Final Exam

Started: May 6 at 2:05pm

Quiz Instructions

- The exam on **modules 7, 8, 9, 10, 11 and 12.**
- The exam will be available on **Monday May 06, 2024 from 1:00 PM to 5:00 PM**.
- You need to answer **38 MCQs** with **1 point** for each + **4 Short questions** with **3 points** for each.
- You will have only **75 minutes** to complete your exam in **one sitting.**

⠿

Question 1 1 pts

What is the objective of backpropagation algorithm?

○

to develop learning algorithm for multilayer feedforward neural network

○

none of the mentioned

○

to develop learning algorithm for multilayer feedforward neural network, so that network can be trained to capture the mapping implicitly

○

to develop leaning algorithm for single layer feedforward neural network

⠿

Question 2 1 pts

What is true regarding backpropagation rule?

○

hidden layers output is not all important, they are only meant for supporting input and output layers

○

none of the mentioned

○

it is a feedback neural network

○

actual output is determined by computing the outputs of units for each hidden layer

⠿

Question 3 1 pts

How can learning process be stopped in backpropagation rule?

○

no heuristic criteria exist

○
none of the mentioned

○
on basis of average gradient value

○
there is convergence involved

⋮⋮

Question 4 1 pts

Why are linearly separable problems of interest of neural network researchers?

○
because they are the only class of problem that perceptron can solve successfully

○
because they are the only mathematical functions you can draw

○
because they are the only class of problem that network can solve successfully

○
because they are the only mathematical functions that are continue

⋮⋮

Question 5 1 pts

Why is the XOR problem exceptionally interesting to neural network researchers?

○
because it is the simplest linearly inseparable problem that exists

○
because it can be expressed in a way that allows you to use a neural network

○
because it can be solved by a single layer perceptron

○
because it is complex binary operation that cannot be solved using neural networks

⋮⋮

Question 6 1 pts

What is meant by generalized in statement "backpropagation is a generalized delta rule" ?

○
because delta is applied to only input and output layers, thus making it more simple and generalized

○
because delta rule can be extended to hidden layer units

○
none of the mentioned

○
it has no significance

⋮⋮

Question 7 1 pts

The effectiveness of an SVM depends upon:

○
Kernel Parameters

○
Soft Margin Parameter C

○
All of the mentioned

○
Selection of Kernel

⋮⋮

Question 8 1 pts

If x1, x2 are independent variables and y the dependent variable, which of the following represents a linear regression model?

○
y = a0 + a1x1 + a2x2

○
y = a0 + a1x1 + a2x22

○
y = a0 + a1/x1 + a2/x2

○
y = a0 + a1x12 + a2x2

⋮⋮

Question 9 1 pts

What is/are true about kernel in SVM?

1. Kernel function map low dimensional data to high dimensional space

2. It's a similarity function

○
1

○
1 and 2

○
2

○
None of these

⋮⋮

Question 10 1 pts

Which of the following are real world applications of the SVM?

○
All of the mentioned

○
Image Classification

○
Text and Hypertext Categorization

○
Clustering of News Articles

⋮⋮

Question 11 1 pts

In SVM, the Hyper plane, f(x)=sign(w*x+b), where 'w' is a?

○
Vector

○
None of the mentioned

○
Distance

○
Constant

⋮⋮

Question 12 1 pts

ROC chart is a _____ plot.

○
One-dimensional

○
Two-dimensional

○
Three-dimensional

○
Multi-dimensional

⋮⋮

Question 13 1 pts

A rule with a lower value of confidence and support could be preferred because:

○ Such rules are more interesting

○ It indicates novelty

○ Such rules are bound to hold throughout the dataset

○ None of the mentioned

⋮⋮

Question 14 1 pts

Which of the following can affect the complexity of Apriori?

○ Maximum number of items in the transactions

○ Number of transactions in the database

○ All of the mentioned

○ Dimensionality of the given data set

⋮⋮

Question 15 1 pts

Which of the following learning algorithm can be used to predict a combination of attributes?

