

Logistic and SVM

Your Name *

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What is the goal of a hard-margin SVM?

1 point

- Maximize classification accuracy on the training set
- Maximize the margin between the decision boundary and the nearest points
- Minimize cross-entropy loss
- Minimize the number of support vectors

What is the decision boundary in logistic regression?

1 point

- The region where the predicted probability is 0 or 1
- The set of points where the predicted probability is exactly 0.5
- The points with maximum loss
- The place where the gradient of the loss is zero

Which of the following are true about the loss function of logistic regression?

1 point

- It is also called the cross-entropy loss
- It encourages a sparse set of weights
- It is only defined for multi-class classification

SVMs learn a probabilistic model of $P(y \mid x)$.

1 point

- True
- False

Which of the following apply to both SVM and logistic regression?

1 point

- They are linear classifiers (in their basic form)
- They use the same loss function
- They try to find a separating hyperplane in feature space

What are support vectors:

1 point

- The examples farthest from the decision boundary.
- The only examples necessary to compute $f(x)$ in an SVM.
- The class centroids
- All the examples that have a non-zero weight α_k in a SVM.

The hinge loss function is defined as $l(t) = \max(0, 1 - t)$. What is the derivative of the hinge loss? 1 point

- 1
- 1
- 0
- 1 if $t < 1$, 0 if $t > 1$

Why can't we use mean squared error (MSE) as the loss function in logistic regression? 1 point

- Because it is not differentiable
- Because it doesn't penalize wrong predictions
- Because it leads to poor probabilistic interpretation
- Because the predictions are integers, not probabilities

In binary logistic regression, the output of the model $f(x)$ is: 1 point

- Always either 0 or 1.
- A probability between 0 and 1.
- The input to a threshold rule for classification.
- The Euclidean distance to the class center.

The goal of the SVM is to _____

1 point

- Find the optimal separating hyperplane which maximizes the margin of training data
- Find the optimal separating hyperplane which minimizes the margin of training data

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