

Quiz

19 May 2020 23:23

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← → ↻ 🏠 coursera.org/learn/ml-foundations/exam/4siTc/classification/attempt

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← Classification Graded Quiz • 14 min

Due May 25, 11:59 AM +05

Classification

TOTAL POINTS 7

1. The simple threshold classifier for sentiment analysis described in the video (*check all that apply*):

1 point

- ☒ Must have pre-defined positive and negative attributes
- ☒ Must either count attributes equally or pre-define weights on attributes
- ☐ Defines a possibly non-linear decision boundary

2. For a linear classifier classifying between "positive" and "negative" sentiment in a review x , $\text{Score}(x) = 0$ implies (*check all that apply*):

1 point

- ☐ The review is very clearly "negative"
- ☒ We are uncertain whether the review is "positive" or "negative"
- ☐ We need to retrain our classifier because an error has occurred

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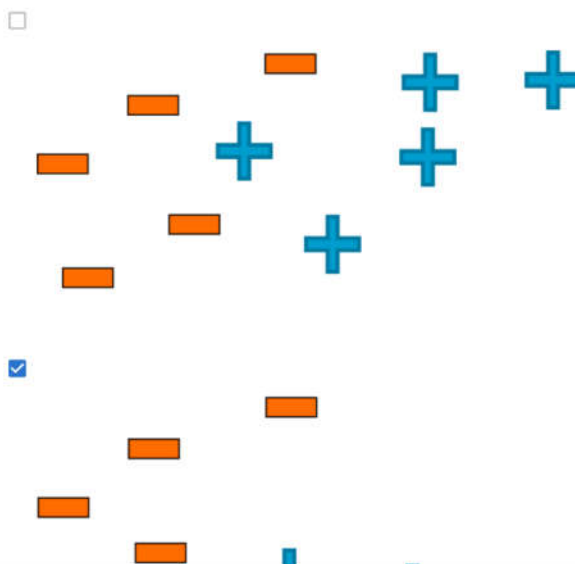
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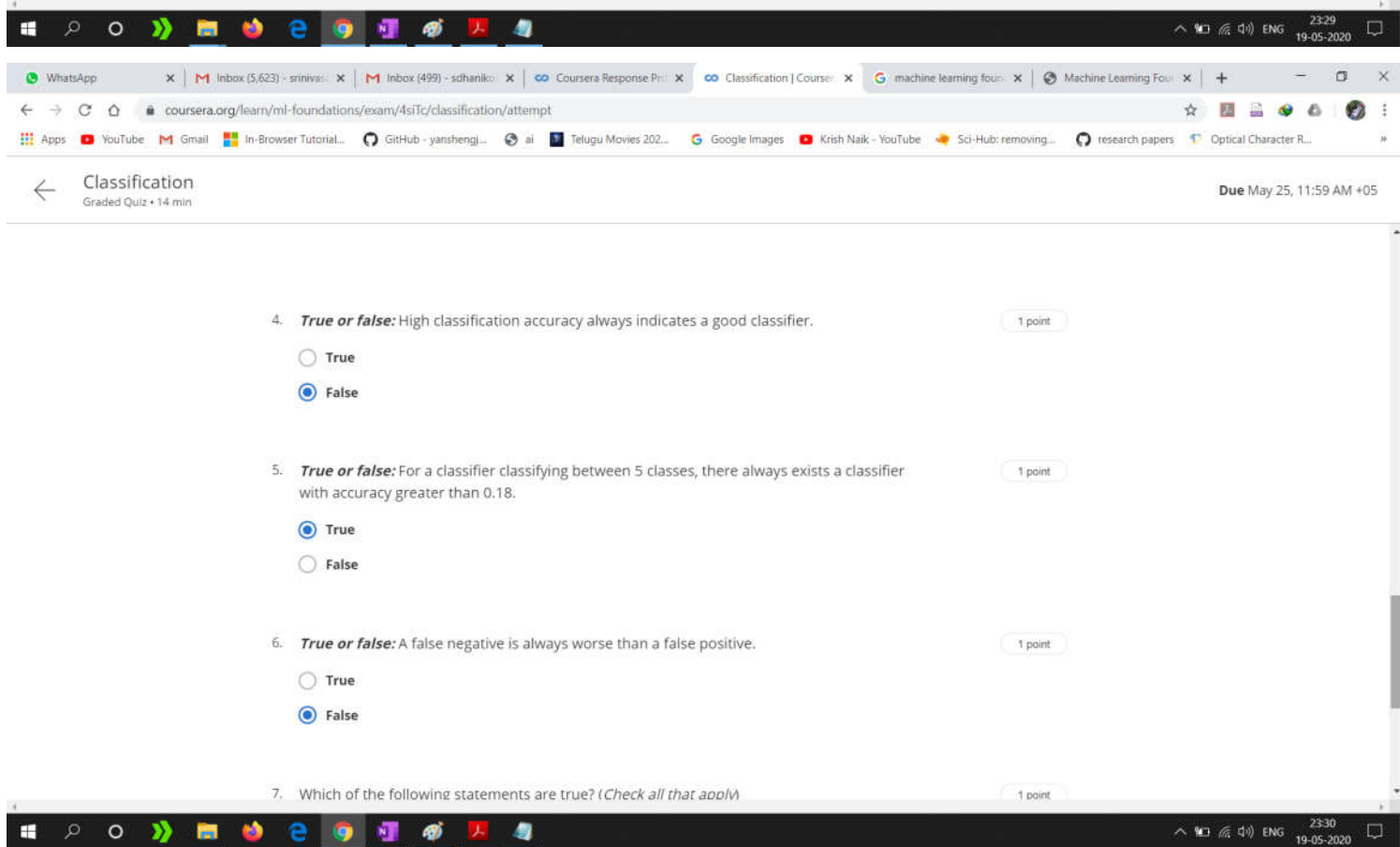
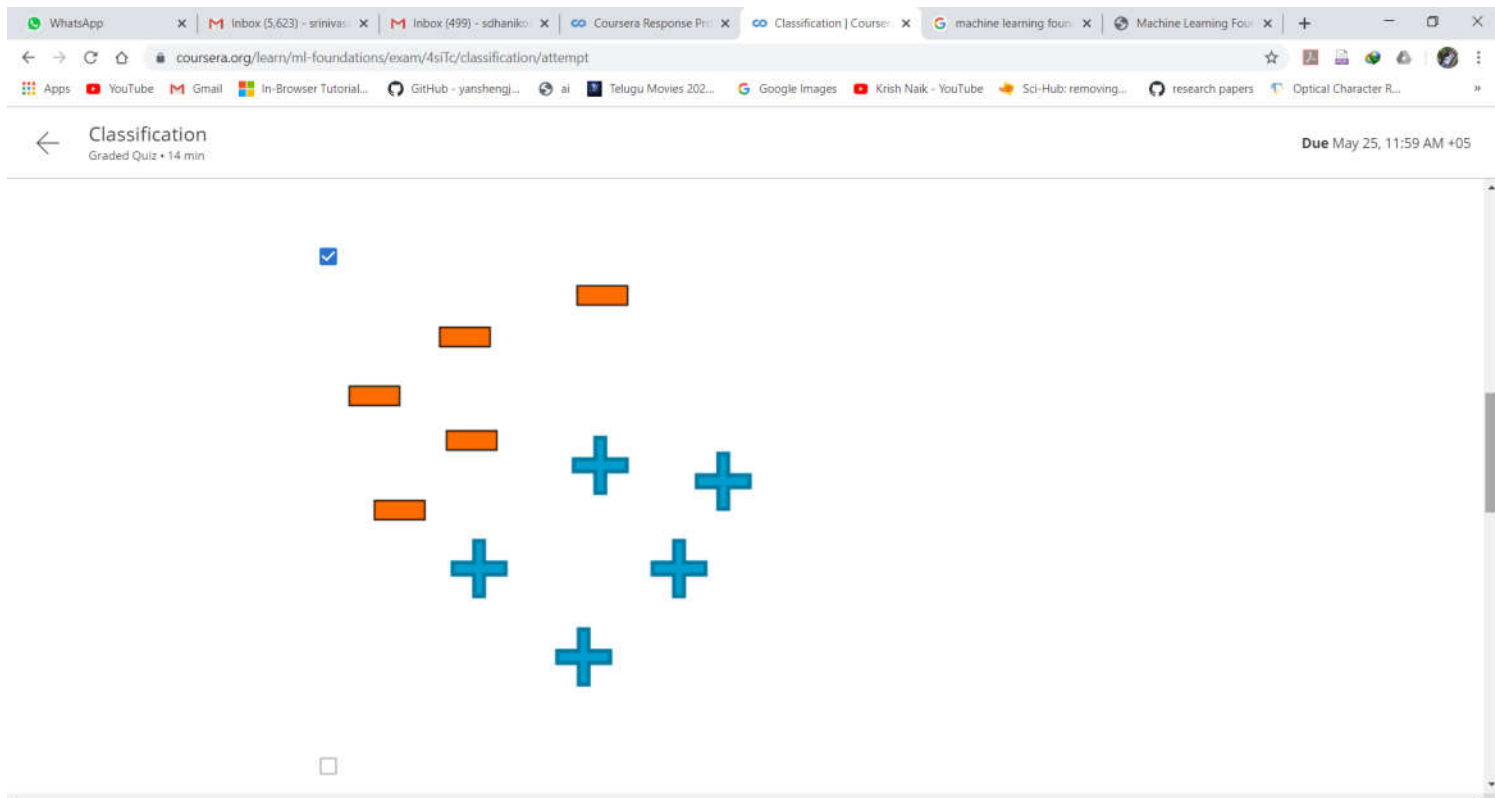
← Classification Graded Quiz • 14 min

