1. It is **the form of learning which requires higher order mental processes like thinking, reasoning, intelligence, etc**. we learn different concepts from childhood. For example, when we see a dog and attach the term 'dog', we learn that the word dog refers to a particular animal.
2. The three major types of learning described by behavioral psychology are **classical conditioning, operant conditioning, and observational learning**.
3. Machine learning is a subfield of artificial intelligence, which is broadly defined as **the capability of a machine to imitate intelligent human behavior**. It works by exploring data and identifying patterns, and involves minimal human intervention.
4. In Reinforcement Learning (RL), agents are trained on a reward and punishment mechanism. **The agent is rewarded for correct moves and punished for the wrong ones**. In doing so, the agent tries to minimize wrong moves and maximize the right ones.
5. In general, we can think of concept learning as a search problem. **The learner searches through a space of hypotheses (we will explain what they are), to find the best one**.

6) The Goals of Machine Learning.

**To make the computers smarter, more intelligent**. The more direct objective in this aspect is to develop systems (programs) for specific practical learning tasks in application domains. (2) To develop computational models of human learning process and perform computer simulations.

**Humans acquire knowledge through experience either directly or shared by others.** **Machines acquire knowledge through experience shared in the form of past data**. We have the terms, Knowledge, Skill, and Memory being used to define intelligence.

1. Machine learning can be used in the techniques and tools that can help in the diagnosis of disease. It is used for the analysis of the clinical parameters and their combination for the prognosis example prediction of disease progression for the extraction of medical knowledge for the outcome research, for therapy planning and patient monitoring. These are the successful implementations of the machine learning methods. It can help in the integration of computer-based systems in the healthcare sector.
2. In simple terms, abstraction **“displays” only the relevant attributes of objects and “hides” the unnecessary details**. For example, when we are driving a car, we are only concerned about driving the car like start/stop the car, accelerate/ break, etc.
3. In machine learning, generalization is **a definition to demonstrate how well is a trained model to classify or forecast unseen data**. Training a generalized machine learning model means, in general, it works for all subset of unseen data. An example is when we train a model to classify between dogs and cats.

The main difference between Regression and Classification algorithms that Regression algorithms are used to **predict the continuous** values such as price, salary, age, etc. and Classification algorithms are used to **predict/Classify the discrete values** such as Male or Female, True or False, Spam or Not Spam, etc.

10)Regression analysis is all about **determining how changes in the independent variables are associated with changes in the dependent variable**. Coefficients tell you about these changes and p-values tell you if these coefficients are significantly different from zero. Medical researchers often use linear regression to understand the relationship between drug dosage and blood pressure of patients.

For example, researchers might administer various dosages of a certain drug to patients and observe how their blood pressure responds. They might fit a simple linear regression model using dosage as the predictor variable and blood pressure as the response variable.

11)Clustering is the task of **dividing the population or data points into a number of groups such that data points in the same groups are more similar to other data points in the same group than those in other groups**. In simple words, the aim is to segregate groups with similar traits and assign them into clusters.

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