

COS 511: Theoretical Machine Learning

Hint on HW#3, problem 1b

Spring, 2019

Start by finding a batch-version algorithm with the following property: Regardless of the true target concept, for given s , and for a given random dataset of an appropriate size, if there happens to exist a consistent hypothesis in $\mathcal{C}_s$, then the algorithm will find it; moreover, any such consistent hypothesis will be guaranteed to have low generalization error with high probability. Then show how such an algorithm can be used to derive an oracle-version algorithm by iteratively guessing the true value of s , stopping when it is safe to do so, or increasing the guess when necessary.

Another hint: There is no need to give the kind of detailed, ad hoc, interval-by-interval argument that you might have used on homework #1. By this point in the course, we have much cleaner and more powerful techniques for analyzing learning algorithms.