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CPTS 315

HW4

Analytical Part

Q1:

Attached to separate piece of paper.

Q2:

Attached to separate piece of paper.

Q3:

To reduce the complexity of finding the nearest neighbor we could first determine the scaled mean of all the training data. Then when we get a test example, we can also determine the scaled mean of it and then the distance between it and the training data. We would be computing the distance in one dimension rather than the much higher dimension so would therefore save computational time.

Q4:

Yes, it is very possible to convert the rule set into an equivalent decision tree. An example could be a classifier with binary features which could then be represented as a Boolean function. If it is represented as a Boolean function, it can also be represented as a decision tree with each path from root to leaf node as a set of binary features. This same logic can be applied to classifiers for non-binary features very easily as a decision tree with a higher possible child count.

Q5:

Attached to separate piece of paper.