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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Introduction to Machine Learning (course)



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Course outline

About NPTEL

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How does an NPTEL online course work? ()

Week 0 ()

Week 1 ()

Week 2 ()

Week 3 ()

Classification
(unit?
unit=42&lesson
=43)

Week 3: Assignment 3

Your last recorded submission was on 2024-08-14, 23:30 IST Due date: 2024-08-14, 23:59 IST.

Thank you for taking the Week 3:

1) For a two-class problem using discriminant functions (δ_k - discriminant function for **1 point** class k), where is the separating hyperplane located?

O Wher

Where $\delta 1 > \delta 2$

0

Where $\delta 1 < \delta 2$

•

Where $\delta 1 = \delta 2$

 \bigcirc

Where $\delta 1 + \delta 2 = 1$

2) Given the following dataset consisting of two classes, A and B, calculate the prior probability of each class.

Feature 1	Class
2.3	A
1.8	A
3.2	A
2.7	В
3.0	A
2.1	A
1.9	В
2.4	В

What are the prior probabilities of class A and class B?

)

Assessment submitted. Regression

(unit? unit=42&lesson =44)

- Linear
 Discriminant
 Analysis I Introduction
 (unit?
 unit=42&lesson
 =45)
- Linear
 Discriminant
 Analysis II
 (unit?
 unit=42&lesson
 =46)
- Discriminant
 Analysis III Another view of
 LDA (unit?
 unit=42&lesson
 =47)
- Tutorial (unit? unit=42&lesson =48)
- Practice: Week
 3: Assignment
 3 (Non Graded)
 (assessment?
 name=266)
- Quiz: Week 3: Assignment 3 (assessment? name=281)
- Week 3
 Feedback Form
 : Introduction
 To Machine
 Learning (unit?
 unit=42&lesson
 =284)

Week 4 ()

- P(A) = 0.5, P(B) = 0.5 P(A) = 0.625, P(B) = 0.375 P(A) = 0.375, P(B) = 0.625 P(A) = 0.6, P(B) = 0.4
- 3) In a 3-class classification problem using linear regression, the output vectors for three *1 point* data points are [0.8, 0.3, -0.1], [0.2, 0.6, 0.2], and [-0.1, 0.4, 0.7]. To which classes would these points be assigned?
 - \bigcirc 1, 2, 1
 - \bigcirc 1, 2, 2
 - \bigcirc 1, 3, 2
 - 01, 2, 3
- 4) If you have a 5-class classification problem and want to avoid masking using **1 point** polynomial regression, what is the minimum degree of the polynomial you should use?
 - Оз
 - **Q** 4
 - 05
 - 06
- 5) Consider a logistic regression model where the predicted probability for a given data **1 point** point is 0.4. If the actual label for this data point is 1, what is the contribution of this data point to the log-likelihood?
 - \bigcirc -1.3219
 - -0.9163
 - \bigcirc +1.3219
 - \bigcirc +0.9163
- 6) What additional assumption does LDA make about the covariance matrix in comparison to the basic assumption of Gaussian class conditional density?

1 point

- O The covariance matrix is diagonal
- O The covariance matrix is identity
- The covariance matrix is the same for all classes
- O The covariance matrix is different for each class
- 7) What is the shape of the decision boundary in LDA?

1 point

- O Quadratic
- O Linear
- O Circular

Assessm**Enxt** submitted. Transcripts ()

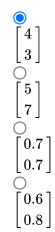
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- O Can not be determined
- 8) For two classes C_1 and C_2 with within-class variances $\sigma_{w1}^2=1$ and $\sigma_{w2}^2=4$ respectively, if the projected means are $\mu_1'=1$ and $\mu_2'=3$, what is the Fisher criterion J(w)? 1 point
 - 0.5
 - 8.0
 - 0 1.25
 - 01.5
- Given two classes C_1 and C_2 with means $\mu_1=\left[egin{array}{c}2\\3\end{array}
 ight]$ and $\mu_2=\left[egin{array}{c}5\\7\end{array}
 ight]$ respectively, what is the direction vector w for LDA when the within-class covariance matrix S_w is the identity matrix I?



You may submit any number of times before the due date. The final submission will be considered for grading.

Submit Answers