**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**

**SEMESTER-ODD**

**UNIT: 1 ASSIGNMENT 1**

**Subject Name:** Machine Learning

**Name of Faculty: Submission Date:** 12/03/2022

1. Define Machine Learning. Discuss with examples some useful applications of machine learning.
2. Differentiate between Supervised, Unsupervised and Reinforcement Learning.
3. What do you mean by a well–posed learning problem?
4. Describe in detail all the steps involved in designing a learning system.
5. What do you mean by General to specific ordering of hypothesis?
6. Explain the following terms in brief:
7. Concept Learning
8. Consistent Hypothesis
9. Version Space
10. General Boundary
11. Specific Boundary
12. Describe Find-S Algorithm. What are the properties and complaints of Find-S.?
13. Perform the steps of the Find S Algorithm on the Training data given below and show the values of set S after each record and show the final results.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Time** | **Weather** | **Temp** | **Company** | **Humidity** | **Wind** | **Go for Walk** |
| Morning | Sunny | Warm | Yes | Mild | Strong | Yes |
| Evening | Rainy | Cold | No | Mild | Normal | No |
| Morning | Sunny | Moderate | Yes | Normal | Normal | Yes |
| Evening | Sunny | Cold | Yes | High | Strong | Yes |

1. Write LIST-THEN-ELIMINATE algorithm. Also, explain this with an example.
2. Write the final version space for the below mentioned training examples using candidate elimination algorithm.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Origin** | **Manufacturer** | **Colour** | **Decade** | **Type** | **ExampleType** |
| Japan | Honda | Blue | 1980 | Economy | Positive |
| Japan | Toyota | Green | 1970 | Sports | Negative |
| Japan | Toyota | Blue | 1990 | Economy | Positive |
| USA | Chrysler | Red | 1980 | Economy | Negative |
| Japan | Honda | White | 1980 | Economy | Positive |
| Japan | Toyota | Green | 1980 | Economy | Positive |
| Japan | Honda | Red | 1990 | Economy | Negative |

1. Explain the concept of Inductive Bias. With a neat diagram, explain how you can model inductive systems by equivalent deductive systems.
2. What are some common issues in Machine Learning that professionals face while creating an application.