Fundamentals of Artificial Intelligence
MOOCs; July - Dec 2024

Assignment No. 10

10 Marks

Each question carries 01 Mark each. There are MORE than ONE correct options for some of the Questions. All correct options must be identified for the answer to be evaluated as correct.

Q1. Of the two strands of Artificial Intelligence activity, the one that seeks to understand how intelligent behaviour arises is the _____.

A. Cognitive approach.
B. Engineering approach.
C. Machine Learning approach.
D. Symbolic approach.

Ans: Direct question from Week 10 (Lecture 1) Videos

Q2. _____ is the approach for modeling the relationship between a scalar dependent variable Y and one or more explanatory variables (or independent variables) denoted X.

A. Regression
B. Classification
C. Clustering
D. Matching

Ans: Direct Question from Week 10 (Lecture 1) Videos

Q3. In pure inductive inference, given a collection of examples of f, return a function h that approximates f. The function h is called a _____.

A. utility function.
B. hypothesis
C. approximation function
D. classifier
E.

Ans: Direct Question from Week 10 (Lecture 2) Videos

Q4. Which of the following statements are correct for Machine Learning vis-à-vis Statistics?

I. Machine learning deals with low-dimensional data [e.g. less than 100 D].
II. Structure in the data; methods involve figuring out a way to represent this structure.

A. Statements I and II
B. Only Statement II
C. Only Statement I
D. None.

Ans: Question based on Week 10 (Lecture 1) Videos

Q5. A decision-tree learning system for real-world applications must be able to handle the following problems:

A. Missing Data
B. Approximation
C. Continuous-valued attribute
D. Multivalued attribute

Ans: Question based on Week 10 (Lecture 2) Videos

Q6. Assertion: For implementing *choose-attribute* in DTL (Decision Tree Learning) algorithm, one exploits *Information Theory* to measure the expected amount of information provided by the attribute.
Reason: *Information Theory* provides a mathematical basis for measuring the information content.

Mark the correct choice as
A. Both A and R are true and R is the correct explanation for A
B. Both A and R are true but R is not the correct explanation for A
C. A is True but R is False
D. A is false but R is True

Ans: Question based on Week 10 (Lecture 2) Videos

Q7. Assertion: Overfitting makes use of irrelevant attributes to distinguish between samples that have no meaningful differences.
Reason: The presence of irrelevant attributes may lead to more degrees of freedom in the decision tree.
Mark the correct choice as
A. Both A and R are true and R is the correct explanation for A
B. Both A and R are true but R is not the correct explanation for A
C. A is True but R is False
D. A is false but R is True

Ans: Question based on Week 10 (Lecture 2) Videos

Q8. Assertion: All knowledge accrues through a process of learning.
Reason: Learning refers to the capability of autonomous acquisition and integration of knowledge.
Mark the correct choice as
A. Both A and R are true and R is the correct explanation for A
B. Both A and R are true but R is not the correct explanation for A
C. A is True but R is False

D. A is false but R is True

Ans: Question based on Week 10 (Lecture 1) Videos

Q9. For a learning agent _____ provides ways and means of weighing up the desirability of goals and the likelihood of achieving them.

A. Decision Theory
B. Utility Theory
C. Probability Theory
D. Bayesian Networks

Ans: Question based on Week 10 (Lecture 2) Videos

Q10. Although the three ML paradigms – Supervised, Unsupervised and Reinforcement Learning help to organize ideas; much current research involves blends across these categories. _____learning makes use of unlabeled data to augment labeled data in a supervised learning context.

A. Active
B. Unsupervised
C. Semisupervised
D. Reinforcement

Ans: Question based on Week 10 (Lecture 1) Videos