

Assessment sub
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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Machine Learning, ML (course)



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Thank you for taking the Week 2 : Assignment 2.

Course
outline

How does an
NPTEL
online
course
work? ()

Week 1:
Introduction
to the
Machine
Learning
course ()

Week 2:
Characterization
of Learning
Problems ()

- Characterization of Learning Problems (unit? unit=24&lesson=25)
- Objects, Categories and Features (unit? unit=24&lesson=26)
- Feature related issues

Week 2 : Assignment 2

Your last recorded submission was on 2023-02-08, 22:49 Due date: 2023-02-08, 23:59 IST.

1) What does the term Feature Extraction refer to? **1 point**

- ☒ Deriving a feature from an analogue input like an image
- ☐ Making a selection of a subset of features from a featureset
- ☐ Creating a new set of features by transformation of a featureset

2) Which important class of machine learning algorithms X is defined as follows? **1 point**

X is concerned with how agents take *actions* in an *environment* and changing state so as to maximize some notion of cumulative reward.

- ☐ Explanation-based learning
- ☐ Inductive logic programming
- ☐ Deep learning
- ☐ Similarity-based learning
- ☒ Reinforcement learning

3) What is meant by a NEAR MISS in Machine Learning **1 point**

- ☐ A misclassification of an example in Conceptual Clustering
- ☐ A non optimal chosen hypotheses in supervised learning due to a non optimal selection and ordering of examples
- ☐ An erroneous action in Reinforcement learning
- ☒ A deliberately chosen negative examples close to positive examples

(unit?
Assessment submitted
unit=24&lesson=27)
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● Scenarios for
Concept
Learning (unit?
unit=24&lesson=28)

● Lecture Notes
(unit?
unit=24&lesson=29)

● Quiz: Week 2
: Assignment
2
(assessment?
name=98)

○ Week 2
Feedback form
: Machine
Learning, ML
(unit?
unit=24&lesson=30)

Week 3 :
Forms of
Representation
()

Lecture
Notes ()

Text
Transcripts ()

Download
Videos ()

Lecture
notes ()

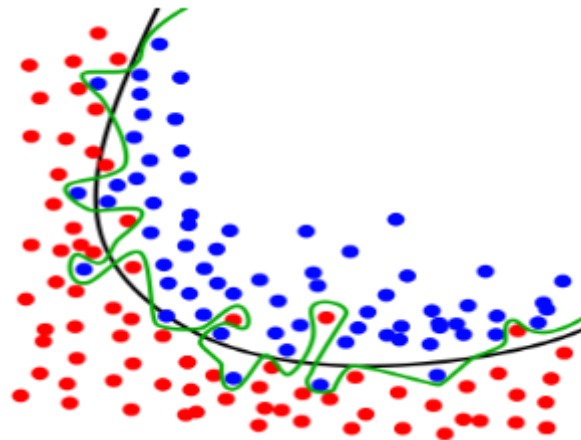
4) Choose the most adequate pair of characteristics of a feature that forms the basis for removing this feature? **1 point**

- ☒ Irrelevance and High Feature value Cardinality
☐ High Feature value Cardinality and Redundancy
☐ Irrelevance and Redundancy
☐ High Feature value cardinality and Non-informativeness

5) Learning Bias is one of the core concepts in the classical frameworks for Inductive Learning. Which of the following interpretations is the most adequate for capturing that concept? **1 point**

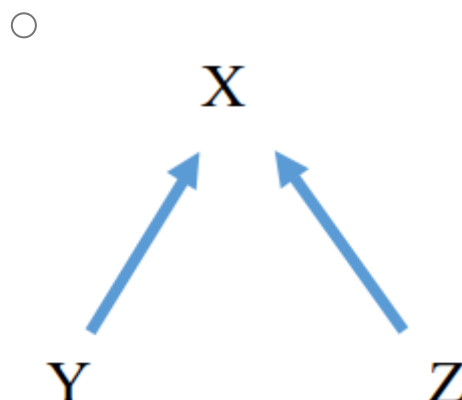
- ☐ Deliberately using a very simplified and restricted Hypothesis Language
☒ Deliberately choosing particular subsets of examples as the basis for learning
☐ Embed background knowledge in the definition of the hypothesis language.