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3. For which of the following datasets would a **linear** classifier perform perfectly?

1 point





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Classification

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5. **True or false:** For a classifier classifying between 5 classes, there always exists a classifier with accuracy greater than 0.18.

1 point

☒ True

☐ False

6. **True or false:** A false negative is always worse than a false positive.

1 point

☐ True

☒ False

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

1 point

☒ Test error tends to decrease with more training data until a point, and then does not change (i.e., curve flattens out)

☐ Test error always goes to 0 with an unboundedly large training dataset

☐ Test error is never a function of the amount of training data

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← Analyzing product sentiment Graded Quiz • 22 min Due May 25, 11:59 AM +05

5. Which of the following ranges contains the accuracy of the *selected_words_model* on the *test_data*? 1 point

☐ 0.811 to 0.841

☒ 0.841 to 0.871

☐ 0.871 to 0.901

☐ 0.901 to 0.931

6. Which of the following ranges contains the accuracy of the *sentiment_model* in the IPython Notebook from lecture on the *test_data*? 1 point

☐ 0.811 to 0.841

☐ 0.841 to 0.871

☐ 0.871 to 0.901

☒ 0.901 to 0.931

7. Which of the following ranges contains the accuracy of the majority class classifier, which simply predicts the majority class on the *test_data*? 1 point

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← Clustering and Similarity

Graded Quiz • 12 min

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2. In *Simpleland*, a reader is enjoying a document with a representation: $[1\ 3\ 2\ 1\ 2\ 1\ 1]$. Which of the following articles would you recommend to this reader next? 1 point

☐ $[7\ 0\ 2\ 1\ 0\ 0\ 1]$

☒ $[1\ 7\ 0\ 0\ 2\ 0\ 1]$

☐ $[1\ 0\ 0\ 0\ 7\ 1\ 2]$

☐ $[0\ 2\ 0\ 0\ 7\ 1\ 1]$

3. A corpus in *Simpleland* has 99 articles. If you pick one article and perform **1-nearest neighbor search** to find the closest article to this query article, how many times must you compute the similarity between two articles? 1 point

☒ 98

☐ $98 \times 2 = 196$

☐ $98 / 2 = 49$

☐ $(98)^2$

☐ 99

What: x Mach: x Bank: x Inbo: x Inbo: x 1 + Ju: x PHD: x 1 1 1: x Untit: x hdt5: x telug: x Dow: x Cour: x Clust: x

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← Clustering and Similarity

Graded Quiz • 12 min

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4. For the TF-IDF representation, does the relative importance of words in a document depend on the base of the logarithm used? For example, take the words "bus" and "wheels" in a particular document. Is the ratio between the TF-IDF values for "bus" and "wheels" different when computed using log base 2 versus log base 10? 1 point

☐ Yes

☒ No

5. Which of the following statements are **true**? (Check all that apply): 1 point

☒ Deciding whether an email is *spam* or *not spam* using the text of the email and some *spam* / *not spam* labels is a supervised learning problem.

☐ Dividing emails into two groups based on the text of each email is a supervised learning problem.

☒ If we are performing clustering, we typically assume we either do not have or do not use class labels in training the model.

