Programming Assignment 3

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 point possible (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'?

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Problem 2

1 point possible (graded)

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

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Problem 3

1 point possible (graded)
How many errors when using 'Alcohol', 'Ash', and 'Flavanoids'?

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Problem 4

1 point possible (graded)
How many errors when using all the features?

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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.

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- 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.

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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.

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Problem 8

1 point possible (graded)

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

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