NPTEL Online Certification Courses

Indian Institute of Technology Kharagpur

Machine Learning for Soil and Crop Management

Assignment- Week 1

TYPE OF QUESTION: MCQ/MSQ

Number of questions: 15 **Total mark: 15 X 1 = 15**

QUESTION 1:

Machine learning is a subset of _____.

a. Deep Learning

b. Human Intelligence

c. Artificial Intelligence

d. None of these

Correct Answer: c

Detailed Solution: Machine learning is a branch of artificial intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy.

QUESTION 2:

Learning, Reasoning, and self-correction are?

a. Non-cognitive skills
b. Cognitive skills
c. None of the above
d. Both a and b

Correct Answer: b

Detailed Solution: Learning, Reasoning, and self-correction are the three cognitive skills.

QUESTION 3:

Which of the following is/are example of Artificial Intelligence?

a. Google (web search)
b. Recommendation system (YouTube, Amazon, Netflix)
c. Human speech understanding (Siri or Alexa)
d. All of the above

Correct Answer: d

Detailed Solution: The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. Some examples are: Google, recommendation system (YouTube, Amazon, Netflix), Human speech understanding (Siri or Alexa), Self-driving car (Tesla), etc.

QUESTION 4:

Which of the following is an advantage of Artificial Intelligence?

a. It offers consistent results
b. Costly
c. Requires deep technical knowledge
d. Lacks generalization from one task to another

Correct Answer: a

Detailed Solution: Artificial Intelligence offers many advantages which includes its usefulness for detail-oriented jobs, reduced time for data-heavy jobs, consistent results, etc.

QUESTION 5:

Clustering is an example of _____ Learning.

a. Supervised Learning

b. Unsupervised Learning

c. Semi-supervised Learning

d. Reinforcement Learning

Correct Answer: b

Detailed Solution: In Unsupervised Learning training data is fed into the model without any desired outputs. Clustering is an example of unsupervised learning.

QUESTION 6:

What is the main goal of clustering in unsupervised learning?

a. To classify data into predefined categories

b. To group similar data points based on their features

c. To analyze labeled outputs

d. To predict continuous variables

Correct Answer: b

Detailed Solution: Clustering groups data points with similar characteristics without prior labels.

QUESTION 7:

Which technology is often paired with ML for disease detection?

a. UAVs and Drones
b. Reinforcement agents
c. Robotics for crop picking
d. Remote GPS systems

Correct Answer: a

Detailed Solution: UAVs and drones are used with ML and computer vision techniques for real-time disease detection.

QUESTION 8:

In Unsupervised Learning, training data is fed into the model without any desired outputs.

a. True
b. False

Correct Answer: a

Detailed Solution: In Unsupervised Learning, training data is fed into the model without any desired outputs. Clustering is an example of unsupervised learning.

QUESTION 9:

Which of the following is the correct formula for 'recall'?

a. (TP + TN)/(TP + FP +FN + TN)
b. TP/(TP + FN)
c. TP/(TN + FP)
d. TN / (TN + FP)

where TP = True positive, TN = True Negative, FP= False Positive, and FN= False Negative

Correct Answer: b

Detailed Solution: Recall = TP / (TP + FN)

QUESTION 10:

Which type of learning is closer to real-world problems?

a. Supervised learning
b. Unsupervised learning
c. Semi-supervised leaning
d. None of the above

Correct Answer: b

Detailed Solution: Unsupervised learning is closer to the real-world problems as we do not always have input data with the corresponding output so to solve such cases, we need unsupervised learning.

QUESTION 11:

_____ Learning is defined as when an event, occurs due to a particular behavior, increases the strength and the frequency of the behavior.

a. Positive Supervised
b. Negative Supervised
c. Positive Reinforcement
d. Negative Reinforcement

Correct Answer: c

Detailed Solution: Positive Reinforcement learning occurs when an event occurs due to a particular behavior, increases the strength and the frequency of the behavior.

QUESTION 12:

Which of the following statements is/are correct?

a. Clustering and association are the type of unsupervised learning.

b. Positive and negative are the types of reinforcement learning.

c. Accuracy, recall, precision, specificity, and F1 score are the performance matrices for supervised learning.

d. All of the above

Correct Answer: d

Detailed Solution: Clustering and association are the type of unsupervised learning. Positive and negative are the type of reinforcement learning. Accuracy, recall, precision, specificity, and F1 score are the performance matrices for supervised learning.

QUESTION 13:

The _____ values of Mean Squared Error (MSE) and Mean Absolute Error (MAE) with _____ value of regression coefficient (R^2) demonstrate better model performance.

a. high, low
b. high, high
c. low, high
d. low, low

Correct Answer: c

Detailed Solution: The low values of Mean Squared Error (MSE) and Mean Absolute Error (MAE) with high value of regression coefficient (R^2) demonstrate better model performance.

QUESTION 14:

What is the primary benefit of using ML for soil management?

a. Faster computation and lower data accuracy

b. Cost-effective soil testing using advanced sensors

c. Increasing the need for soil testing

d. Increasing manual inspection efforts

Correct Answer: b

Detailed Solution: ML combined with sensors like Proximal and Diffuse Reflectance Spectroscopy allows cost-effective and faster soil analysis.

QUESTION 15:

What does UAV stand for in Precision Agriculture?

a. Universal Agricultural Vehicle
b. Unmanned Aerial Vehicle
c. Unique Agro Verification
d. Utility AI Vision

Correct Answer: b

Detailed Solution: UAV stands for Unmanned Aerial Vehicle, used for data collection in agriculture.

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