# Machine Learning Report LAB – 1

Q.1 Discuss the importance of rank of an observation matrix in model building for classification?

Ans: As the name suggests, the Rank of a matrix is defined as the number of nonzero rows or columns a matrix has. It is of the form AX=C where A represents the attributes, X represents the variable matrix and C represents the output matrix.

Classification defines the problem of identifying which of a set of categories an observation belongs to. For example, in the questions given in the assignment where we had to class the customer as ‘Rich’ or ‘Poor’ regarding their payment if it was either greater than or less than 200 is said to be a classification prob for which only the payment column was required to us in order to classify which means this payment comes under the observation. The total given number of columns were 5 in the dataset but we realised that only 3 of them were required as the attributes as A in AX=C form where X was supposed to be found out using pseudo inverse as it was not a square matrix and C was the resultant matrix which was nothing but the ‘Payment’ column.

With the help of Rank we can easily be able to make our classification model and thus it does play an important role in model building as we can get the attributes/parameters required for further calculations.

Q.2 Discuss on regression(A2) and classification(A3) tasks. How would you differentiate between them?

Ans: Regression correlates between the independent and the dependent variables. Basically these models predict continuous variables such as housing prices, weather pattern, height, weight, probability, market trends and so on. This particular algorithm finds the mapping function to map the input to the continuous output variable.

On the other hand, Classification finds a function which basically divides the dataset into different classes according to their attributes/parameters. Here, this algorithm maps the input to a discrete valued output. Such algorithms are used to predict email spam or not spam, bank customers to pay their loans or not, identifying if a person has brain tumour or not or any disease prediction of that matter and many more Yes or No problems which give discreate answers.

Q3. Observing the stock data provided, record your suggestions to build a system that may be able to predict the price and Change % into future.

Ans : We can realise how the price and the Change% are depending upon the other attributes such as high, low, open, volume. From this we can try to make a model and use it to predict the future price and Change% as well.