Overfitting & Regularization in Logistic Regression

8 试题

1 point

1.
Consider four classifiers, whose classification performance is given by the following table:

	Classification error on training set	Classification error on validation set
Classifier 1	0.2	0.6
Classifier 2	0.8	0.6
Classifier 3	0.2	0.2
Classifier 4	0.5	0.4

Which of the four classifiers is most likely overfit?

- (●) Classifier 1
- ( ) Classifier 2
- ( ) Classifier 3
- ( ) Classifier 4

1 point

2.
Suppose a classifier classifies 23100 examples correctly and 1900 examples incorrectly. Compute accuracy by hand. Round your answer to 3 decimal places.

0.924

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1 point

3.
(True/False) Accuracy and error measured on the same dataset always sum to 1.

- (●) True
- ( ) False

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1 point

4.
Which of the following is NOT a correct description of complex models?

- ( ) Complex models accommodate many features.
- ( ) Complex models tend to produce lower training error than simple models.
- (●) Complex models tend to generalize better than simple models.
- ( ) Complex models tend to exhibit high variance in response to perturbation in the training data.
- ( ) Complex models tend to exhibit low bias, capturing many patterns in the training data that simple models may have missed.

1 point

5.
Which of the following is a symptom of overfitting in the context of logistic regression? Select all that apply.

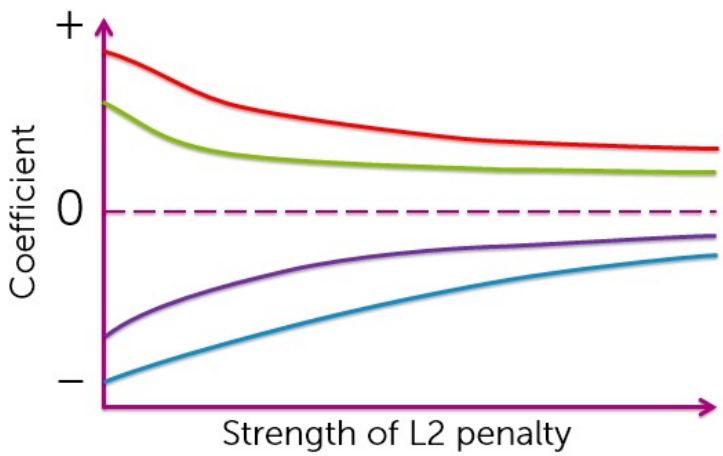
- [x] Large estimated coefficients
- [ ] Good generalization to previously unseen data
- [ ] Simple decision boundary
- [x] Complex decision boundary
- [x] Overconfident predictions of class probabilities

1 point

6.
Suppose we perform L2 regularized logistic regression to fit a sentiment classifier. Which of the following plots does NOT describe a possible coefficient path? Choose all that apply.

Note. Assume that the algorithm runs for a wide range of L2 penalty values and each coefficient plot is zoomed out enough to capture all long-term trends.

- [ ]



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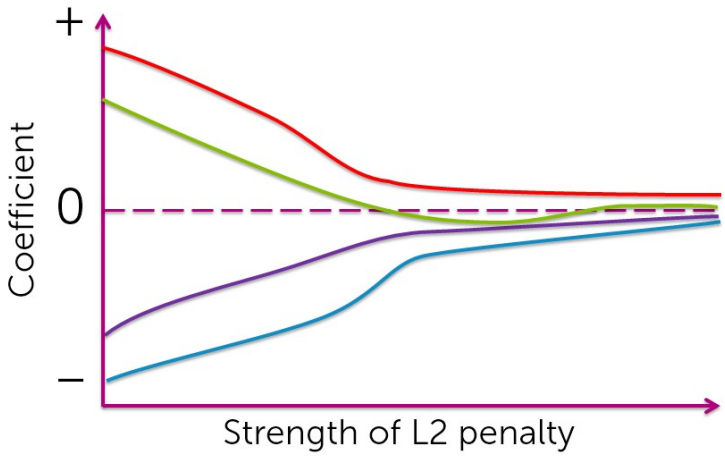
+
Coefficient
0
–
Strength of L2 penalty

