Unit 13 - Week 10

Assignment 10

The due date for submitting this assignment has passed. **Due on 2019-10-09, 23:59 IST.**
As per our records you have not submitted this assignment.

1) Which of the following statements is/are TRUE regarding the rules for Bernoulli experiment? **1 point**

- The experiment is repeated a fixed number of times (n times)
- Each trial has only two possible outcomes, "success"and "failure". The possible outcomes are exactly the same for each trial
- The probability of success remains the same for each trial. We use p for the probability of success (on each trial) and q = (1 − p) for the probability of failure
- The trials are not independent (the outcome of previous trials has no influence on the outcome of the next trial)

No, the answer is incorrect.
Score: 0
Accepted Answers:
The experiment is repeated a fixed number of times (n times)
Each trial has only two possible outcomes, "success"and "failure". The possible outcomes are exactly the same for each trial
The probability of success remains the same for each trial. We use p for the probability of success (on each trial) and q = (1 − p) for the probability of failure

2) A bag contains 6 red marbles and 4 blue marbles. Five marbles are drawn from the bag without replacement and the number of red marbles is observed. **1 point**

We might let a trial here consist of drawing a marble from the bag and let success be getting red

Statement 1 (S1): The above experiment is a Bernoulli experiment.
Statement 2 (S2): The Trails are not independent.

- S1 and S2 are true and S2 is correct explanation of S1
- S1 and S2 are true and S2 is not the correct explanation of S1
- S1 is True and S2 is False
- S1 is False and S2 is True

No, the answer is incorrect.
Score: 0
Accepted Answers:
S1 is False and S2 is True

3) For Gaussian Distribution $X \sim N(\mu, \sigma)$ **1 point**

Statement 1 (S1) : $P(X > \mu + \sigma) = P(X < \mu + \sigma)$
Statement 2 (S2) : The Gaussian Distribution is symmetric

- S1 and S2 are true and S2 is correct explanation of S1
- S1 and S2 are true and S2 is not the correct explanation of S1
- S1 is True and S2 is False
- S1 is False and S2 is True.4

No, the answer is incorrect.
Score: 0
Accepted Answers:
S1 is False and S2 is True.4

4) For Gaussian Distribution $X \sim N(\mu, \sigma)$ **1 point**

Statement 1 (S1): $P(X \geq a) = P(X > a)$
Statement 2 (S2): The Gaussian distribution is continuous and $P(X = a) = 0$

- S1 and S2 are true and S2 is correct explanation of S1
- S1 and S2 are true and S2 is not the correct explanation of S1
- S1 is True and S2 is False
- S1 is False and S2 is True

No, the answer is incorrect.
Score: 0
Accepted Answers:
S1 and S2 are true and S2 is correct explanation of S1

5) Given that **1 point**

$$P(Y|X) = \frac{P(X|Y) \times P(Y)}{P(x)}$$,Match the following.

P (Y |X)	i. Evidence
P (X|Y)	ii. Prior
P(X)	iii. Posterior
P(Y)	iv. Likelihood

- $(a \rightarrow iii, b \rightarrow iv, c \rightarrow i, d \rightarrow ii)$
- $(a \rightarrow i, b \rightarrow iv, c \rightarrow iii, d \rightarrow ii)$
- $(a \rightarrow iii, b \rightarrow ii, c \rightarrow i, d \rightarrow iv)$
- $(a \rightarrow i, b \rightarrow iv, c \rightarrow ii, d \rightarrow iii)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$(a \rightarrow iii, b \rightarrow iv, c \rightarrow i, d \rightarrow ii)$

6) Which of the following statement/s is/are TRUE about Naïve Bayes? **1 point**

- Robust to isolated noise point
- Handle missing values by ignoring the instances during the probability estimate calculation
- Robust to irrelevant attributes
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Robust to isolated noise point
Handle missing values by ignoring the instances during the probability estimate calculation
Robust to irrelevant attributes

7) Principal Component Analysis (PCA) is as dimensionality reduction algorithm.Which of the following statement/s is/are TRUE about PCA? **1 point**

- PCA is an unsupervised method
- It searches for the directions that data have the largest variance
- Maximum number of principal components <= number of features
- All principal components are orthogonal to each other

No, the answer is incorrect.
Score: 0
Accepted Answers:
PCA is an unsupervised method
It searches for the directions that data have the largest variance
Maximum number of principal components <= number of features
All principal components are orthogonal to each other

8) Consider the following statements about Support Vector Machine (SVM): **1 point**

Statement 1 (S1): Support vector machines, like logistic regression models, give a probability distribution over the possible labels given an input example
Statement 2 (S2): We would expect the support vectors to remain the same in general as we move from a linear kernel to higher order polynomial kernels
Statement 3 (S3): Any decision boundary that we get from a generative model with class-conditional Gaussian distributions could in principle be reproduced with an SVM
Statement 4 (S4): The values of the margins obtained by two different kernels $K_1(x, x_o)$and $K_2(x, x_o)$ on the same training set do not tell us which classifier will perform better on the test set.

- $(S1 \rightarrow False, S2 \rightarrow False, S3 \rightarrow True, S4 \rightarrow True)$
- $(S1 \rightarrow True, S2 \rightarrow False, S3 \rightarrow True, S4 \rightarrow False)$
- $(S1 \rightarrow False, S2 \rightarrow True, S3 \rightarrow True, S4 \rightarrow True)$
- $(S1 \rightarrow True, S2 \rightarrow False, S3 \rightarrow True, S4 \rightarrow False)$

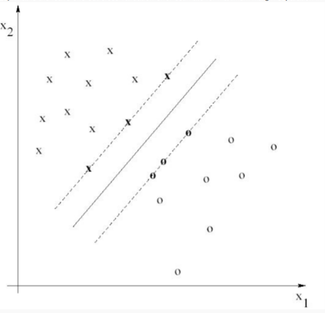
No, the answer is incorrect.
Score: 0
Accepted Answers:
$(S1 \rightarrow False, S2 \rightarrow False, S3 \rightarrow True, S4 \rightarrow True)$

9) For text classification, a linear kernel SVM is usually preferred. What could be the reasons? **1 point**

- Text problems are usually high dimension, hence the data might be linearly separable in the original dimension itself
- Given that the number of dimensions is already large, the kernel computation stillrequires significant work
- With linear kernels we can have a very efficient solution method for the primal problem itself without going to the dual
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above

10)What is the leave-one-out cross-validation error estimate for maximum margin separation in the following figure ? **1 point**



- 0
- 2
- 3
- 6

No, the answer is incorrect.
Score: 0
Accepted Answers:
0