UNIT 4 ASSIGNMENT

Introduction to Linear Models

## Instructions

The questions below will prepare you for future interviews as they relate to concepts discussed throughout the unit. You’ve practiced these concepts in the coding activities, exercises and coding portion of the assignment. Now, let’s formulate your programming into well-thought responses.

Except as indicated, use this document to record all your assignment work and responses to any questions. At a minimum, you will need to turn in a digital copy of this document to your facilitator as part of your assignment completion. You may also have additional supporting documents that you will need to submit. Your facilitator will provide feedback to help you work through your findings.

**Note:** Though your work will only be seen by those grading the course and will not be used or shared outside the course, you should take care to obscure any information you feel might be of a sensitive or confidential nature.

*Begin your assignment by completing the questions below. Directions to submit your work can be found on the assignment page. Information about the grading rubric is available on any of the course assignment pages online. Do not hesitate to contact your facilitator if you have any questions about the assignment.*

Unit 4 Written Portion

# Logistic Regression

Answer the questions below about linear models.

## Questions:

1. What is a linear model? What are the advantages and disadvantages of linear models?

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| A model where the line of best fit/ the prediction line is a straight line. Advantages: it’s very simple to understand and implement. Disadvantages: doesn’t do well with complex data |

1. What type of supervised learning problem is logistic regression best suited for? Give an example of a problem you would use a logistic regression model for. Explain what you are trying to predict.

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| Use logistic regression when low complexity is a desired feature. For example, if we want to determine whether or not someone likes sweet or savory based on the feature of preferences for food |

1. Describe the training phase of a logistic regression model: explain the intuition behind using gradient descent algorithm and the use of loss functions.

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| Initially, the weights are set to some random baseline value. Then, as we train the model, the weights will be updated based on some loss function. Training will continue until the weights end up meeting some constant value |

1. Explain the purpose of using regularization when training a logistic regression model.

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| It’s a way of monitoring how well the model is doing in updating the weights. If the weights are growing out of proportion, it will “punish” the model to control it from becoming too complexity |

1. Explain which linear model and accompanying loss function you would use for a classification problem and for a regression problem.

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| I would use a logistic regression model for a regression problem since it has to do with linearity and binary classification. For loss function, I would use gradient descent and log loss to ensure that the model is training optimally |

*To submit this assignment, please refer to the instructions in the course*.