6. Which of the following pictures represents the **best** k-means solution? (Squares represent observations, plus signs are cluster centers, and colors indicate assignments of observations) 1 point

problem.

☒ If we are performing clustering, we typically assume we either do not have or do not use class labels in training the model.

6. Which of the following pictures represents the **best** k-means solution? (Squares represent observations, plus signs are cluster centers, and colors indicate assignments of observations to cluster centers.)

1 point



Retrieving Wikipedia articles

TOTAL POINTS 9

1. Top word count words for Elton John

1 point

- ☐ (the, john, singer)
- ☐ (england, awards, musician)
- ☒ (the, in, and)
- ☐ (his, the, since)
- ☐ (rock, artists, best)

2. Top TF-IDF words for Elton John

1 point

- ☒ (furnish, elton, billboard)
- ☐ (john, elton, fivedecade)
- ☐ (the, of, has)
- ☐ (awards, rock, john)
- ☐ (elton, john, singer)

3. The cosine distance between 'Elton John's and 'Victoria Beckham's articles (represented with TF-IDF) falls within which range?

1 point

- ☐ 0.1 to 0.29
- ☐ 0.3 to 0.49
- ☐ 0.5 to 0.69
- ☐ 0.7 to 0.89
- ☒ 0.9 to 1.0

4. The cosine distance between 'Elton John's and 'Paul McCartney's articles (represented with TF-IDF) falls within which range?

1 point

- ☐ 0.1 to 0.29
- ☐ 0.3 to 0.49
- ☐ 0.5 to 0.69
- ☒ 0.7 to 0.89
- ☐ 0.9 to 1

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Retrieving Wikipedia articles

Graded Quiz • 18 min

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5. Who is closer to 'Elton John', 'Victoria Beckham' or 'Paul McCartney'? 1 point

☐ Victoria Beckham

☒ Paul McCartney

6. Who is the nearest cosine-distance neighbor to 'Elton John' using raw word counts? 1 point

☐ Billy Joel

☒ Cliff Richard

☐ Roger Daltrey

☐ George Bush

7. Who is the nearest cosine-distance neighbor to 'Elton John' using TF-IDF? 1 point

☐ Roger Daltrey

☒ Rod Stewart

☐ Tommy Haas

☐ Elvis Presley

What: x Mach: x Bank: x Inbo: x Inbo: x 1 - Ju: x PHD: x 1.1.1: x Untit: x hdt5: x telug: x Dow: x Cour: x Retri: x

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Retrieving Wikipedia articles

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☒ Rod Stewart

☐ Tommy Haas

☐ Elvis Presley

8. Who is the nearest cosine-distance neighbor to 'Victoria Beckham' using raw word counts? 1 point

☐ Stephen Dow Beckham

☐ Louis Molloy

☐ Adrienne Corri

☒ Mary Fitzgerald (artist)

9. Who is the nearest cosine-distance neighbor to 'Victoria Beckham' using TF-IDF? 1 point

☐ Mel B

☐ Caroline Rush

☒ David Beckham

☐ Carrie Reichardt

Recommender Systems

TOTAL POINTS 9

1. Recommending items based on **global popularity** can (check all that apply):

1 point

- ☐ provide personalization
- ☐ capture context (e.g., time of day)
- ☒ none of the above

2. Recommending items using a **classification** approach can (check all that apply):

1 point

- ☒ provide personalization
- ☒ capture context (e.g., time of day)
- ☐ none of the above

☐ none of the above

3. Recommending items using a **simple count based co-occurrence matrix** can (check all that apply):

1 point

- ☒ provide personalization
- ☐ capture context (e.g., time of day)
- ☐ none of the above

4. Recommending items using **featurized matrix factorization** can (check all that apply):

1 point

- ☒ provide personalization
- ☒ capture context (e.g., time of day)
- ☐ none of the above

5. Normalizing co-occurrence matrices is used primarily to account for:

1 point

- ☐ people who purchased many items

Recommender Systems
Graded Quiz • 18 min

Due Jun 8, 11:59 AM +05

☐ capture context (e.g., time of day)

☐ none of the above

4. Recommending items using **featurized matrix factorization** can (check all that apply): 1 point

☒ provide personalization

☒ capture context (e.g., time of day)

