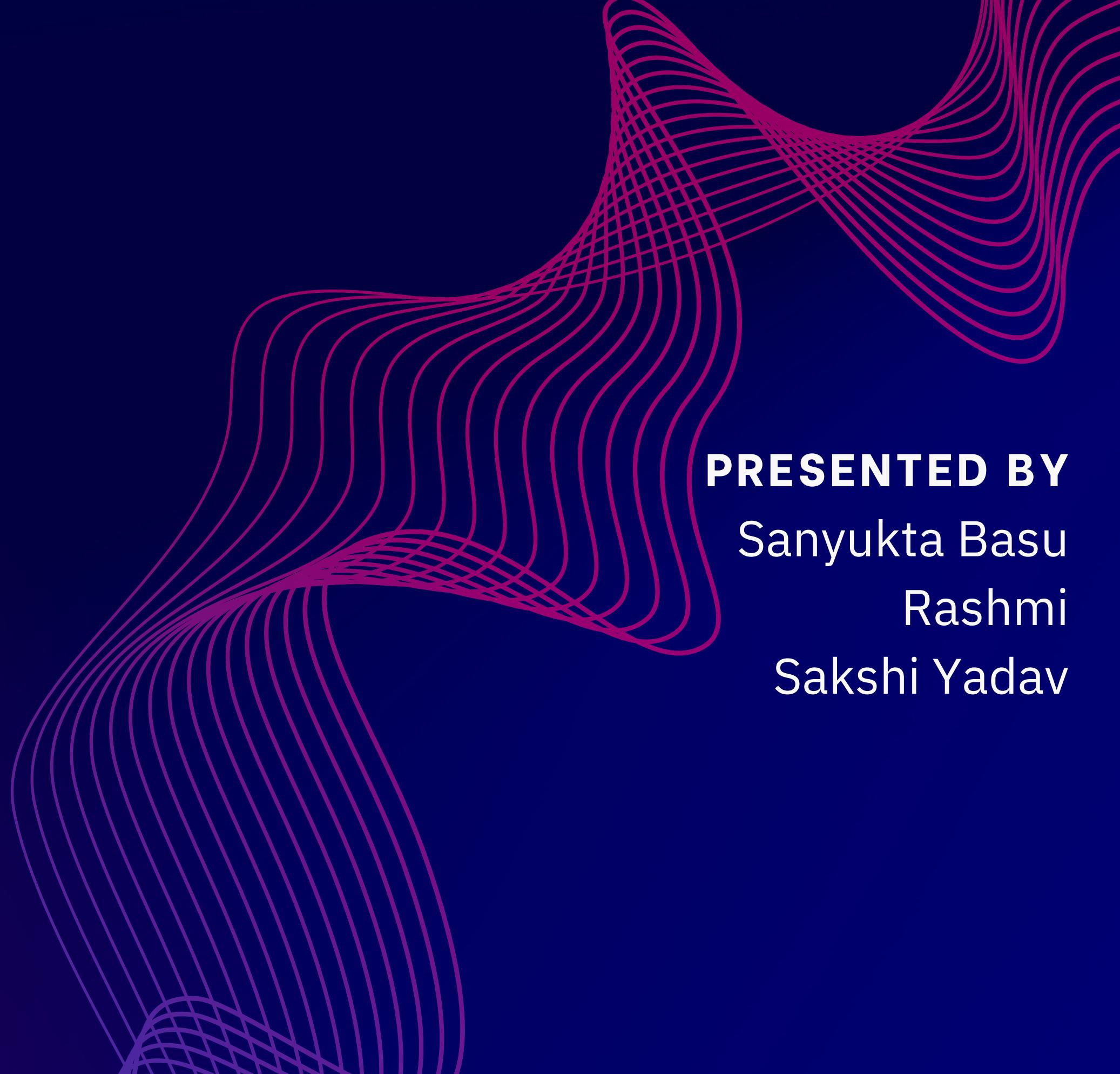


ROAD ACCIDENT ANALYSIS



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Agenda



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INTRODUCTION

- Every year because of traffic accidents 90% of the deaths occur in the low and middle developed countries.
- There are various types of accidents , some of them include a crash between vehicles, a crash between pedestrians etc.

PROBLEM STATEMENT

The rate of deaths due to accidents is increasing day by days.

There are some factors because of which these accidents might occur.



Problem Statements



PURPOSE

To help to reduce the number of accidents by knowing some of the reasons of these accidents.

