Homework 6

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1 a.

Each decision stump classifies by assigning all values either greater than or less than t to one label class, and the rest of the samples to the other label class. The decision stump must both optimize the value of t and the greater than or less than comparator, which is the c_1 and c_2 component. This stump will only use one feature to make its decision.

A stump has very little power for good classification. Firstly, it is only using a single feature. If the real relationship between the features and predicted outcomes is complex, any method using a single feature would be barely better than random guessing. Secondly, the stump classifies based solely on the comparison relationship to t, so its power is not great.