

Machine Learning Question Bank

Module1

1. Define Machine Learning. Discuss with examples Why Machine Learning is Important.
2. What do you mean by a well –posed learning problem? Explain the important features that are required to well –define a learning problem
3. Discuss with examples some useful applications of machine learning
4. Explain how some areas/disciplines have influenced the Machine learning.
5. Define Learning Program for a given Problem. Describe the following problems with respect to Tasks, Performance and Experience:
 - a. Checkers Learning Problems
 - b. Handwritten Recognition Problem
 - c. Robot Driving Learning Problem
6. Describe in detail all the steps involved in designing a Learning Systems
7. Discuss the Perspective and Issues in Machine Learning.
8. Define Concept and Concept Learning. With example explain how the Concept Learning task determines the Hypothesis for given target concept.
9. Define Inductive Learning Hypothesis.
10. Discuss Concept learning as search with respect to General to specific ordering of hypothesis.
11. Describe Find S Algorithm. Explain its working taking the enjoy sport concept and training instances given below. What are the properties and complaints of Find S.

Day	Sky	AirTemp	Humidity	Wind	Water	Forecast	EnjoySport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	YES

12. Define *Consistent Hypothesis* and *Version Space* . With example explain Version Space and Representation of version Space.
13. Describe List the Eliminate Algorithm
14. Explain the candidate elimination algorithm for any of the the example given below :

Day	Sky	AirTemp	Humidity	Wind	Water	Forecast	EnjoySport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	YES

Origin	Manufacturer	Color	Decade	Type	Example Type
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

15. Write the Candidate-Elimination algorithm and trace it through the following Smile Concept Learning Task.

Example	Eyes	Nose	Head	FColor	Hair	Smile
1	Round	Triangle	Round	Purple	Yes	Yes
2	Square	Square	Square	Green	Yes	No
3	Square	Triangle	Round	Yellow	Yes	Yes
4	Round	Triangle	Round	Green	No	No
5	Square	Square	Round	Yellow	Yes	Yes

16. Explain the inductive biased hypothesis space, unbiased learner and the futility of Bias Free Learning. Describe the three types of learner.
17. What is the role of a function approximation algorithm? How does learner system estimate training values and adjusts weights while learning?
18. Describe in brief: 1) Version spaces and Candidate –Elimination Algorithm.
19. Describe Inductive Systems and Equivalent Deductive Systems
20. Rank the following three types of learners according to their biases: 1. Rote Learner 2. Candidate Elimination Learner and 3. Find S Learner.