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## Final Exam

### Final Exam Instructions

1. Time allowed: **1 hour**
2. Attempts per question:
  - One attempt - For True/False questions
  - Two attempts - For any question other than True/False
3. Clicking the "**Final Check**" button when it appears, means your submission is **FINAL**. You will **NOT** be able to resubmit your answer for that question ever again

**IMPORTANT: Do not let the time run out and expect the system to grade you automatically. You must explicitly submit your answers, otherwise they would be marked as incomplete.**

### Question 1

1/1 point (graded)

You can define Jaccard as the size of the intersection divided by the size of the union of two label sets.

☒ True

☐ False



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## Question 2

1/1 point (graded)

When building a decision tree, we want to split the nodes in a way that increases entropy and decreases information gain.

☐ True

☒ False



Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

## Question 3

1/1 point (graded)

Which of the following statements are true? (Select all that apply.)

☒ K needs to be initialized in K-Nearest Neighbor.

☒ Supervised learning works on labelled data.

☐ A high value of K in KNN creates a model that is over-fit

☐ KNN takes a bunch of unlabelled points and uses them to predict unknown points.

☒ Unsupervised learning works on unlabelled data.



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## Question 4

1/1 point (graded)

To calculate a model's accuracy using the test set, you pass the test set to your model to predict the class labels, and then compare the predicted values with actual values.

☒ True

☐ False



Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

## Question 5

1/1 point (graded)

Which is the definition of entropy?

☐ The purity of each node in a decision tree.

☐ Information collected that can increase the level of certainty in a particular prediction.


☐ The information that is used to randomly select a subset of data.

☒ The amount of information disorder in the data.



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## Question 6

1/1 point (graded)

Which of the following is true about hierarchical linkages?

☒ Average linkage is the average distance of each point in one cluster to every point in another cluster

☐ Complete linkage is the shortest distance between a point in two clusters

☐ Centroid linkage is the distance between two randomly generated centroids in two clusters

☐ Single linkage is the distance between any points in two clusters



Submit

You have used 2 of 2 attempts

✓ Correct (1/1 point)

## Question 7

1/1 point (graded)

The goal of regression is to build a model to accurately predict the continues value of a dependent variable for an unknown case.

☒ True

☐ False

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✓ Correct (1/1 point)

## Question 8

1/1 point (graded)

Which of the following statements are true about linear regression? (Select all that apply)

☒ With linear regression, you can fit a line through the data.

☒  $y = a + b \cdot x_1$  is the equation for a straight line, which can be used to predict the continuous value  $y$ .

☐ In  $y = \theta^T X$ ,  $\theta$  is the feature set and  $X$  is the "weight vector" or "confidences of the equation", with both of these terms used interchangeably.



Submit

You have used 1 of 2 attempts

✓ Correct (1/1 point)

## Question 9

1/1 point (graded)


The Sigmoid function is the main part of logistic regression, where Sigmoid of  $\theta^T X$ , gives us the probability of a point belonging to a class, instead of the value of  $y$  directly.

☒ True

☐ False

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✓ Correct (1/1 point)

## Question 10

1/1 point (graded)

In comparison to supervised learning, unsupervised learning has:

☒ Less tests (evaluation approaches)

☐ More models

☐ A better controlled environment

☐ More tests (evaluation approaches), but less models



Submit

You have used 1 of 2 attempts

✓ Correct (1/1 point)

## Question 11

1/1 point (graded)

The points that are classified by Density-Based Clustering and do not belong to any cluster, are outliers.

☒ True

☐ False

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✓ Correct (1/1 point)

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## Question 12

1/1 point (graded)

Which of the following is false about Simple Linear Regression?

☐ It does not require tuning parameters

☐ It is highly interpretable

☐ It is fast

☒ It is used for finding outliers



Submit

You have used 1 of 2 attempts

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✓ Correct (1/1 point)

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## Question 13


1/1 point (graded)

Which one of the following statements is the most accurate?

☒ Machine Learning is the branch of AI that covers the statistical and learning part of artificial intelligence.

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Deep Learning.

☐ Artificial Intelligence is the branch of Deep Learning that allows us to create models.



Submit

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✓ Correct (1/1 point)

## Question 14

1/1 point (graded)

Which of the following are types of supervised learning?

☒ Classification

☒ Regression

☒ KNN

☐ K-Means

☐ Clustering



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✓ Correct (1/1 point)



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popular method than the Agglomerative method.

☒ True

☐ False



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✖ Incorrect (0/1 point)

## Question 16

1/1 point (graded)

Select all the true statements related to Hierarchical clustering and K-Means.

☒ Hierarchical clustering does not require the number of clusters to be specified.

☐ Hierarchical clustering always generates different clusters, whereas k-Means returns the same clusters each time it is run.

☒ K-Means is more efficient than Hierarchical clustering for large datasets.



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✔ Correct (1/1 point)

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☒ Content-based recommendation system tries to recommend items to the users based on their profile built upon their preferences and taste.

☐ Content-based recommendation system tries to recommend items based on similarity among items.

☐ Content-based recommendation system tries to recommend items based on the similarity of users when buying, watching, or enjoying something.



Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

## Question 18

1/1 point (graded)

Before running Agglomerative clustering, you need to compute a distance/proximity matrix, which is an  $n$  by  $n$  table of all distances between each data point in each cluster of your dataset.

☒ True

☐ False



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✓ Correct (1/1 point)

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☒ DBSCAN can be used when examining spatial data.

☒ DBSCAN can be applied to tasks with arbitrary shaped clusters, or clusters within clusters.

☐ DBSCAN is a hierarchical algorithm that finds core and border points.

☒ DBSCAN can find any arbitrary shaped cluster without getting affected by noise.



Submit

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✓ Correct (1/1 point)

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## Question 20

1/1 point (graded)

In recommender systems, "cold start" happens when you have a large dataset of users who have rated only a limited number of items.

☐ True

☒ False



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