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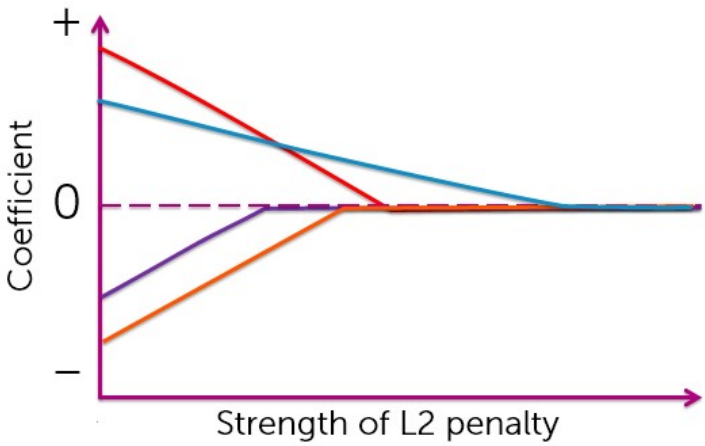
+
Coefficient
0
–
Strength of L2 penalty

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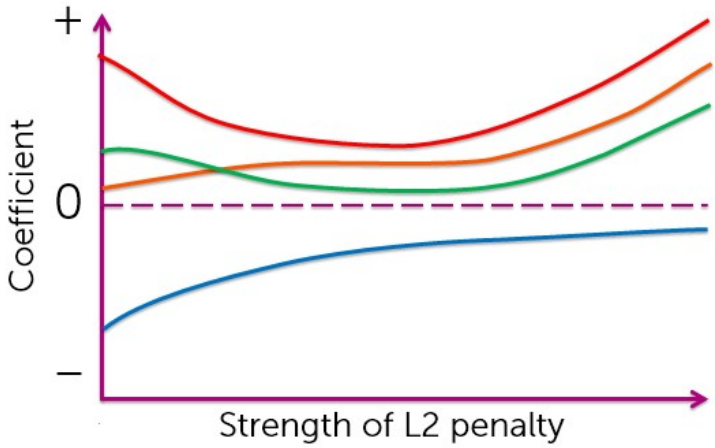

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1 point

7.

Suppose we perform L1 regularized logistic regression to fit a sentiment classifier. Which of the following plots does NOT describe a possible coefficient path? Choose all that apply.

Note. Assume that the algorithm runs for a wide range of L1 penalty values and each coefficient plot is zoomed out enough to capture all long-term trends.

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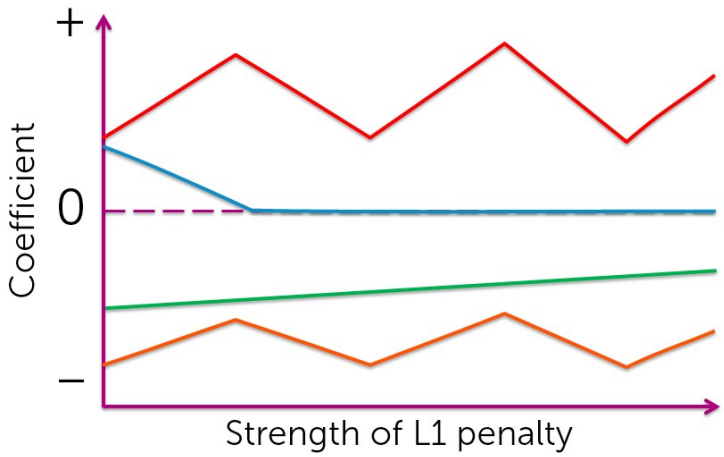

