Kunal Mehta
50352960
kunalkam

Quiz 1

1. Differences between supervised and unsupervised learning:
    - The chief difference between supervised and unsupervised learning is that in case of supervised learning, the algorithm is provided a means of self-evaluation, a mode by which it can determine its accuracy and thereby maximize it. For instance, an image recognition model that uses labelled images as its training dataset is an example of supervised learning.
    - Supervised learning is most often used when there is prior knowledge of what the output values should be, whereas unsupervised learning is most commonly used to detect the inherent features of the data without any influence or direction.
    - Due to their nature, supervised learning algorithms tend to be more logically complex, whereas the lack of direction tends to make unsupervised learning algorithms less complex.
    - Supervised learning tends to be one of either classification or regression, whereas unsupervised learning tends to involve clustering, principal component analysis and so on.

2. Examples of supervised learning applications:
    - Image recognition systems: Usually involving neural networks, the models are trained on pre-labelled training datasets. This provision of the labels is what the self-evaluation of the model is based on.
    - Weather prediction models: Based on big data from meteorological monitoring systems and from previous weather phenomena, weather prediction models are often made to predict and simulate the spread, effect and duration of certain weather phenomena like typhoons and cyclones based on a multitude of parameters like wind velocity, atmospheric humidity, cloud type, precipitation as well as the historic data about similar phenomena and the same location. These models involve both regression and classification and are good examples of supervised learning.