2. Hinge Loss

Project due Oct 7, 2020 05:29 IST *Completed*

In this project you will be implementing linear classifiers beginning with the Perceptron algorithm. You will begin by writing your loss function, a hinge-loss function. For this function you are given the parameters of your model θ and θ_0. Additionally, you are given a feature matrix in which the rows are feature vectors and the columns are individual features, and a vector of labels representing the actual sentiment of the corresponding feature vector.

Hinge Loss on One Data Sample

1.0/1 point (graded)

First, implement the basic hinge loss calculation on a single data-point. Instead of the entire feature matrix, you are given one row, representing the feature vector of a single data sample, and its label of +1 or -1 representing the ground truth sentiment of the data sample.

Reminder: You can implement this function locally first, and run `python test.py` in your `sentiment_analysis` directory to validate basic functionality before checking against the online grader here.

Available Functions: You have access to the NumPy python library as np; No need to import anything.

```
def hinge_loss_single(feature_vector, label, theta, theta_0):
    """
    Finds the hinge loss on a single data point given specific classification
    parameters.

    Args:
        feature_vector - A numpy array describing the given data point.
        label - A real valued number, the correct classification of the data
            point.
        theta - A numpy array describing the linear classifier.
        theta_0 - A real valued number representing the offset parameter.


    Returns: A real number representing the hinge loss associated with the
    given data point and parameters.
    """
```

Press ESC then TAB or click outside of the code editor to exit

Correct

Test results

See full output

```
CORRECT
```

See full output

Submit You have used 3 of 25 attempts

The Complete Hinge Loss

1.0/1 point (graded)

Now it's time to implement the complete hinge loss for a full set of data. Your input will be a full feature matrix this time, and you will have a vector of corresponding labels. The k^{th} row of the feature matrix corresponds to the k^{th} element of the labels vector. This function should return the appropriate loss of the classifier on the given dataset.

Available Functions: You have access to the NumPy python library as np, and your previous function as `hinge_loss_single`

```
def hinge_loss_full(feature_matrix, labels, theta, theta_0):
```

```
    """
    Finds the total hinge loss on a set of data given specific classification
    parameters.

    Args:
        feature_matrix - A numpy matrix describing the given data. Each row
            represents a single data point.
        labels - A numpy array where the kth element of the array is the
            correct classification of the kth row of the feature matrix.
        theta - A numpy array describing the linear classifier.
        theta_0 - A real valued number representing the offset parameter.


    Returns: A real number representing the hinge loss associated with the
    given dataset and parameters. This number should be the average hinge
```

Press ESC then TAB or click outside of the code editor to exit

Correct

Test results

See full output

CORRECT

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Discussion

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Topic: Unit 1 Linear Classifiers and Generalizations (2 weeks):Project 1: Automatic Review Analyzer / 2. Hinge Loss

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?	"ys = feature_matrix @ theta " should not it be "ys = theta @feature_matrix" ? What is the justification for this order of multiplying vector theta by the feature matrix ? Thank you	3
💬	Runs perfectly locally but getting only 0.75 marks when submitting here. The code I wrote for full hinge loss function returns "pass" when I run python test.py locally on my pc but i'm getting only 0.75 marks...	2
💬	[STAFF] The Complete Hinge Loss - Test Case 1. Testing random feature matrix I added some print statement to get to know what was passed into the function. And surprised to see that labels were 2s, 1s and 0s. ...	3
?	Testing locally Hello. I am struggling with local testing. Are we supposed to modify the project1.py file then run the test.py file? I am getting "NotIm...	9
?	Very Urgent Where can i find data for this project.	3
💬	Progress not updating Despite getting correct answers progress is not updating anyone else is having the same issue?	5
💬	feature_matrix is an <class 'numpy.ndarray'> I had a problem because this "feature_matrix - A numpy matrix ..." is not the case. The feature matrix is <class 'numpy.ndarray'>, NO...	2
💬	[STAFF] Wy do we need to calculate Hinge Loss for this project? I'm almost at the end of the project and can't find where these Hinge Loss functions are used further. Is this just an exercise?	1
?	Is there a function similar to vectorize that works on matrix? I am trying to solve the hinge full loss function. I can solve it via loops. Was wondering if there is a solution that uses vectorize? I trie...	2
☑	hinge_loss_full - local version test PASS, grader version Incorrect Hi, I downloaded project code and implemented hinge_loss_full in my laptop. The test is green - "PASS Hinge loss full". Grader says "I...	6
?	Are we expected to use a loop for the complete hinge loss? My loop solution passed the grader, but I am wondering if we are expected to do something else.	3

? What is the use of " #pragma coderesponse template " in the code . Does it say something to the interpreter? 1
This is not directly related to the exercise. I downloaded the project files and i found some #pragma statements in the code. What is ...

Np.all() for if loop? 6
Hey guys, I run into constant trouble on the first question. I tried this: if np.all(expression <= 0): But I always get the ValueError: The t...

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