○ Naïve Bayesian.

○ K-means

○ Apriori.

○ Decision tree.

⋮⋮

Question 16 1 pts

Which of the following best describes lift in knowledge discovery?

○

A known class attribute

○

An unsupervised learning approach

○

A measure of interestingness of a rule

○

A data mining technique

⋮⋮

Question 17 1 pts

The analysis performed to uncover the interesting statistical correlation between associated -attributes value pairs are known as the _____.

○

Mining of correlation

○

Mining of asociation

○

Mining of clusters

○

All of the mentioned

⋮⋮

Question 18 1 pts

Which of the following best describes the Apriori principle?

○

Support of an itemset never exceeds the support of its subsets

○

When the anti-monotone property of support holds on given itemset

○

If an itemset is frequent, then all of its subsets must also be frequent

○

All of the mentioned

⋮⋮

Question 19 1 pts

_____ Method derives clusters from the number of observations locally falling in a neighborhood of each observation.

○
Partition method

○
Density-based method

○
Hierarchical method

○
Grid method

⋮⋮

Question 20 1 pts

_____ is a clustering procedure characterized by the development of a tree-like structure.

○
K-Medoids clustering

○
K-Means clustering

○
Non-hierarchical clustering

○
Hierarchical clustering

⋮⋮

Question 21 1 pts
Which one of the following can be considered as the final output of the hierarchal type of clustering?

○
Finalize estimation of cluster centroids

○
Assignment of each point to clusters

○
None of the mentioned

○
A tree which displays how the close thing are to each other

⋮⋮

Question 22 1 pts
Which of the following is not an application of cluster analysis?

○
Help marketers discover distinct groups in their customer bases.

○

Decide about the subsequent purchases after buying a PC.

○

Observing earth quake epicenters should be clustered along continent faults.

○

Identifying groups of motor insurance policy holders with a high average claim cost.

⠿

Question 23 1 pts

A _____ is a tree diagram for displaying clustering results. Vertical lines represent clusters that are joined together.

○
Scatter plot

○
Histogram

○
Tree plot

○
Dendrogram

⠿

Question 24 1 pts
Which of the following statements is incorrect about the hierarchal clustering?

○
The choice of an appropriate metric can influence the shape of the cluster

○
In general, the splits and merges both are determined in a greedy manner

○
All of the mentioned

○
The hierarchal type of clustering is also known as the HCA

⠿

Question 25 1 pts

From the following which method is not the clustering method?

○
Density based

○
Partition

○
Divide-and-conquer based

○
Hierarchical

⁞

Question 26 1 pts

Which statement is not true about cluster analysis?

○
Groups or clusters are suggested by the data, not defined a priori.

○
Cluster analysis is also called classification analysis or numerical taxonomy.

○
Cluster analysis is a technique for analyzing data when the criterion or dependent variable is categorical and the independent variables are interval in nature.

○
Objects in each cluster tend to be similar to each other and dissimilar to objects in the other clusters.

⁞

Question 27 1 pts

One of the drawbacks of using clustering in anomaly detection is:

○
Sometime it can be difficult to decide on number of clusters

○
All of the mentioned

○
Density may become less meaningful in high-dimensional space.

○
It may be hard to estimate the true distribution for high dimensional data

⁞

Question 28 1 pts

For the purpose of anomaly detection, in the 1-Class SVM approaches we need to -----.

○
assume data comes from normal distribution

○
reduce data to lower dimensional data

○
All of the mentioned

○
use certain kernel function on the given data to construct such a model

⠿

Question 29 1 pts

Which one of the following can be defined as the data object which does not comply with the general behavior (or the model of available data)?

○
Evaluation Analysis

○
Classification

○
Outlier Analysis

○
Prediction

⠿

Question 30 1 pts

An observation that is extreme, being distant from the rest of the data is termed a -----.

