Quiz – 1

(Introduction to ML)

1. When performing gradient descent on a large data set, which of the following batch sizes will likely be more efficient?
2. SGD, b) classical gradient descent
3. Which of the following ROC curve produces AUC value greater than 0.5?

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1. How would multiplying all of the predictions from a given model by 2.0 (for example, if the model predicts 0.4, we multiply by 2.0 to get a prediction of 0.8) change the model's performance as measured by AUC?
2. Imagine a linear model with 100 input features:

10 are highly informative. 90 are non-informative.Assume that all features have values between -1 and 1. Which of the following statements are true?

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| L2 regularization will encourage many of the non-informative weights to be nearly (but not exactly) 0.0. |
| L2 regularization may cause the model to learn a moderate weight for some **non-informative** features. |
| L2 regularization will encourage most of the non-informative weights to be exactly 0.0. |

1. What type of machine learning problem following cases fall into

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| 1. Grouping documents into different categories based on the topic and content of each document | 1. Identifying hand written digits in images | 1. Behavior of a website indicating that the site is not working as expected |
| 1. Predicting salary of an individual based on his/her experience and field |  |  |

1. Suppose you want to develop a supervised machine learning model to predict whether a given email is "spam" or "not spam." Which of the following statements are true?

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| 1. The labels applied to some examples might be unreliable. | 1. Words in the subject header will make good labels. | 1. We'll use unlabeled examples to train the model. | 1. Emails not marked as "spam" or "not spam" are unlabeled examples. |

1. Suppose an online shoe store wants to create a supervised ML model that will provide personalized shoe recommendations to users. That is, the model will recommend certain pairs of shoes to Marty and different pairs of shoes to Janet. The system will use past user behavior data to generate training data. Which of the following statements are true?

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| a) "Shoe size" is a useful feature. | b) "The user clicked on the shoe's description" is a useful label. | c) "Shoe beauty" is a useful feature. | d) "Shoes that a user adores" is a useful label. |

1. Consider the following two plots:

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| A plot of 10 points. A line runs through 6 of the points. 2 points are 1 "unit" above the line; 2 other points are 1 "unit" below the line. | A plot of 10 points. A line runs through 8 of the points. 1 point is 2 "units" above the line; 1 other point is 2 "units" below the line. |

Explore the options below.

Which of the two data sets shown in the preceding plots has the **higher** Mean Squared Error (MSE)?

|  |  |
| --- | --- |
| 1. left | 1. right |

Which of the two data sets shown in the preceding plots has the **higher** Mean percentage Error (MPE)?

|  |  |
| --- | --- |
| 1. left | 1. right |

Which of the two data sets shown in the preceding plots has the **higher** Mean percentage Error (MAPE)?

1. You’re on a brand new machine learning project, about to select your first features. How many features should you pick?

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| a) Pick as many features as you can, so you can start observing which features have the strongest predictive power | b) Pick 4-6 features that seem to have strong predictive power. | c) Pick 1-3 features that seem to have strong predictive power. |

1. Your friend Sam is excited about the initial results of his statistical analysis. He says that the data show a positive correlation between the number of app downloads and the number of app review impressions. But he's not sure whether they would have downloaded it anyway without seeing the review. What response would be most helpful to Sam?

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| 1. Trust the data. It's clear that that great review is the reason users are downloading the app. | 1. You could run an experiment to compare the behavior of users who didn't see the review with similar users who did. |