

## WORKSHEET 6 MACHINE LEARNING

- 1) C
- 2) B
- 3) C
- 4) C
- 5) B
- 6) A and D
- 7) B and C
- 8) A and C
- 9) A and B.
- 10) The adjusted R-squared compensates for the addition of variables and only increases if the new predictor enhances the model above what would be obtained by probability. Conversely, it will decrease when a predictor improves the model less than what is predicted by chance.
- 11) Where Lasso regularization attempts to estimate the median of data, ridge regularization makes estimation for the mean of the data in order to evade overfitting.

Through including the absolute value of weight parameters, Lasso regularization can add the penalty term in cost function. On the other hand, ridge regularization appends the squared value of weights in the cost function.

- 12) Variance inflation factor (VIF) is a measure of the amount of multicollinearity in a set of multiple regression variables. As a rule of thumb, a VIF of 5 or below is not a cause for concern. As VIF increases, the less reliable your regression results are going to be.
- 13) Data Scaling is a technique to standardize the independent features present in the data in a fixed range. Scaling of the data makes it easy for a model to learn and understand the problem. It is performed during the data pre-processing.
- 14) There are three error metrics that are commonly used for evaluating and reporting the performance of a regression model; they are: Mean Squared Error (MSE) i.e. calculated as the mean or average of the squared differences between predicted and expected target values in a dataset. Root Mean Squared Error (RMSE) extension of the mean squared error. MSE loss is thus used to train a regression predictive model, and to use RMSE to evaluate and report its performance. Mean Absolute Error (MAE) i.e. calculated as the average of the absolute error values.
- 15) Sensitivity= $TP / (TP + FN) = 1000 / (1000 + 1200) = 0.45$   
Specificity= $TN / (TN + FP) = 50 / (50 + 250) = 0.16$   
Recall= $TP / (TP + FP) = 1000 / (1000 + 250) = 0.8$   
Accuracy= $(TP + TN) / (TP + FP + TN + FN) = (1000 + 50) / (1000 + 250 + 50 + 1200) = 0.42$

