R17

Code No: 844AC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MCA IV Semester Examinations, December - 2019
MACHINE LEARNING

Time: 3hrs **Max.Marks:75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

5 × 5 Marks = 25

1.a) List and explain the issues in machine learning. [5]
b) Discuss in brief about neural network representation. [5]
c) Describe briefly about Bayesian Belief Networks. [5]
d) What are temporal patterns? Explain. [5]
e) Briefly discuss about explanation based learning. [5]

PART - B

5 × 10 Marks = 50

2. In the following, it is desired to describe whether a person is ill. We use a representation based on conjunctive constraints (three per subject) to describe individual person. These constraints are "running nose", "coughing", and "reddened skin", each of which can take the value true ('+') or false ('–'). We say that somebody is ill, if he is coughing and has a running nose. Each single symptom individually does not mean that the person is ill. Specify the space of hypotheses that is being managed by the version space approach. Arrange all hypotheses in a graph structure using the more-specific-than relation. [10]

OR

3. Table below shows the relationship between the body height and the gender of a group of persons (the records have been sorted with respect to the value of height in cm). Calculate the information gain for potential splitting thresholds and determine the best one. [10]

Height	161	164	169	175	176	179	180	184	185
Gender	F	F	M	M	F	F	M	M	F

4. Describe how the basic Back-Propagation Learning Algorithm is used in Multi-Layer Network. [10]

OR

5. Consider a learned hypothesis, h, for some boolean concept. When h is tested on a set of 100 examples, it classifies 83 correctly. What is the standard deviation and the 95% confidence interval for the true error rate for $Error_D(h)$? [10]

6. Describe in detail about Maximum Likelihood Hypotheses for Predicting probabilities. [10]

OR

7. Give an example to explain the concept of K-Nearest neighbor algorithm. [10]

8. Explain in detail about Dynamic Time Warping Methods. [10]

OR

9. Explain how training and testing is performed in discrete hidden markov models. [10]

10. Describe how prior knowledge is used to alter the Search Objective. [10]

OR

11. Illustrate how learning can be performed using inductive-analytical approach. [10]

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