✕

MITx: 6.86x
Machine Learning with Python-From Linear Models to Deep Learning

Help   sandipan_dey ▼

2. Hinge Loss

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

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.

```
 1 def hinge_loss_single(feature_vector, label, theta, theta_0):
 2     """
 3     Finds the hinge loss on a single data point given specific classification
 4     parameters.
 5
 6     Args:
 7         feature_vector - A numpy array describing the given data point.
 8         label - A real valued number, the correct classification of the data
 9             point.
10         theta - A numpy array describing the linear classifier.
11         theta_0 - A real valued number representing the offset parameter.
12
13
14     Returns: A real number representing the hinge loss associated with the
15     given data point and parameters.
```

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

Processing

Your answer has been submitted. As soon as your submission is graded, this message will be replaced with the grader's feedback.

Submit   You have used 1 of 20 attempts

The Complete Hinge Loss

1/1 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 kth row of the feature matrix corresponds to the kth 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`

```
 1 def hinge_loss_full(feature_matrix, labels, theta, theta_0):
 2     """
 3     Finds the total hinge loss on a set of data given specific classification
 4     parameters.
 5
 6     Args:
 7         feature_matrix - A numpy matrix describing the given data. Each row
 8             represents a single data point.
 9         labels - A numpy array where the kth element of the array is the
10             correct classification of the kth row of the feature matrix.
11         theta - A numpy array describing the linear classifier.
12         theta_0 - A real valued number representing the offset parameter.
13
14
15     Returns: A real number representing the hinge loss associated with the
16     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

<u>**See full output**</u>

CORRECT

<u>**See full output**</u>
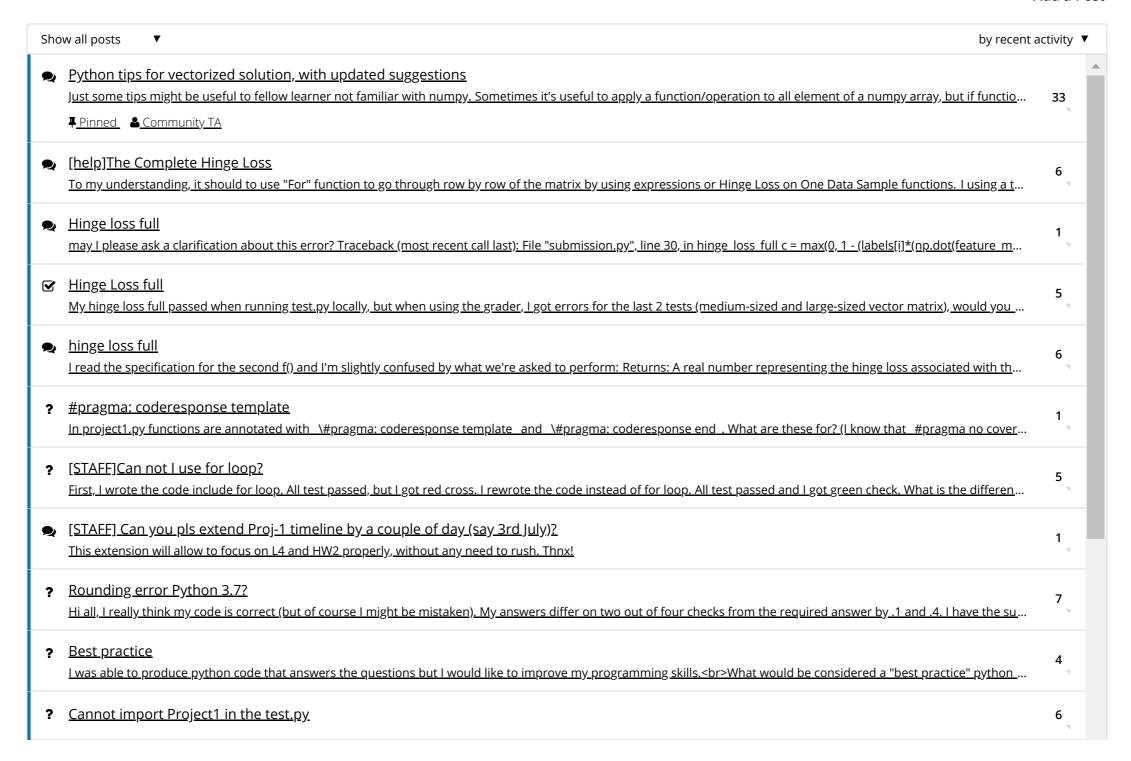
Submit   You have used 1 of 20 attempts

✔   **Correct (1/1 point)**

Discussion

                                                 Hide Discussion

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

Add a Post

Show all posts ▼	by recent activity ▼
💬 **Python tips for vectorized solution, with updated suggestions** Just some tips might be useful to fellow learner not familiar with numpy. Sometimes it's useful to apply a function/operation to all element of a numpy array, but if functio... 📌 Pinned 👤 Community TA	33
💬 [help]The Complete Hinge Loss To my understanding, it should to use "For" function to go through row by row of the matrix by using expressions or Hinge Loss on One Data Sample functions. I using a t...	6
💬 Hinge loss full may I please ask a clarification about this error? Traceback (most recent call last): File "submission.py", line 30, in hinge_loss_full c = max(0, 1 - (labels[i]*(np.dot(feature_m...	1
☑ Hinge Loss full My hinge loss full passed when running test.py locally, but when using the grader, I got errors for the last 2 tests (medium-sized and large-sized vector matrix), would you ...	5
💬 hinge loss full I read the specification for the second f() and I'm slightly confused by what we're asked to perform: Returns: A real number representing the hinge loss associated with th...	6
❓ #pragma: coderesponse template In project1.py functions are annotated with \#pragma: coderesponse template and \#pragma: coderesponse end . What are these for? (I know that #pragma no cover...	1
❓ [STAFF]Can not I use for loop? First, I wrote the code include for loop. All test passed, but I got red cross. I rewrote the code instead of for loop. All test passed and I got green check. What is the differen...	5
💬 [STAFF] Can you pls extend Proj-1 timeline by a couple of day (say 3rd July)? This extension will allow to focus on L4 and HW2 properly, without any need to rush. Thnx!	1
❓ Rounding error Python 3.7? Hi all, I really think my code is correct (but of course I might be mistaken). My answers differ on two out of four checks from the required answer by .1 and .4. I have the su...	7
❓ Best practice I was able to produce python code that answers the questions but I would like to improve my programming skills. What would be considered a "best practice" python ...	4
❓ Cannot import Project1 in the test.py	6

? Output TypeError in Hinge Loss on One Data Sample

Hi everyone, I am stuck in the first question. I think it is really straightforward, that is first calculate z and then use np.max(0, 1-z). But I have run time error: > TypeError: 'fl...

4

💬 a hint for anyone using np.vectorize

You probably need to explicitly set output data type. np.vectorize(func, otypes=[float])

4

Learn About Verified Certificates