6) What is the term best suited for the situation depicted in the figure below, where the green line estimates the classification of the instances? **1 point**



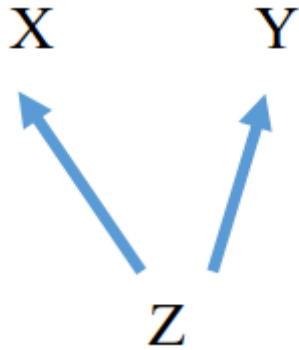
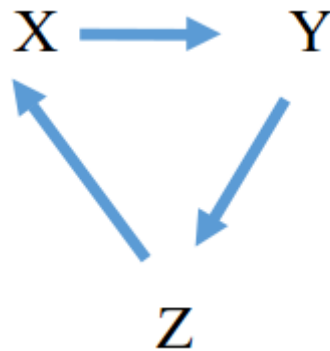
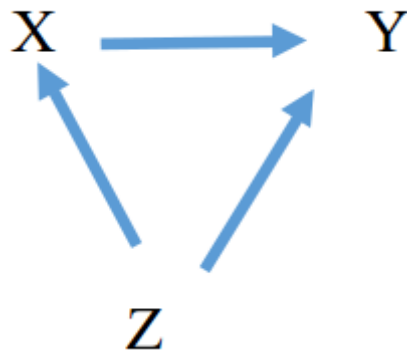
- ☐ Linear separability
☒ Overfitting
☐ Linear non-separability
☐ Underfitting

7) A taxonomy is a directed acyclic graph (DAG) under the Specialization relation. Which of the following Structures is NOT a valid DAG **1 point**



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☐☒☐

8) A taxonomy is a category structure, typically a hierarchical one. Normally features are attributed to all categories on the different levels of the taxonomy. In this context, what is meant by INHERITANCE? **1 point**

- ☒ That a leaf (terminal) category is characterized by the aggregation of attributes of itself and all its ancestor categories.
- ☐ That a category is characterized by the same attributes as its parent category only.
- ☐ That a category is characterized by the same attributes as its sibling categories.

9) For everyday entities such as tools, clothes, furniture, fruits, pets etc, a typical taxonomy (category structure) has three levels of categories : superordinate, basic and subordinate. What is the primary characteristic of the subordinate level. **1 point**

- ☐ It is the most abstract level with the fewest features

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- ☐ It is the level with the highest density of attributes and the most common sense and everyday character of features
- ☒ It is the most concrete level with detailed features

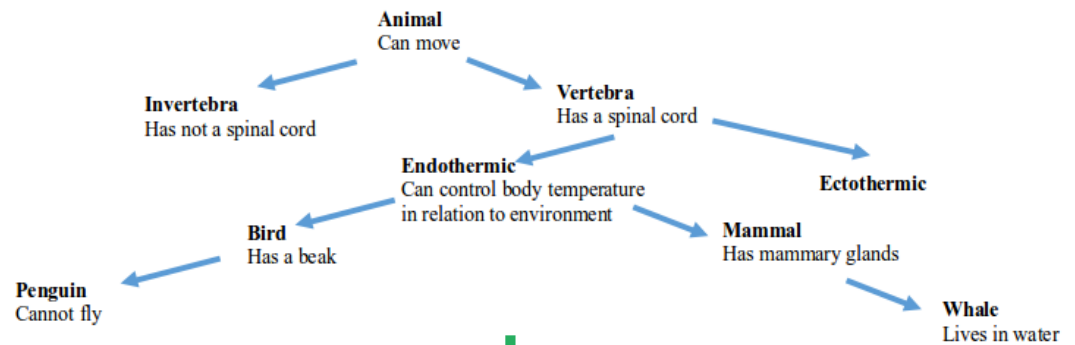
10) For everyday entities such as tools, clothes, furniture, fruits, pets etc, a typical taxonomy has three levels: superordinate, basic and subordinate. Which of the following Categories in a fruit taxonomy would normally be characterized as SUPERORDINATE?

1 point

- ☒ Fruit
- ☐ Apple
- ☐ Macintosh

11)

1 point



Which properties does a Penguin have according to the above taxonomy with a standard specialization relation?

- ☐ Cannot Fly
- ☒ Cannot Fly, Has a beak, Can control body temperature in relation to environment, Has a spinal cord, Can move
- ☐ Cannot Fly, Has a beak, Can control body temperature in relation to environment, Has a spinal cord
- ☐ Cannot Fly, Has a beak, Can control body temperature in relation to environment
- ☐ Cannot Fly, Has a beak

You may submit any number of times before the due date. The final submission will be considered for grading.

Submit Answers