

COS 511: Foundations of Machine Learning

Hints for HW#2

Due: March 2, 2006

Sample size bounds and VC dimension

- 1b. Fix i_1, \dots, i_k as in the statement of the problem, and bound the probability of the hypothesis defined by these k examples being consistent but having error greater than ϵ . Then apply the union bound.
2. Think about the fact that any $d + 1$ points $\mathbf{x}_1, \dots, \mathbf{x}_{d+1}$ in \mathbb{R}^d must be linearly dependent, i.e., there exists scalars $\lambda_1, \dots, \lambda_{d+1}$, not all equal to zero, such that $\sum_{i=1}^{d+1} \lambda_i \mathbf{x}_i = \mathbf{0}$.