

1.5 Classifying Data and Matrix Multiplication

Started: Jan 27 at 10:11am

Quiz Instructions

View the Video Lecture and then complete the short quiz.

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[Video Lecture Slides \(PDF\)](https://uwmadison.box.com/s/72y0z63rqbrqcd222amnei9g0xrmep9b) [_ \(https://uwmadison.box.com/s/72y0z63rqbrqcd222amnei9g0xrmep9b\)](https://uwmadison.box.com/s/72y0z63rqbrqcd222amnei9g0xrmep9b)

1.5 Classifying Data and Matrix Multiplication

Training a linear classifier involves solving a system of linear equations

$$\begin{bmatrix} x_1^T \\ x_2^T \\ \vdots \\ x_N^T \end{bmatrix} \underline{w} \approx \begin{bmatrix} l_1 \\ l_2 \\ \vdots \\ l_N \end{bmatrix} \Rightarrow \underline{X} \underline{w} \approx \underline{l}$$

$\begin{matrix} \nearrow & \nwarrow & \nwarrow \\ & M \times 1 & N \times 1 \end{matrix}$
 1 training samples
 ... features

Play clip



6:16 / 8:58



2x



Question 1

1 pts

Binary classification involves deciding which of two categories to assign to data.

☒ True

☐ False

Question 2

1 pts

Select all that apply.

Let \mathbf{x} be a K-by-1 feature vector and \mathbf{w} be a K-by-1 set of weights. Which of the following represent decision boundaries for linear classifiers?

☒ $\mathbf{x}^T \mathbf{w} = 0$

☐ $\mathbf{w}^T \mathbf{x} = 0$

☐ $\mathbf{w}^T \mathbf{w} \mathbf{x}^T \mathbf{x} = 0$

Question 3

1 pts

What is necessary to use supervised learning for training a linear classifier?

☐ cocaine powder☒ a set of features with known labels☐ fewer features than labels☐ fewer training samples than classifier weights☐ at least 10 weights

Question 4

1 pts

Let \mathbf{x} be a vector that is a function of the features. A binary classifier written in the form $\text{sign}(\mathbf{x}^T \mathbf{w})$ cannot have a curved decision boundary in the feature space.

- ☐ True
- ☒ False

Question 5**1 pts**

An error in a classification problem is called a

- ☐ false start
- ☐ false hypothesis
- ☒ misclassification
- ☐ inconceivable

Quiz saved at 10:24am

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