Review Test Submission: Bayesian Decision

User	Fei Shen
Course	CS-584-Parent.17S
Test	Bayesian Decision
Started	1/30/17 6:24 PM
Submitted	1/31/17 7:09 PM
Due Date	1/31/17 11:59 PM
Status	Completed
Attempt Score	50 out of 50 points
Time Elapsed	24 hours, 45 minutes
Results Displayed	All Answers, Submitted Answers, Correct Answers

Question 1

10 out of 10 points

We have a coin whose fairness is unknown. We toss it multiple times and get the sequence below:

T, T, H, H, T, H, H, H, H, T

Based on this sequence, with no prior belief, what is the best estimate of the probability of getting H, using this coin, i.e. P(Toss=H)

Selected Answer: 0.6
Correct Answer: 0.6
Answer range +/- 0.001 (0.599 - 0.601)

Question 2

10 out of 10 points

We have coin whose fairness is unknown. We toss it multiple times and get the following sequence:

H, H, T, T, H

Estimate the probability of getting this sequence using this coin. Hint: You first need to estimate P(Toss=H) and P(Toss=T). Please enter the exact number that you calculate.

Selected Answer: 0.03456
Correct Answer: 0.03456
Answer range +/- 0.0001 (0.03446 - 0.03466)

Question 3

10 out of 10 points

We have a binary class variable C, and a binary feature X. We are given:

P(X=T) = 0.1, P(C=F) = 0.8, P(X=F|C=T)=0.7

Calculate P(C=F|X=F).

(Please ignore this value: 0.2)

Selected Answer: 0.84444

Correct Answer: 0.84 ± 0.01

Question 4

10 out of 10 points

We have a class variable Y, which has three values: **R**ainy, **S**nowy and **C**lear. Also we have a binary feature X. We are given:

The probability distribution table for Y:

Y	P(Y)
R	0.1
S	0.7
C	0.2

Also:

P(X=T|Y=R)=0.4, P(X=T|Y=S)=0.8, P(X=T|Y=C)=0.8

Calculate P(Y=R|X=F).

Selected Answer: 0.25

Correct Answer: 0.25 ± 0.01

Question 5

10 out of 10 points

Given the loss table below:

		Action	
		F	T
True Class	F	0	9
	T	7	0

Do the risk analysis and find the lowest probability to label an instance as T, minimizing expected risk. That is, what is the threshold for deciding C=T?

Selected Answer: 0.5625

Correct Answer: 0.56 ± 0.01

Friday, April 28, 2017 5:37:50 PM CDT

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