

# Statistical Machine Learning

Home Work 04

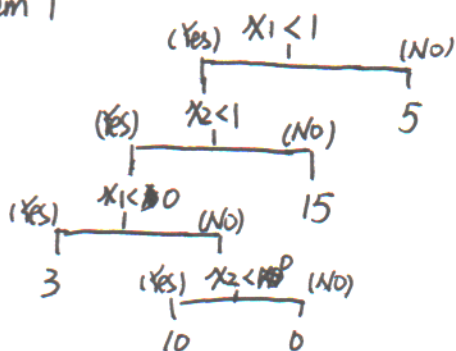
YL

CHEN

YC 3356

11) Problem 1

a.



b.

		2.49	
2			
	-1.06	0.21	
X2 1			
	-1.8	0.63	
		0	1
		X1	

12) Problem 2

a. Approach One: Majority Vote

Among the 10 bootstrap { Red:  $\hat{p}(\text{Red} | x) \geq \frac{1}{2} \Rightarrow 6$  records  
Green:  $\hat{p}(\text{Red} | x) < \frac{1}{2} \Rightarrow 4$  records

Thus: we classify  $x$  as Red

b. Approach Two: Average probability

$$\bar{x} = \frac{1}{10} (2.1 + 0.15 + 0.2 + 0.2 + 0.15 + 0.6 + 0.6 + 0.15 + 0.7 + 0.75) = 0.45 < \frac{1}{2}$$

Thus: we classify  $x$  as Green