☐ none of the above

5. Normalizing co-occurrence matrices is used primarily to account for: 1 point

☐ people who purchased many items

☒ items purchased by many people

☐ eliminating rare products

☐ none of the above

Recommender Systems
Graded Quiz • 18 min

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6. A store has 3 customers and 3 products. Below are the learned feature vectors for each user and product. Based on this estimated model, which product would you recommend most highly to *User #2*? 1 point

User ID	Feature vector
1	(1.73, 0.01, 5.22)
2	(0.03, 4.41, 2.05)
3	(1.13, 0.89, 3.76)

Product ID	Feature vector
1	(3.29, 3.44, 3.67)
2	(0.82, 9.71, 3.88)
3	(8.34, 1.72, 0.02)

☐ Product #1

☒ Product #2

☐ Product #3

Recommender Systems
Graded Quiz • 18 min

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☐ Product #1
☒ Product #2
☐ Product #3

7. For the liked and recommended items displayed below, calculate the **recall** and round to 2 decimal points. (As in the lesson, green squares indicate recommended items, magenta squares are liked items. Items not recommended are grayed out for clarity.) Note: enter your answer in American decimal format (e.g. enter 0.98, not 0,98)

1 point

0.33

8. For the liked and recommended items displayed below, calculate the **precision** and round to 2 decimal points. (As in the lesson, green squares indicate recommended items, magenta squares are liked items. Items not recommended are grayed out for clarity.) Note: enter your answer in American decimal format (e.g. enter 0.98, not 0,98)

1 point

Recommender Systems
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Due Jun 8, 11:59 AM +05

0.33

8. For the liked and recommended items displayed below, calculate the **precision** and round to 2 decimal points. (As in the lesson, green squares indicate recommended items, magenta squares are liked items. Items not recommended are grayed out for clarity.) Note: enter your answer in American decimal format (e.g. enter 0.98, not 0,98)

1 point

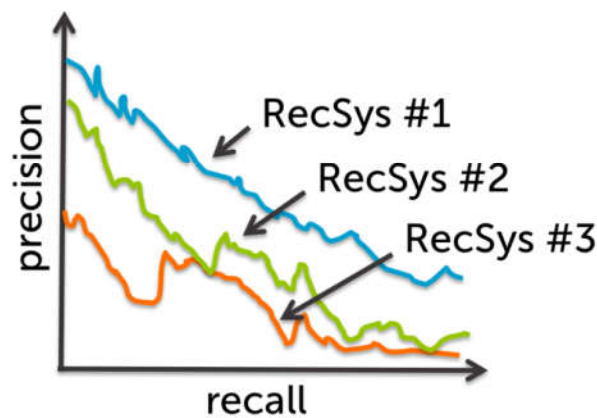
0.25

9. Based on the precision-recall curves in the figure below, which recommender would you use?

1 point

9. Based on the precision-recall curves in the figure below, which recommender would you use?

1 point



☒ RecSys #1

Recommending songs

TOTAL POINTS 3

1. Which of the artists below have had the most unique users listening to their songs?

1 point

- ☐ Kanye West
- ☐ Foo Fighters
- ☒ Taylor Swift
- ☐ Lady GaGa

2. Which of the artists below is the most popular artist, the one with highest total listen_count, in the data set?

1 point

- ☐ Taylor Swift
- ☒ Kings of Leon
- ☐ Coldplay
- ☐ Lady GaGa

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← Recommending songs

Graded Quiz • 6 min

Due Jun 8, 11:59 AM +05

☒ Taylor Swift

☐ Lady GaGa

2. Which of the artists below is the most popular artist, the one with highest total listen_count, in the data set? 1 point

☐ Taylor Swift

☒ Kings of Leon

☐ Coldplay

☐ Lady GaGa

3. Which of the artists below is the least popular artist, the one with smallest total listen_count, in the data set? 1 point

☒ William Tabbert

☐ Velvet Underground & Nico

☐ Kanye West

☐ The Cool Kids

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☐ Kanye West

☐ The Cool Kids

4. Using the first 10,000 unique users only in the test data, use the personalized_model learned on the training data to recommend 1 song to each user. What's the most recommended song?

