5. Algorithm Discussion

Once you have completed the implementation of the 3 learning algorithms, you should qualitatively verify your implementations. In **main.py** we have included a block of code that you should uncomment. This code loads a 2D dataset from **toy_data.txt**, and trains your models using $T = 10, \lambda = 0.2$. **main.py** will compute θ and θ_0 for each of the learning algorithms that you have written. Then, it will call **plot_toy_data** to plot the resulting model and boundary.

Plots

6/6 points (graded)

In order to verify your plots, please enter the values of θ and θ_0 for all three algorithms.

(For example, if $\theta = (1, 0.5)$, then type **1, 0.5** without the brackets. Make sure your answers are correct up to 4 decimal places.)

For the **perceptron** algorithm:

$\theta =$ 3.9174, 4.164 ✔ $\theta_0 =$ -8.0 ✔

For the **average perceptron** algorithm:

$\theta =$ 3.4783, 3.611 ✔ $\theta_0 =$ -6.373 ✔

For the **Pegasos** algorithm:

$\theta =$ 0.734, 0.63 ✔ $\theta_0 =$ -1.2195 ✔

Submit You have used 1 of 20 attempts

✔ Correct (6/6 points)

Convergence

1/1 point (graded)

Since you have implemented three different learning algorithm for linear classifier, it is interesting to investigate which algorithm would actually converge. Please run it with a larger number of iterations T to see whether the algorithm would visually converge. You may also check whether the parameter in your theta converge in the first decimal place. Achieving convergence in longer decimal requires longer iterations, but the conclusion should be the same.

Which of the following algorithm will converge on this dataset? (Choose all that apply.)

- [ ] perceptron algorithm
- [x] average perceptron algorithm
- [x] pegasos algorithm

✔

Submit You have used 1 of 3 attempts

✔ Correct (1/1 point)

Discussion

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- Convergence Hints? 8
- All my code in previous pages are marked right, but now here in this page it is all marked wrong... 9
- Almost all my answers are wrong for Q1

	Only Pegasus' theta is correct, and Perceptron's theta_0. All other answers are marked as incorrect. More over, every time I re-run the main.py with T=10, I get slightly differen...	5
💬	[staff] First marking the code as correct and then next the numerical answers with the same code are marked wrong All my percpetron, pegasos code, etc are marked correct but with the same code the answers are marked wrong. First marking the code is correct and then next the numerica...	3
💬	Thank you ;) I love the main.py and utils.py files, they are great examples to learn from. Many thanks to the professors and TAs.	3
?	Problems with Pegasos code	2
💬	Decimal Precission Hello In the Pegasos algorithm when comparing if prediction is less or equal to one What precission shoud we apply?	4
?	[STAFF] All marked wrong! Hi, I am unable to submit my code because of grader issue. But I ran the test cases from the test.py source and all got passed. I also ran few additional test cases and they all ...	36
💬	For those of you running on macOSX and getting an NSException error.. The exact error I got (and perhaps some others amongst you are getting) is here: https://github.com/matplotlib/matplotlib/issues/13414 The solution here: https://github.com...	1
💬	TYPO toy_data.txt -> toy_data.tsv There is no "toy_data.txt" inside resources_sentiment_analysis.tar, there is "toy_data.tsv" file. Best regards	1
☑	Code working fine for previous questions and test.py but outputs not suitable for this question How come all the tests are successful with the defined functions (test.py and online graders up to this question), but the outputs of the code don't pass the test here? Must be...	9
☑	what os theta?? Explain to me please what is theta. As I thought, these are parameters of a linear function (ax + by = 0), and theta is [x, y]. Is that so or not? And if so, then why should they co...	4
?	[Staff] Correctness of the grader for theta_0 of avg perceptron Could you check if the grader is correct in this case? The console output that I'm getting locally has less decimal places than expected by the grader, but I'm not sure if this is t...	10

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