Discussions

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Final Exam - Fall 2023 At Started: Dec 15 at 4:28am

**Quiz Instructions** Dear students, This is an open book, open notes exam. Open Canvas course materials. <u>Assignments</u>

> Internet search is not allowed. Please answer all questions. You have three (3) hours (180 minutes) so that you can answer in a relaxed manner. You may start 15 minutes early and complete 15 minutes late, hence you have 210 minutes total.

Questions

② Question 1

Question 2

Question 3

② Question 4

Question 5

② Question 6

② Question 7

② Question 8

Time Running: Hide Time

Attempt due: Dec 16 at 11:59pm

3 Hours, 29 Minutes, 43 Seconds

There are Fill-in-the Blanks, and Match the Following questions and some problem-solving questions, however, each question has a little more weight in points. The test has been designed so that you can complete answering all questions in less than two hours. For the questions that requires problem-solving, you can work the problem out in clear handwriting or

electronically in a Word document (please convert to PDF). If you prefer to minimize the number of attachments,

instead of submitting one document per question, it is okay if you submit one single document for all questions.

You can submit an attachment as an answer directly to the question or include the answers to all questions in a

single attachment to the last question that says: "Submitting one document for all problems? Submit here". I will be able to see that all the answers are in a single document. It is preferable for grading convenience, that you make an attachment if required, directly to the question itself, instead of providing answers to all problem-solving questions in a single document. Please remember, the problem-solving questions are very simple in nature. They are intended only to test your understanding of the basic concept. All the questions must be answered individually. Collaboration or sharing solutions or seeking solutions or searching on the internet is strictly NOT ALLOWED as this is an exam. Use of tools such as Chat GPT is strictly

prohibited. Any violation will be viewed as a violation of the university honor code. So please keep this in mind while answering the exam. There is only one attempt, meaning you can hit the submit button only once. CANVAS saves your answers each

time you answer a question. You can exit without hitting the submit button and come back in later and answer

the remaining questions or change your answers to questions as long as you have not hit the submit button.

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Question 3  Creation 3  Creation 3  Creation 4  Creation 5  Creation 5  Creation 6  Associated the main exchangue for			
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Ancural net may as well be accomplished with just one			
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Distribution-based Clustering  [Choose]	Centroid-based clustering	[ Choose ]	
Hierarchical Clustering  Li Choose	Density-based clustering	[Choose]	
Cuestion 7  Which of the following evaluation metrics cannot be applied in case of logistic regressurput to compare with target?  Mean-Squared-Error  AUC-ROC  Accuracy  LogLoss  What are the characteristics of an Artificial Neural Network (ANN)?  It is an handle redundant and irrelevant attributes because weights are automatically learnt for attributes  It is sensitive to noise in training data  It is extremely fast in handling missing, attributes  Research of the sextremely fast in handling missing, attributes  Question 9  It is extremely fast in handling missing, attributes  Question 9  The boundary becomes smoother with decreasing value of K  Smoothness of boundary doesn't dependent on value of K  The boundary becomes smoother with increasing value of K  None of these  Question 10  Which of the following is an example of predicting regression?  Predicting wind valocities  Predicting vind valocities  Predicting tumor cells as benign or mallgnant  Question 11  Cuestion 11  Cuestion 12  Cuestion 12  Cuestion 12  Cuestion 13  Cuestion 14  Cuestion 15  Cuestion 16  Cuestion 16  Cuestion 17  Cuestion 18  Cuestion 19  Cuestion 19  Cuestion 19  Cuestion 10  Cuestion 11  Cuestion 11  Cuestion 11  Cuestion 11  Cuestion 11  Cuestion 12	Distribution-based Clustering	[Choose]	
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 p	<b>::::</b>	<b>(†)</b> 0 words
Question 13		5 pts
Why is logit called a regression? Does it simulate a line (Explain in detail)	e even	n though data is not a line?
p	::::	1 0 words    :

5 pts

5 pts

Question 12

Explain the following (think on your feet!):

When the misclassification rate reaches a required threshold

When the limit on the number of runs is reached

the weight and other parameters. a

the preceding iteration

these conditions may exist.

Question 14

Explain SVM and what are slack variables in SVM?

In the neural net topic, the back propagation of error is used iteratively in a cycle to update

When the new values of the bias and weights are only incrementally different from those of

Please explain the above three conditions with your own intuition what they mean and why

When does the updating stop? The most common conditions are one of the following:

p	① words  :
Question 15	15 pts
Explain Entropy and Information Gain and calcu	ulate the entropy and information gain for the
Problem:	
Given two dice (each with six numbers from 1 t	to 6):
(a) what is the entropy of the event of getting a throw?	total of greater than or equal to 11 in one
(b) what is the entropy of the event of getting a	total of equal to 8 in one throw?
What is the Information GAIN going from state your own words.	e (a) to state (b)? Explain what this means in
	ow all working. You may do it on paper and one camera app, make sure the writing on each Details of working are as important as your final

low high high medium	on below wit  Weight  low  low  medium  medium  high				ble. Pro	vide cle	ear step	<b>20</b> p
The following set of Answer the question  Height low high high medium low	on below wit  Weight  low  low  medium  medium  high	h respect to  Class  no  yes  no			ble. Pro	vide cle	ear step	)S.
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