# Assignment 3

1. Plot the training data (Data1.xlsx) to get an idea of the data distribution. Plot the points with variable 1 on x-axis and variable 2 on y-axis. Now color the coordinates/points of class 0 with blue and class 1 with red. Report your visual observations. (10)
2. Apply SVM on training data (Data1.xlsx) to find decision boundary. Plot training data along with decision boundary. (30)
3. Now apply SVM with "modified optimization problem" on Data2.xlsx and try out different values of C and report your observations along with plots of the decision boundary. (20)
4. Classify Red Domestic SUV using Naïve Bayes classifier manually. (20)

| Example No. | Color | Type | Origin | Stolen? |
|---|---|---|---|---|
| 1 | Red | Sports | Domestic | Yes |
| 2 | Red | Sports | Domestic | No |
| 3 | Red | Sports | Domestic | Yes |
| 4 | Yellow | Sports | Domestic | No |
| 5 | Yellow | Sports | Imported | Yes |
| 6 | Yellow | SUV | Imported | No |
| 7 | Yellow | SUV | Imported | Yes |
| 8 | Yellow | SUV | Domestic | No |
| 9 | Red | SUV | Imported | No |
| 10 | Red | Sports | Imported | Yes |

5. Manually perform K Means clustering on Manual_Data.xlsx. There are 10 data points given and you have to separate them into 2 clusters. (20)

## Submission Details

1. Submit a zip file on moodle named "EntryNumber.zip" with all the code files and a **pdf with all the graphs and analysis**. Only Matlab & python are allowed.

2. Deadline for the submission is 13th March 11:59 PM.

3. For any doubts in the assignment, contact: Devansh Agrawal devansh.agrawal1997@gmail.com