15-859(B) Machine Learning Theory

Homework # 4 **Due: February 28, 2002**

Problems:

1. [Problem 5.1 in KV] Design an algorithm that learns Decision Lists in the Statistical Query model (and prove it).

2. [What if η is not known?] In class we proved that we could convert any statistical query algorithm to an algorithm for learning in the random classification noise model, when η is known. Show how to handle the case that η is unknown. The running time should still be polynomial in $\frac{1}{1-2\eta}$ (even though we don't know what η is).

   As a first step, argue that it suffices to have a good additive approximation to η, and a good multiplicative approximation to $1-2\eta$.

   Note: if you get stuck, it's OK to take a peek at section 5.4.3 of the book, which solves this problem in excruciating detail.