Quiz #10. Machine learning

What are the forms of machine learning based on feedback received?

Which data is available for supervised learning?

What is the difference between classification and regression?

Explain the Occam's razor principle.

Define a decision tree. How is the decision tree used to take decisions?

Is the order of attributes identical in all branches of the decision tree?

What is the entropy of a flip of a fair coin (equally likely to come up heads or tails)?

What is the relation between B(p/(p+n)) and B(n/(p+n)), where B is entropy of a Boolean variable, and p and n are the numbers of positive and negative examples respectively?

How can we represent a decision tree using a logical formula?

What are the possible forms of inconsistency of example with hypothesis in binary classification?

Describe the current-best-hypothesis method. Is the current best hypothesis consistent with all the processed examples? What is its major disadvantage?

How does generalization of logical formula mean? How can generalization and specialization be realized? If we generalize some formula and then specialize it, will we always get the original formula?

If the example is false negative with the hypothesis, should we generalize or specialize the hypothesis?

Describe the two methods of linear regression.

Can we use the method of linear regression for classification?

Can perceptron model XOR relation?

Can artificial neural network represent non-linear functions?

What is difference between a parametric and a nonparametric model? Give some examples of these models.

Show how the method of nearest neighbors can be used for classification and for regression.

Describe the core ideas of Support Vector Machines. What is a support vector? What is specific for the maximum margin separator? What is the role of the kernel function?