**MACHINE LEARNING**

**WORKSHEET – 1**

**In Q1 to Q7, only one option is correct, Choose the correct option:**

1. The value of correlation coefficient will always be:
   1. between 0 and 1 B) greater than -1

C) between -1 and 1 D) between 0 and -1

Ans: (C)

1. Which of the following cannot be used for dimensionality reduction?
   1. Lasso Regularisation B) PCA

C) Recursive feature elimination D) Ridge Regularisation

Ans: (D)

3. Which of the following is not a kernel in Support Vector Machines?

A) linear B) Radial Basis Function

C) hyperplane D) polynomial

Ans: (C)

1. Amongst the following, which one is least suitable for a dataset having non-linear decision boundaries?
   1. Logistic Regression B) Naïve Bayes Classifier

C) Decision Tree Classifier D) Support Vector Classifier

Ans: (A)

1. In a Linear Regression problem, ‘X’ is independent variable and ‘Y’ is dependent variable, where ‘X’ represents weight in pounds. If you convert the unit of ‘X’ to kilograms, then new coefficient of ‘X’ will be?

(1 kilogram = 2.205 pounds)

* 1. 2.205 × old coefficient of ‘X’ B) same as old coefficient of ‘X’

C) old coefficient of ‘X’ ÷ 2.205 D) Cannot be determined

Ans: (A)

1. As we increase the number of estimators in ADABOOST Classifier, what happens to the accuracy of the model?
   1. remains same B) increases

C) decreases D) none of the above

Ans: (B)

1. Which of the following is not an advantage of using random forest instead of decision trees?
   1. Random Forests reduce overfitting
   2. Random Forests explains more variance in data then decision trees
   3. Random Forests are easy to interpret
   4. Random Forests provide a reliable feature importance estimate

Ans: (C)

**In Q8 to Q10, more than one options are correct, Choose all the correct options:**

1. Which of the following are correct about Principal Components?
   1. Principal Components are calculated using supervised learning techniques B) Principal Components are calculated using unsupervised learning techniques
   2. Principal Components are linear combinations of Linear Variables.
   3. All of the above

Ans: (B)+(C)

1. Which of the following are applications of clustering?
   1. Identifying developed, developing and under-developed countries on the basis of factors like GDP, poverty index, employment rate, population and living index
   2. Identifying loan defaulters in a bank on the basis of previous years’ data of loan accounts.
   3. Identifying spam or ham emails
   4. Identifying different segments of disease based on BMI, blood pressure, cholesterol, blood sugar levels.

Ans: (A)+(B)

1. Which of the following is(are) hyper parameters of a decision tree?
   1. max\_depth B) max\_features

C) n\_estimators D) min\_samples\_leaf

Ans: (A)+(B)+(D)

**Q10 to Q15 are subjective answer type questions, Answer them briefly.**

1. What are outliers? Explain the Inter Quartile Range(IQR) method for outlier detection.

Ans: A random saple from a population. In a sense this definition leaves it up to the analyst to decide what will be considered abnormal.

1. What is the primary difference between bagging and boosting algorithms?

Ans:Bangging: Bagging is also known as bootstrap aggregating sits on top of the majority voting principle. The samples are bootstrapped each time when the model is trained when the samples are chosen, they are used to train and validate the predictions. The samples are then replaced back into the traning set.

Boosting: The concept of adaptive boost revolves around correcting previous classifier mistakes each classifier gets trained on the sample set and learn to predict.

1. What is adjusted R2 in logistic regression. How is it calculated?
2. What is the difference between standardisation and normalisation?
3. What is cross-validation? Describe one advantage and one disadvantage of using cross-validation.

**Ans: Cross validation is a technique to fit a model on data set. In cross validation the dataset is divided into k number of sets where k-1 sets are used for training and 1 set is used as validation set.**