○
Feature

○
Outlier

○
Class

○
Predictor

⠿

Question 31 1 pts

For the purpose of anomaly detection, in the reconstruction-based approaches we need to -----.

○
use certain kernel function on the given data to construct such a model

○
assume data comes from normal distribution

○
reduce data to lower dimensional data

○
All of the mentioned

⋮⋮

Question 32 1 pts

One of the drawbacks of using density methods in anomaly detection is:

○

It may be hard to estimate the true density distribution for high dimensional data.

○

Density may become less meaningful in high-dimensional space.

○

Sometime it can be sensitive to variations in density

○

All of the mentioned

⋮⋮

Question 33 1 pts

Which of the following is method of preserving privacy in data mining process?

○

Add noise to the data in order to mask some attribute values of records

○

Personal information is encrypted and stored at different locations

○

All of the mentioned

○

Removing sensitive features or fields associated with the data

⋮⋮

Question 34 1 pts

Which of the following is an example of the Mining Graphs and Network?

○

Sequential Pattern Mining in Symbolic Sequences

○

Clustering, Ranking and Classification of Heterogeneous Networks

○

All of the mentioned

○

Mining Web Data

⋮⋮

Question 35 1 pts

Which of the following is not type of data mining in recommender systems?

○

Mining of spatiotemporal, biological, diverse semantics and relationships

○
Extract from known to unknown ratings to predict user-item combinations

○
Model-based method uses a collection of ratings to learn a model

○
All of the mentioned

⋮⋮

Question 36 1 pts

Data mining projects differ in many respects from both classical statistics and
_____analyses.

○
OLAM

○
OLTP

○
HOLAP

○
OLAP

⋮⋮

Question 37 1 pts

In web mining, _____ is used to know the order in which URLs tend to be
accessed.

○
sequential analysis

○
classification

○
associations

○
clustering

⋮⋮

Question 38 1 pts

Which one of the following can be considered as the correct application of the data
mining?