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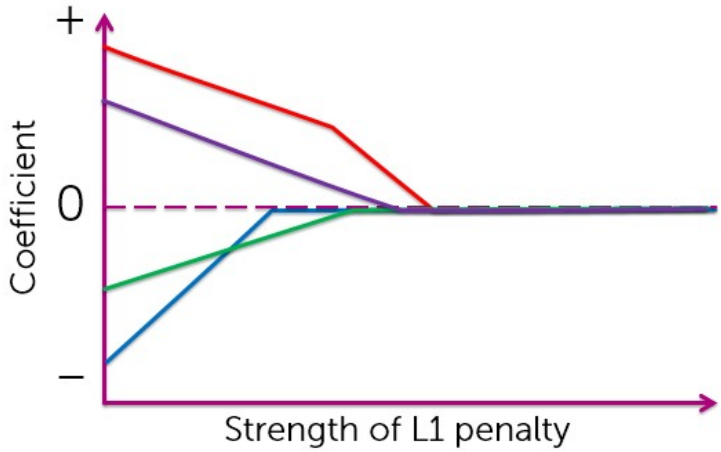
+
Coefficient
0
–
Strength of L1 penalty

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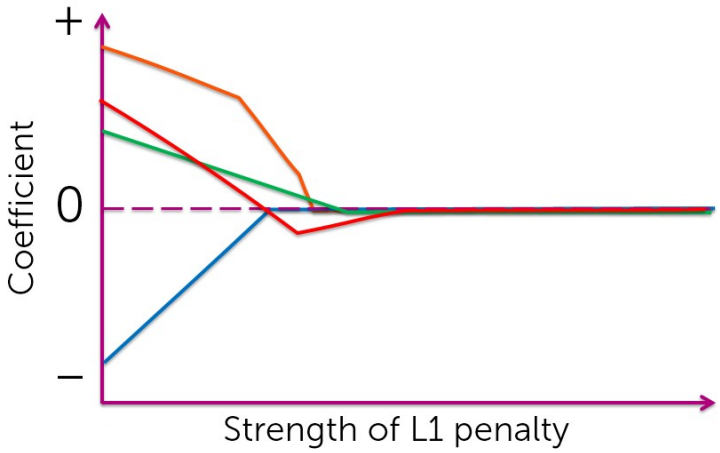
+
Coefficient
0
–
Strength of L1 penalty

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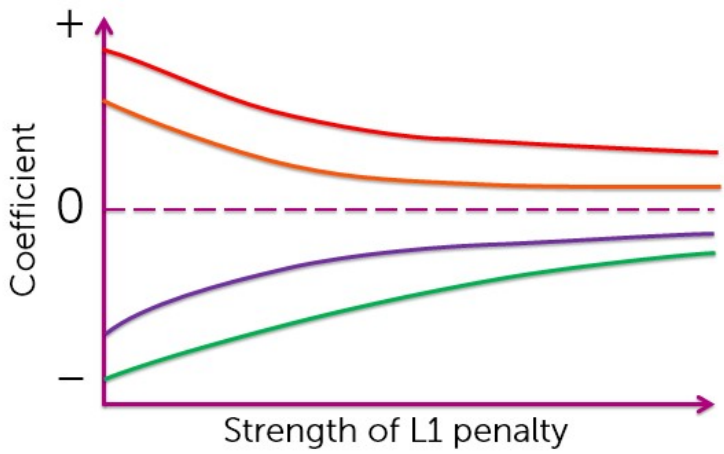

1 point

8.
In the context of L2 regularized logistic regression, which of the following occurs as we increase the L2 penalty λ ? Choose all that apply.

- [x] The L2 norm of the set of coefficients gets smaller
- [ ] Region of uncertainty becomes narrower, i.e., the classifier makes predictions with higher confidence.
- [x] Decision boundary becomes less complex
- [ ] Training error decreases
- [x] The classifier has lower variance
- [ ] Some features are excluded from the classifier

- [x] I, **伟臣 沈**, understand that submitting work that isn't my own may result in permanent failure of this course or deactivation of my Coursera account.
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