Principal Component Analysis | Coursera

Principal Component Analysis
Graded Quiz • 10 min

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✓ Congratulations! You passed! GRADE 100% **Keep Learning** QUIZ • 10 MIN TO PASS 80% or higher **Principal Component Analysis Principal Component Analysis** LATEST SUBMISSION GRADE 100% Submit your assignment Try again **DUE** Nov 11, 1:29 PM IST **ATTEMPTS** 3 every 8 hours 1. Consider the following 2D dataset: 1 / 1 point Receive grade Grade View Feedback . - - - . TO PASS 80% or higher Which of the following figures correspond to possible values that PCA may return for $u^{\left(1
ight)}$ (the first eigenvector / first principal component)? Check all that apply (you may have to check more than one figure). The maximal variance is along the y = x line, so this option is correct. The maximal variance is along the y = x line, so the negative vector along that line is correct for the first principal component. 2. Which of the following is a reasonable way to select the number of principal components k? 1 / 1 point (Recall that n is the dimensionality of the input data and m is the number of input examples.) igcup Choose k to be 99% of n (i.e., k=0.99*n, rounded to the nearest integer). igcup Choose k to be the smallest value so that at least 1% of the variance is retained. igcirc Choose the value of k that minimizes the approximation error $rac{1}{m}\sum_{i=1}^m \left||x^{(i)}-x_{ ext{approx}}^{(i)}|
ight|^2$. $igoreal{igoreal}$ Choose k to be the smallest value so that at least 99% of the variance is retained. Correct This is correct, as it maintains the structure of the data while maximally reducing its dimension. 3. Suppose someone tells you that they ran PCA in such a way that "95% of the variance was retained." 1 / 1 point What is an equivalent statement to this? $\log rac{rac{1}{m}\sum_{i=1}^{m}||x^{(i)}||^2}{rac{1}{m}\sum_{i=1}^{m}||x^{(i)}-x_{ ext{approx}}^{(i)}||^2} \leq 0.05$ $rac{rac{1}{m}\sum_{i=1}^{m}||x^{(i)}||^2}{rac{1}{m}\sum_{i=1}^{m}||x^{(i)}-x_{ ext{approx}}^{(i)}||^2}\geq 0.05$ $rac{rac{1}{m}\sum_{i=1}^{m}||x^{(i)}||^2}{rac{1}{m}\sum_{i=1}^{m}||x^{(i)}-x_{ ext{approx}}^{(i)}||^2} \leq 0.95$ $rac{rac{1}{m}\sum_{i=1}^{m}||x^{(i)}-x_{ ext{approx}}^{(i)}||^2}{rac{1}{m}\sum_{i=1}^{m}||x^{(i)}||^2}\leq 0.05$

Correct

This is the correct formula

https://www.coursera.org/learn/machine-learning/exam/B20Bx/principal-component-analysis/view-attempt

Clustering

10 min

Reading: Lecture Slides

Quiz: Unsupervised

Principal Component

Reading: Lecture Slides

Quiz: Principal Component

Programming Assignment:
K-Means Clustering and PCA

5 questions

5 questions

Motivation

Analysis

Review

Applying PCA