☐ Hey_ Soul Sister - Train

☐ Secrets - OneRepublic

☒ Undo - Björk

☐ Sehr kosmisch - Harmonia

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Deep Learning

TOTAL POINTS 6

1. Which of the following statements are **true**? (Check all that apply)

1 point

- ☐ Linear classifiers are never useful, because they cannot represent XOR.
- ☐ Linear classifiers are useful, because, with enough data, they can represent anything.
- ☒ Having good non-linear features can allow us to learn very accurate linear classifiers.
- ☐ none of the above

2. A simple **linear** classifier can represent which of the following functions? (Check all that apply)

1 point

Hint: If you are stuck, see <https://www.coursera.org/learn/ml-foundations/module/mqC1t/discussions/AAIUjrrtEeWGphLhfbPAyQ>

- ☒ x1 OR x2 OR NOT x3

☒ x1 AND x2 AND NOT x3

TOTAL POINTS 6

1. Which of the following statements are **true**? (Check all that apply)

1 point

- ☐ Linear classifiers are never useful, because they cannot represent XOR.
- ☐ Linear classifiers are useful, because, with enough data, they can represent anything.
- ☒ Having good non-linear features can allow us to learn very accurate linear classifiers.
- ☐ none of the above

2. A simple **linear** classifier can represent which of the following functions? (Check all that apply)

1 point

Hint: If you are stuck, see <https://www.coursera.org/learn/ml-foundations/module/mqC1t/discussions/AAIUjrrtEeWGphLhfbPAyQ>

- ☒ x1 OR x2 OR NOT x3

☒ x1 AND x2 AND NOT x3

☒ x1 OR (x2 AND NOT x3)

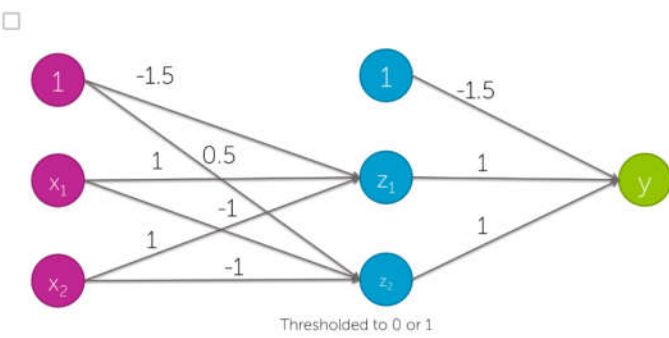
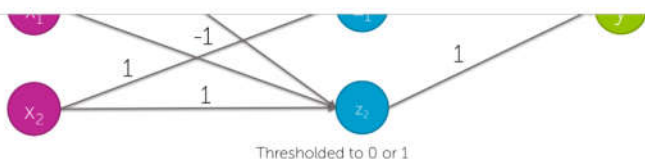
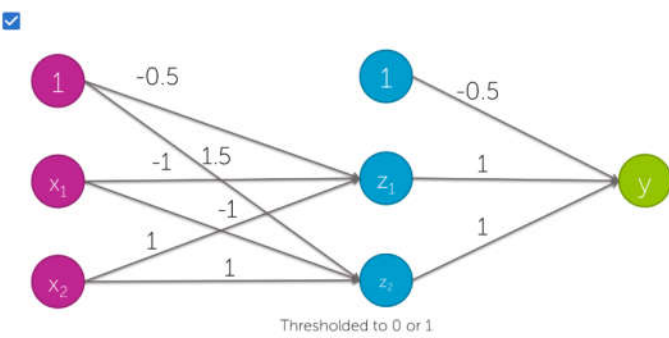
☐ none of the above

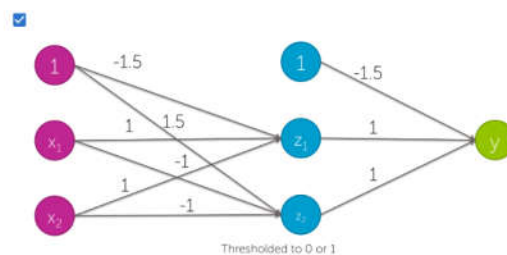
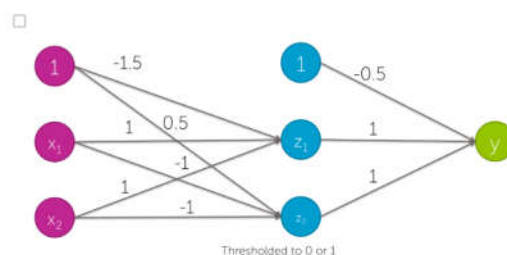
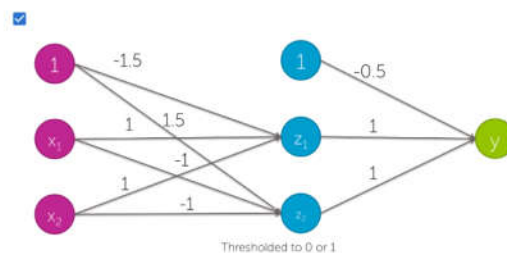
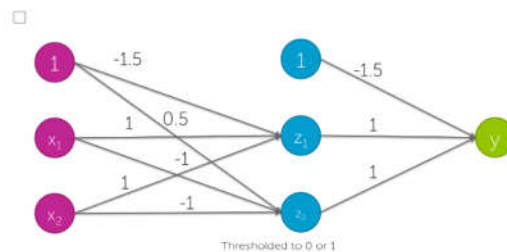
☐ none of the above

