**Assignment\_1**

1. What does one mean by the term "machine learning"?

**Ans: According to me, Machine Learning is a machine (non-living thing) learns or turns into living things by means of sensors technology and get capability of communicating, thinking and taking decisions. An objects get trained through algorithms and large data sets.**

2.Can you think of 4 distinct types of issues where it shines?

**Ans: 1) Predicting crop disease and soil analysis in Agriculture.**

**2) Prediction of various disease in Healthcare.**

**3) Weather forecasting**

**4) Smart electric vehicles.**

3. What is a labeled training set, and how does it work?

**Ans: A labelled training data set has a tag, like name, a type, etc. It trains the model to yield inputs and desired outputs with datasets. The model is trained to learn over time.**

4. What are the two most important tasks that are supervised?

**Ans: Regression and Classification**

5. Can you think of four examples of unsupervised tasks?

**Ans: Clustering , visualization, dimensionality reduction, and association rule learning.**

6. State the machine learning model that would be best to make a robot walk through various unfamiliar terrains?

**Ans: Reinforced Learning**

7. Which algorithm will you use to divide your customers into different groups?

**Ans**: **k-means clustering algorithm**

8. Will you consider the problem of spam detection to be a supervised or unsupervised learning problem?

**Ans: Supervised Learning**

9. What is the concept of an online learning system?

**Ans: In Online learning system machine learns continuously.**

10.What is out-of-core learning, and how does it differ from core learning?

**Ans: out-of-core learning is set of algorithms working with data that cannot fit in memory of a single computer, but can easily fit into some data storage.**

11.What kind of learning algorithm makes predictions using a similarity measure?

**Ans: instance-based Learning**

12.What's the difference between a model parameter and a hyperparameter in a learning algorithm?

Ans

13.What are the criteria that model-based learning algorithms look for? What is the most popular method they use to achieve success? What method do they use to make predictions?

14.Can you name four of the most important Machine Learning challenges?

**Ans: 1) Lack of enough data**

**2) uninformative features**

**3) complex models that overfit the data.**

**4) nonrepresentative data.**

15.What happens if the model performs well on the training data but fails to generalize the results to new situations? Can you think of three different options?

**Ans: overfitting the training data.**

**Solutions: getting more data and simplifying the model.**

16.What exactly is a test set, and why would you need one?

**Ans: We need test set to validate if the model is trained under all circumstances.**

17.What is a validation set's purpose?

**Ans: To choose the number of hidden units in a neural network.**

18.What precisely is the train-dev kit, when will you need it, how do you put it to use?

**19.What could go wrong if you use the test set to tune hyperparameters?**

**Ans: We allow the model to see the data, thus we loose the possibility to find out how good our model is.**