1.Explain the term machine learning, and how does it work? Explain two machine learning applications in the business world. What are some of the ethical concerns that machine learning applications could raise?

Machine learning is the field of study which gives the computers capability to learn without being explicitly programmed. It is actively used today to being in real life business solutions and enhance productivity. It can be used to track credit card fraud transaction or predict flight fares.

Some of the ethical issues could be as it would also bring in unemployment and also if we build robots they might behave biased.

2. Describe the process of human learning:

i. Under the supervision of experts

In this case the human learning will be better since there is a guidance of someone who is experienced hence the learning would be better.

ii. With the assistance of experts in an indirect manner

Here the human learning might not be great as the assistance is provided in a indirect manner, hence when it comes to individual performance it might lead to errors as per the situation if not faced before.

iii. Self-education

Here the human learning would be as per the sources or behaviours received or perceived.

Learning is a process that leads to change, which occurs as a result of experience and increases the potential for improved performance and future learning.

3. Provide a few examples of various types of machine learning.

Types are Supervised, Unsupervised and reinforcement learning.

4. Examine the various forms of machine learning.

5. Can you explain what a well-posed learning problem is? Explain the main characteristics that must be present to identify a learning problem properly.

6. Is machine learning capable of solving all problems? Give a detailed explanation of your answer.

7. What are the various methods and technologies for solving machine learning problems? Any two of them should be defined in detail.

A computer program is said to learn from experience associated with a task and some form of performance measurement if its performance on the task was measure by the performance , it upgrades with the experience.

examples that efficiently defines the well-posed learning problem are –

1. To better filter emails as spam or not

Task – Classifying emails as spam or not

Performance Measure – The fraction of emails accurately classified as spam or not spam

Experience – Observing you label emails as spam or not spam

2. A checkers learning problem

8. Can you explain the various forms of supervised learning? Explain each one with an example application.

Task – Playing checkers game

Performance Measure – percent of games won against opposer

Experience – playing implementation games against itself

9. What is the difference between supervised and unsupervised learning? With a sample application in each region, explain the differences.

In case of supervised learning e have the input and output hence we train with past data and test the model with new test data, but in case of unsupervised learning we need to predict the output as we only have the input data.

IN case of credit card fraud detection we train the model with the past data, analyse the trends/patters where we have the input as well as output. But in other case suppose a customer has bought product A we need to predict if he will go ahead and buy product B or product C without ant historical data available.

10. Describe the machine learning process in depth.

a. Make brief notes on any two of the following:

MATLAB is one of the most widely used programming languages.

ii. Deep learning applications in healthcare

Deep Learning enables remarkable advancements in the medical imaging field. This type of automated algorithm helps in providing a valuable second opinion to the healthcare professionals during the screening process. Deep Learning using MATLAB helps in quickly prototyping and developing algorithms

iii. Study of the market basket

For the analytical assessment of various human lifestyles, advanced computational methods are ultimately needed. We apply market basket analysis, which is generally applied in social sciences such as marketing, and used transaction data derived from dietary intake information which revealed several relationships.

iv. Linear regression (simple)

11. Make a comparison between:-

1. Generalization and abstraction

Abstraction is of finding patterns from some objects(and conctretizing something is probably adding structure to the pattern to produce some examples). Generalization is probably making some constant variable.

2. Learning that is guided and unsupervised

3. Regression and classification

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.