Problem 1

1. **Supervised Learning**
   the machine learning task of learning a function that maps an input to an output based on example input-output pairs.it provide label for every input and learned from labeled examples in one shot decision making

2. **Semi-Supervised Learning**
   an approach to machine learning that combines a small amount of labeled data (called ground truth) with a large amount of unlabeled data during training. Semi-supervised learning falls between unsupervised learning with no labeled training data and supervised learning with only labeled training data.

3. **Unsupervised Learning**
   learns patterns from unlabeled data in one shot decision making. It exhibits self-organization that captures patterns as neuronal predilections or probability densities

4. **Reinforcement Learning**
   An area of machine learning involves with interaction between agent and environment. intelligent agents ought to take actions in an environment in order to maximize the notion of cumulative reward. Indeed, algorithm learn through interactions between agent and environment

5. **Transfer learning**
   An area of machine learning involves with storing knowledge gained while solving one problem and applying it to a different but related problem. For example, knowledge gained while learning to recognize cars could apply when trying to recognize trucks.

6. **Classification**
   The Classification algorithm is a Supervised Learning technique that is used to identify the category of new observations on the basis of training data. In Classification, a program learns from the given dataset or observations and then classifies new observation into a number of classes or groups.

7. **Regression**

   The Regression algorithm is a Supervised Learning technique that its target value is a numeric variable or quantity.

8. **Online learning**

   a method of machine learning in which data becomes available in a sequential order and is used to update the best predictor for future data at each step.

9. **Overfitting**

   happens when a model learns the detail and noise in the training data to the extent that it negatively impacts the performance of the model on new data. This means that the noise or random fluctuations in the training data is picked up and learned as concepts by the model

10. **Active learning**

    a special case of machine learning in which a learning algorithm can interactively query a user (or some other information source) to label new data points with the desired outputs. The information source is also called teacher or oracle.

11. **A Correlation**

    a statistic that measures the degree to which two variables move in relation to each other. Correlation coefficient is defined to measure relation between to RV or target and feature.

    B. **Independence**

    If there is no relationship between two features, in other words, the correlation between these two is zero, the two properties are independent of each other.

Machine Learning