✔ **Congratulations! You passed!**

Grade received 100%   To pass 80% or higher

Go to next item

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1. Assume that your objective is to minimize the transformation of X as similar to Y as possible, what would you optimize to get R? $(XR \approx Y)$

   1 / 1 point

◉ Minimize the distance between XR and Y

○ Maximize the distance between XR and Y

○ Minimize the dot product between XR and Y

○ Maximize the dot product between XR and Y

✓ **Correct**
This is correct.

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2. When solving for R, which of the following is true?

   1 / 1 point

○ Create a forloop, inside the forloop: (initialize R, compute the gradient, update the loss

○ Create a forloop, inside the forloop: (initialize R, update the loss, compute the gradient.

◉ Initialize R, create a forloop, inside the forloop: (compute the gradient, update the loss)

○ Initialize R, compute the gradient, create a forloop, inside the forloop: (update the loss)

✓ **Correct**
This is correct.

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3. The Frobenius norm of A = $\begin{pmatrix} 1 & 3 \\ 4 & 5 \end{pmatrix}$ is

   1 / 1 point

(Answer should be in 2 decimal places)

> 7.14

✓ **Correct**
7.14

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4. Assume $X \in R^{m \times n}, R \in R^{n \times n}, Y \in R^{m \times n}$ which of the following is the gradient of $\|XR - Y\|_F^2$?

   1 / 1 point

◉ $\frac{2}{m} X^T (XR - Y)$

○ $\frac{2}{m} X (XR - Y)$

○ $\frac{2}{m} (XR - Y) X$

○ $\frac{2}{m} (XR - Y) X^T$

✓ **Correct**
This is correct.

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5. Imagine that you are visiting a city in the US. If you search for friends that are living in the US, would you be able to determine the 2 closest of ALL your friends around the world?

   1 / 1 point

○ Yes, because I am already in the country and that implies that my closest friends are also going to be in the same country.

◉ No

✓ **Correct**
This is correct.

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6. What is the purpose of using a function to hash vectors into values?

   1 / 1 point

☑ To speed up the time it takes when comparing similar vectors.

✓ **Correct**
This is correct.

☑ To not have to spend time comparing vectors with other vectors that are completely different.

✓ **Correct**
This is correct.

☐ To make the search for other similar vectors more accurate.

☐ It helps us create vectors.

7. Given the following vectors, determine the true statements.

$P: \begin{bmatrix} 1 \\ 1 \end{bmatrix}$

$V_1: \begin{bmatrix} 1 \\ 1 \end{bmatrix}$

$V_2: \begin{bmatrix} 2 \\ 2 \end{bmatrix}$

$V_3: \begin{bmatrix} -1 \\ -1 \end{bmatrix}$

1 / 1 point

- ⦿ PV_1^T and PV_2^T have the same sign.
- ◯ PV_1^T and PV_2^T are equal in magnitude.
- ◯ PV_1^T and PV_3^T have the same sign.

⊘ **Correct**
   Correct

8. We define H to be the number of planes and h_i to be 1 or 0 depending on the sign of the dot product with plane i. Which of the following is the equation used to calculate the hash for several planes.

1 / 1 point

- ⦿ $\sum_i^H 2^i h_i$
- ◯ $\sum_i^H 2^i h_i^i$
- ◯ $\sum_i^H 2ih_i$
- ◯ $\sum_i^H 2^{h_i} i$

⊘ **Correct**
   Correct.

9. How can you speed up the look up for similar documents.

1 / 1 point

- ☐ PCA
- ☑ Approximate Nearest Neighbors

⊘ **Correct**
   This is correct.

- ☐ K-Means
- ☑ Locality sensitive hashing

⊘ **Correct**
   This is correct.

10. Hash tables are useful because

1 / 1 point

- ☑ allow us to divide vector space to regions.

⊘ **Correct**
   This is correct.

- ☑ speed up look up

⊘ **Correct**
   This is correct.

- ☐ classify with higher accuracy
- ☑ can always be reproduced

⊘ **Correct**
   You will always hash the same vector to the same bucket with the same hash function.