Learning Linear Classifiers

6/6 得分（100%)

测验通过!

继续课程 (/learn/ml-classification/supplement/zU6HO/implementing-logistic-regression-from-scratch)

返回第 2 周课程 (/learn/ml-classification/home/week/2)

1 / 1 分

1.
(True/False) A linear classifier can only learn positive coefficients.

- True
- False

正确回答

1 / 1 分

2.
(True/False) In order to train a logistic regression model, we find the weights that maximize the likelihood of the model.

- True

正确回答

- False

1 / 1 分

3.

(True/False) The data likelihood is the product of the probability of the inputs x given the weights w and response y.

- ○ True
- ◉ False

正确回答

✔ 1 / 1 分

4.

Questions 4 and 5 refer to the following scenario.

Consider the setting where our inputs are 1-dimensional. We have data

x	y
2.5	+1
0.3	-1
2.8	+1
0.5	+1

and the current estimates of the weights are w0 = 0 and w1 = 1. (w0: the intercept, w1: the weight for x).

Calculate the likelihood of this data. Round your answer to 2 decimal places.

0.23

正确回答

$$
\begin{aligned}
&P(y_1 = +1|x_1, w)P(y_2 = -1|x_2, w)P(y_3 = +1|x_3, w)P(y_4 = +1|x_4, w) \\
&= \frac{1}{1+e^{-2.5}} \frac{e^{-0.3}}{1+e^{-0.3}} \frac{1}{1+e^{-2.8}} \frac{1}{1+e^{-0.5}} \\
&= 0.230765\cdots
\end{aligned}
$$

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1 / 1 分

5.
Refer to the scenario given in Question 4 to answer the following:

Calculate the derivative of the log likelihood with respect to w1. Round your answer to 2 decimal places.

0.37

正确回答

$$\begin{aligned}\frac{\partial \ell(\mathbf{w})}{\partial \mathbf{w}_1} &= \sum_{i=1}^{4} h_1(\mathbf{x}_i)\Big(\mathbf{1}[y_i = +1] - P(y_i = +1|\mathbf{x}_i, \mathbf{w})\Big) \\ &= 2.5\left(1 - \frac{1}{1+e^{-2.5}}\right) + 0.3\left(0 - \frac{1}{1+e^{-0.3}}\right) \\ &\quad + 2.8\left(1 - \frac{1}{1+e^{-2.8}}\right) + 0.5\left(1 - \frac{1}{1+e^{-0.5}}\right) \\ &= 0.366591\cdots\end{aligned}$$

1 / 1 分

6.
Which of the following is true about gradient ascent? Select all that apply.

- [x] It is an iterative algorithm

正确回答

- [x] It only updates a few of the parameters, not all of them

正确回答

- [x] It finds the maximum by “hill climbing”

正确回答