3. Which of the the following neural networks can represent the following function? Select all that apply. 1 point

(x1 AND x2) OR (NOT x1 AND NOT x2)

Hint: If you are stuck, see <https://www.coursera.org/learn/ml-foundations/module/nqC1t/discussions/AAlUurrEeWGphLhfbPayQ>





Deep Learning
Graded Quiz • 12 min

Thresholded to 0 or 1

4. Which of the following statements is **true**? (Check all that apply) 1 point

- ☒ Features in computer vision act like local detectors.
- ☐ Deep learning has had impact in computer vision, because it's used to combine all the different hand-created features that already exist.
- ☒ By learning non-linear features, neural networks have allowed us to automatically learn detectors for computer vision.
- ☐ none of the above

5. If you have lots of images of different types of plankton labeled with their species name, and lots of computational resources, what would you expect to perform better predictions: 1 point

- ☒ a deep neural network trained on this data.
- ☐ a simple classifier trained on this data, using deep features as input, which were trained using ImageNet data.

6. If you have a few images of different types of plankton labeled with their species name, what would you expect to perform better predictions: 1 point

- ☐ a deep neural network trained on this data.
- ☒ a simple classifier trained on this data, using deep features as input, which were trained using ImageNet data.

Deep features for image retrieval
Graded Quiz • 14 min

Due Jun 15, 11:59 AM +05


Deep features for image retrieval

TOTAL POINTS 7

1. What's the least common category in the training data? 1 point

- ☒ bird
- ☐ dog
- ☐ cat
- ☐ automobile


2. Of the images below, which is the nearest 'cat' labeled image in the training data to the first image in the test data (image_test[0:1])? 1 point





Deep features for image retrieval


Graded Quiz • 14 min

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☐ 

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Deep features for image retrieval


Graded Quiz • 14 min


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3. Of the images below, which is the nearest 'dog' labeled image in the training data to the the first image in the test data (image_test[0:1])? 1 point

☐ 

☐ 

☐ 

☒ 

☐ 

Deep features for image retrieval
Graded Quiz • 14 min

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4. For the first image in the test data, in what range is the mean distance between this image and its 5 nearest neighbors that were labeled 'cat' in the training data? 1 point

☐ 33 to 35

☒ 35 to 37

☐ 37 to 39

☐ 39 to 41

☐ Above 41

5. For the first image in the test data, in what range is the mean distance between this image and its 5 nearest neighbors that were labeled 'dog' in the training data? 1 point

☐ 33 to 35

☐ 35 to 37

☒ 37 to 39

☐ 39 to 41

☐ Above 41

6. On average, is the first image in the test data closer to its 5 nearest neighbors in the 'cat' data or in the 'dog' data? 1 point

☒ cat

☐ dog

Deep features for image retrieval
Graded Quiz • 14 min

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5. For the first image in the test data, in what range is the mean distance between this image and its 5 nearest neighbors that were labeled 'dog' in the training data? 1 point

☐ 33 to 35

☐ 35 to 37

☒ 37 to 39

☐ 39 to 41

☐ Above 41

6. On average, is the first image in the test data closer to its 5 nearest neighbors in the 'cat' data or in the 'dog' data? 1 point

☒ cat

☐ dog

7. In what range is the accuracy of the 1-nearest neighbor classifier at classifying 'dog' images from the test set? 1 point

☐ 50 to 60

☒ 60 to 70

☐ 70 to 80

☐ 80 to 90

☐ 90 to 100