○
Management and market analysis

○
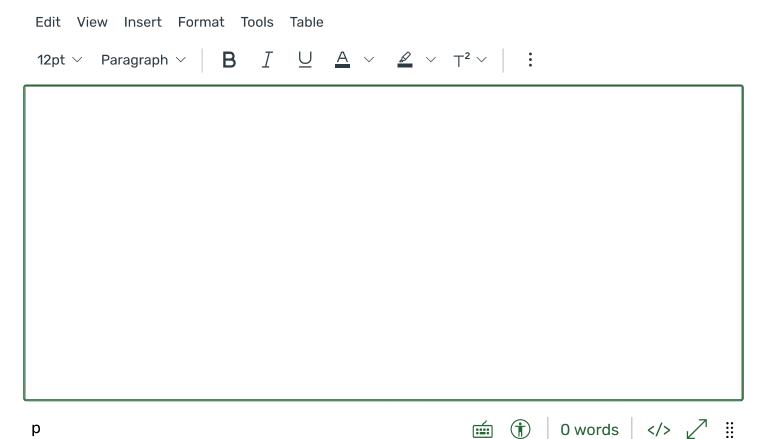Fraud detection

○
Corporate Analysis & Risk management

○
All of the mentioned

⁞

Question 39 3 pts

In your opinion, what are the major **5 trends** in data mining research today? Name one **major issue** in data mining, which in your view, may have a strong impact on society.
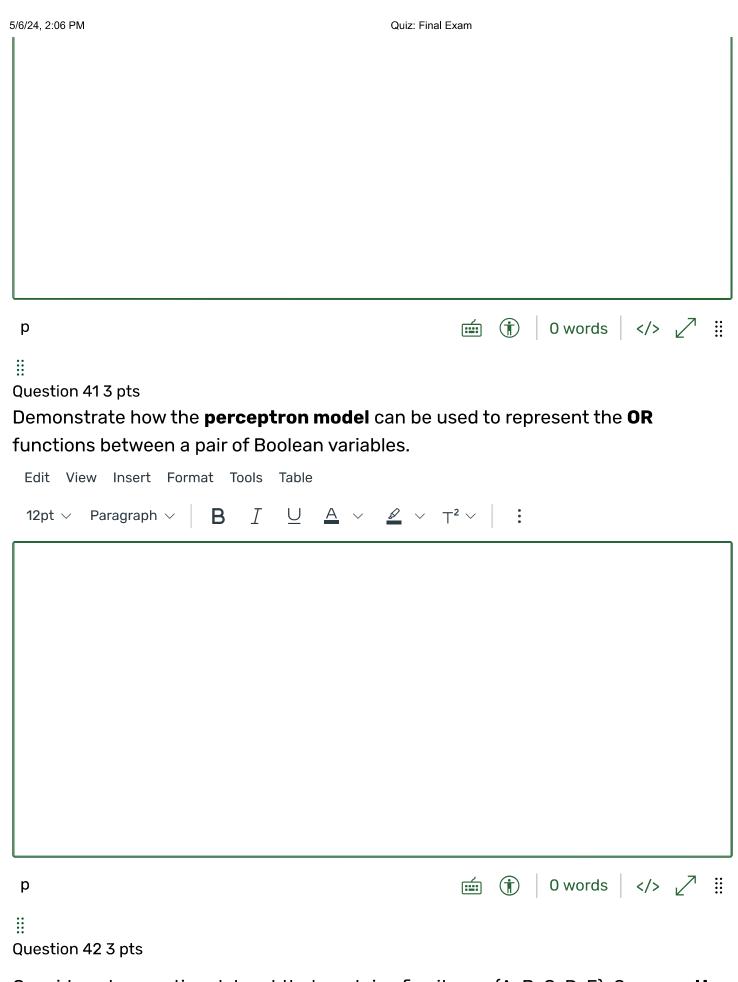
Edit   View   Insert   Format   Tools   Table

12pt ∨   Paragraph ∨ | **B**   *I*   U̲   A ∨   ✎ ∨   T² ∨ | ⋮

p   ⌨   ⓣ | 0 words | </>   ↗   ⁞

⁞

Question 40 3 pts

We generally will be more interested in association rules with **high confidence.** However, often we will not be interested in association rules that have a confidence of **100%**. Why? Then specifically explain why association rules with 99% confidence may be interesting (i.e., **what might they indicate**)?

Edit   View   Insert   Format   Tools   Table

12pt ∨   Paragraph ∨ | **B**   *I*   U̲   A ∨   ✎ ∨   T² ∨ | ⋮

p   ⌨ ⓣ │ 0 words │ </> ↗ ⠿

Question 41 3 pts

Demonstrate how the **perceptron model** can be used to represent the **OR** functions between a pair of Boolean variables.

Edit   View   Insert   Format   Tools   Table

12pt ⌄   Paragraph ⌄ │ **B** *I* U̲ A̲ ⌄ ✎ ⌄ T² ⌄ │ ⋮

p   ⌨ ⓣ │ 0 words │ </> ↗ ⠿

Question 42 3 pts

Consider a transaction dataset that contains five items, {A, B, C, D, E}. Suppose **the rules {A, B} → C has the same confidence as {A, B} → D**, which one of the following statements are true or not, and why:

1. a) The confidence of the {A, B} → {C, D} is the same as the confidence of {A, B} → {C}.

2. b) All transactions that contain {A, B, C} also contain {A, B, D}.

Edit   View   Insert   Format   Tools   Table

12pt ⌄   Paragraph ⌄ | **B**   *I*   U̲   A̲ ⌄   ✎ ⌄   T² ⌄ | ⋮

p   ⌨   ⓘ | 0 words | </>   ↗   ⋮

Quiz saved at 2:06pm   Submit Quiz