

**CS 410/510**  
**Machine Learning**  
**Spring, 2007**

**Homework 4: Part II**

Due Thursday, May 3.

Solve the following problems.

- 1.** Consider the hypothesis space of unions of two intervals on the real number line. That is, a hypothesis  $h \in H$  consists of four numbers,  $a, b, c, d \in \mathfrak{R}$ , and  $h(x)$  is true if  $a < x < b$  or  $c < x < d$ ; otherwise  $h(x)$  is false. What is  $VC(H)$ ? Show how you derived your answer.
  
- 2.** Consider the hypothesis space of thresholds  $a \in \mathfrak{R}$ . That is, a hypothesis  $h$  consists of one real number  $a$ , and  $h(x)$  is true if  $x \geq a$ , and false otherwise. What is  $VC(H)$ ? Show how you derived your answer.