Machine Learning Algorithm:



Machine Learning Algorithms Cheat Sheet