

Week 3-2: Regularization

1. You are training a classification model with logistic regression. Which of the following statements are true? Check all that apply.

- (a) Adding many features to the model makes it more likely to overfit the training set.
- (b) Introducing regularization to the model always results in equal or better performance on examples not in the training set.

2. Suppose you ran logistic regression twice, once with $\lambda = 0$ and once with $\lambda = 1$. One of the times, you got parameters $\theta = \begin{bmatrix} 81.47 \\ 12.69 \end{bmatrix}$, and the other time you got $\theta = \begin{bmatrix} 13.01 \\ 0.91 \end{bmatrix}$. However, you forgot which value of λ corresponds to which value of θ . Which one do you think corresponds to $\lambda = 1$?

$$\theta = \begin{bmatrix} 13.01 \\ 0.91 \end{bmatrix}$$

3. Which of the following statements about regularizations are true? Check all that apply.

- (a) Consider a classification problem. Adding regularization may cause your classifier to incorrectly classify some training examples (which it had previously correctly classified when not using regularization, i.e. when $\lambda = 0$).

4. In which one of the following figures do you think the hypothesis has overfit the training set?



5. In which one of the following figures do you think the hypothesis has underfit the training set?

