Congratulations! You passed!

Grade received 100% **To pass** 80% or higher

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Hashing and Machine Translation

Total points 10

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.

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.

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

7.14

Correct
7.14

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.

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.

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. **1 / 1 point**

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 :

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

- ◉ 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.