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Support Vector Machine Classification

Video: Support Vector Machine Classification
5 min

Reading: Support Vector Machine Classification Demo
1h

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Quiz: Support Vector Machine Classification Quiz
Submitted

Reading: Support Vector Machine Classification Case Study
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Discussion Prompt: Support Vector Machine Classification Exploration Exercise
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Support Vector Machine Classification Quiz

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1. What is the primary goal of a Support Vector Machine (SVM) in classification? **1 / 1 point**

- To find the best-fitting regression line through the data points.
- To find the optimal hyperplane that best separates data points of different classes in a high-dimensional space.
- To compute the probability distribution of the target variable in the dataset.
- To identify the most important features in the dataset.

Correct
Correct! The primary goal of SVM is to find the optimal hyperplane that best separates data points of different classes in a high-dimensional space.

2. What is the role of the margin in SVM? **1 / 1 point**

- The margin represents the number of support vectors in the SVM model.
- The margin represents the number of features used to define the hyperplane in the SVM model.
- The margin represents the distance between the decision boundary and the closest support vectors from each class.
- The margin represents the complexity of the decision boundary in the SVM model.

Correct
Correct! The margin in SVM represents the distance between the decision boundary and the closest support vectors from each class, and SVM aims to maximize this margin.

3. What is Hard SVM? **1 / 1 point**

- Hard SVM allows misclassifications in the training data and aims to maximize the margin between classes.
- Hard SVM allows misclassifications in the training data and aims to find a decision boundary with the maximum number of support vectors.
- Hard SVM does not allow misclassifications in the training data and aims to find a decision boundary with no margin violations.
- Hard SVM allows misclassifications in the training data and aims to find a decision boundary with some margin violations.

Correct
Correct! Hard SVM does not allow misclassifications and aims to find a decision boundary with no margin violations, i.e., all support vectors are correctly classified.

4. What is Soft SVM? **1 / 1 point**

- Soft SVM allows misclassifications in the training data and aims to find a decision boundary with the maximum number of support vectors.
- Soft SVM allows misclassifications in the training data and introduces a penalty for margin violations to find a decision boundary with some margin violations.
- Soft SVM does not allow misclassifications in the training data and aims to find a decision boundary with no margin violations.
- Soft SVM does not allow misclassifications in the training data and aims to find a decision boundary with the maximum number of support vectors.

Correct
Correct! Soft SVM allows misclassifications and introduces a penalty (slack variables) for margin violations to find a decision boundary with some margin violations.

5. Which of the following SVM kernels is best suited for linearly separable data? **1 / 1 point**

- Radial Basis Function (RBF) kernel
- Linear kernel
- Polynomial kernel
- Sigmoid kernel

Correct
Correct! The linear kernel is best suited for linearly separable data.