Self test Questions for Slides Set #6

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February 17, 2025

These questions should help review the key concepts presented in the slides!

1. What is the purpose of a classifier in machine learning?
2. Explain the difference between the training phase and testing phase of a classifier.
3. How does the number of attributes (keywords) in the system affect the classification process?
4. What is the role of a decision surface in classification, and how is it related to linear functions?
5. In the context of linear classifiers, what is the significance of the equation 2.5-0.8x1-x2=0?
6. How does the classifier classify a point that lies above or below a decision line?
7. What happens when the bias (w_0) is adjusted in a linear classifier?
8. In a linear classifier, how are the weights w1, w2, ..., wn related to the orientation of the decision surface?
9. What is the concept of a hyperplane in classification, and how does it relate to the number of attributes in the system?
10. Explain the role of the threshold θ in the linear classifier and how it influences the classification of an example.
11. Describe the perceptron learning algorithm. What is the goal of the algorithm?
12. How are the weights updated in the perceptron learning algorithm? Provide the formula and explain how it works.
13. What happens when there is a mismatch between the hypothesized class h(x) and the real class c(x)?
14. What does it mean for examples to be linearly separable in the context of perceptron learning?
15. Given a set of binary attributes and classes, how would you apply the perceptron learning algorithm to adjust the weights?
16. What is the significance of the learning rate η in the perceptron learning algorithm?
17. In the example provided, explain how the weights are adjusted after each training example is presented to the classifier.

18. What is the difference between bias and threshold in the perceptron model, and how do they influence the decision boundary?

19. How does the perceptron learning algorithm handle incorrect classifications?

20. What is an epoch in the context of perceptron learning, and when does the training process stop?