Programming Assignment 3

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Programming Assignments due Jul 12, 2022 06:35 PKT Completed

Click this link to download the Winery Classification notebook and then complete problem 1-5.

Click this link to download the Gaussian Generative-MNIST notebook and then complete problems 6-8.

Problem 1

1/1 point (graded)

This problem is based on the *Winery classification notebook*. You should work through that notebook and then enter answers here.

How many errors (out of 48) are made on the test set when using the single feature 'Ash'?

29 ✔

29

Submit

Problem 2

1/1 point (graded)

How many errors when using 'Alcohol' and 'Ash'?

12 ✔

12

Submit

Problem 3

1/1 point (graded)

How many errors when using 'Alcohol', 'Ash', and 'Flavanoids'?

4 ✔

4

Submit

Problem 4

1/1 point (graded)

How many errors when using all the features?

2 ✔

2

Submit

Problem 5

1/1 point (graded)

In lecture, we got zero errors on the test set when using all the features. Why might this be?

- ○ In the example from lecture, the Gaussians were fit to the entire data (both training and test).
- ◉ In the example from lecture, a different split of the data (into training set and test set) was used.
- ○ In the example from lecture, a different procedure was used for fitting a Gaussian generative model.

✔

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Problem 6

1/1 point (graded)

This problem is based on the *Gaussian generative MNIST notebook*. You should complete that notebook and then enter answers here.

What happens if you do not regularize the covariance matrix? Select all that apply.

- ○ The displayed mean vectors are different.
- ○ The procedure **`fit_generative_model`** generates an error message.
- ◉ The procedure for computing the test error generates an error message.

✔

Submit

Problem 7

1/1 point (graded)

What happens if you set the value of c too high, for instance to one billion? Select all that apply.

- ○ The procedure **`fit_generative_model`** generates an error message.
- ○ The procedure for computing the test error generates an error message.
- ◉ The test error approaches that of a random classifier.

✔

Submit

Problem 8

1/1 point (graded)

What value of c did you end up using? *Note: any value of c will be accepted.

1000

1000

Answer

Correct: Our value of c=4000 yields an error of ~4.3%

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‹ Previous

Next ›