CSPB 4622 - Truong - Machine Learning

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Started on	Monday, 28 October 2024, 12:03 AM
State	Finished
Completed on	Monday, 28 October 2024, 12:05 AM
Time taken	2 mins 7 secs
Marks	8.00/8.00
Grade	**10.00** out of 10.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

In SVDs $A = U\Sigma V^T$ and $AA^T = X\Lambda Y^T$, $\Lambda = \Sigma^2$ for any matrix A. True or False.

◉ a. True ✔

◯ b. False

> Your answer is correct. ## In SVDs $A = U\Sigma V^T$ and $AA^T = X\Lambda Y^T$, $\Lambda = \Sigma^2$ for any matrix A.
>
> The correct answer is: True

Question **2**

Correct

Mark 1.00 out of 1.00

Eigenvectors from eigenvalue decomposition are always orthogonal. **True or False.**

◯ a. True

◉ b. False ✔

> Your answer is correct. If A is not symmetric, eigenvetors may not be orthogonal.
>
> The correct answer is: False

Question **3**

Correct

Mark 1.00 out of 1.00

In SVD: $A = U \Sigma V^T$, $UV^T = \mathbf{I}$ **True or False.**

○ a. True

◉ b. False ✔

Your answer is correct. In SVD: ## $A = U \Sigma V^T$, $UV^T \mathbf{!} = \mathbf{I}$ In SVD: ## $A = U \Sigma V^T$, $UU^T = \mathbf{I}$

The correct answer is: False

Question **4**

Correct

Mark 1.00 out of 1.00

Matrix A needs to be a symmetric matrix in Eigenvalue decomposition. **True or False**

○ a. True

◉ b. False ✔

Your answer is correct. Eigenvalue decomposition can still work for a non-symmetric matrix. Matrix A needs to be square shaped.

The correct answer is: False

Question **5**

Correct

Mark 1.00 out of 1.00

How many non-zero eigenvalues does this matrix have? $\begin{bmatrix} 1 & 2 \\ 2 & 3 \\ 4 & 7 \\ 3 & 9 \end{bmatrix}$

  ○ a. 1

  ◉ b. 2   ✔

  ○ c. 3

  ○ d. 4

> Your answer is correct. This matrix has two non-zero eigenvalues.
>
> The correct answer is: 2

Question **6**

Correct

Mark 1.00 out of 1.00

For any matrix A, both AA^T and A^TA are symmetric. **True/False**

  ◉ a. True   ✔

  ○ b. False

> Your answer is correct. For any matrix A, both AA^T and A^TA are symmetric.
>
> The correct answer is: True

Question **7**

Correct

Mark 1.00 out of 1.00

For any matrix A, AA^T and A^TA have the same dimension. **True or False.**

   ○ a. True

   ⊙ b. False   ✔

> Your answer is correct. For any matrix A, AA^T and A^TA have the same dimension.
>
> The correct answer is: False

Question **8**

Correct

Mark 1.00 out of 1.00

In SVD: $A = U \Sigma V^T$, $U U^T = \textbf{I}$

   ⊙ a. True   ✔

   ○ b. False

> Your answer is correct. ## $A = U \Sigma V^T$, $U U^T = \textbf{I}$
>
> The correct answer is: True