GOALS

- Accurately analyzing accidents can help government to better the safety of their roads and highways.
- Identifying high areas of accidents and high areas of accident severity can highlight areas of concern.

Objective



The objective of this project is to investigate what causes accidents what attributes to their level of severity.

TECHNOLOGY USED

For our project we are going to use
Machine Learning .

We will use different Machine Learning
Algorithm
and then will compare there accuracy.



WHY MACHINE LEARNING?

Machine Learning is a Sub - branch of Artificial Intelligence which takes insights from the past experience and predicts the output.

Machine Learning gives more accurate results as compared to the manual survey.

ML ALGORITHMS

The following are the machine learning algorithm we are using in our project:

- Logistic Regression
- Random Forest Classifier
- AdaBoost Classifier
- Bagging Classifier

PYTHON LIBRARIES

The following are the python libraries that we are using:

- Pandas
- Numpy
- Matplotlib
- Seaborn
- Plotly
- Streamlit
- Streamlit_option_Menu
- Sklearn
- Pickle

PROJECT PROCESS



Step1: Collecting Data

Step2: Preprocessing
Data

Step3: Applying
ML
Algorithms

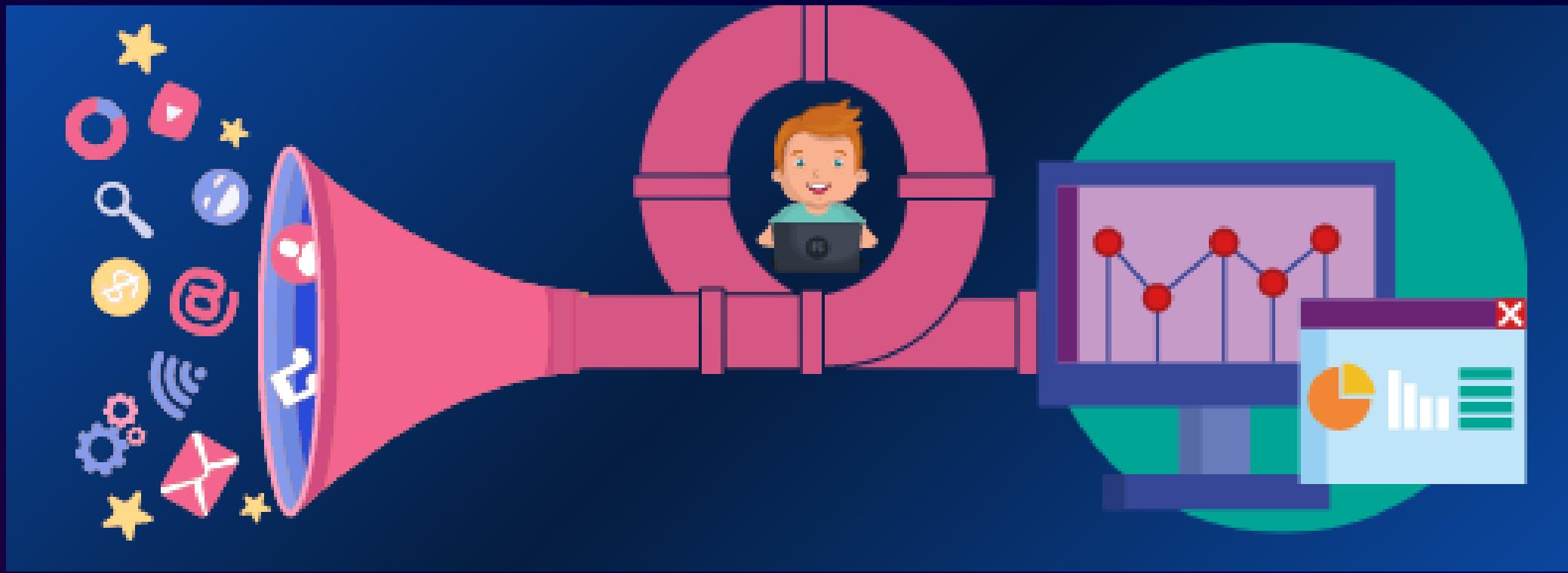
Step4: Comparing
Algorithms

DATA COLLECTION



We are collecting our data from Kaggle site. Kaggle is an online community of data scientists and machine learning engineers. Kaggle allows users to find datasets they want to use in building AI models, publish datasets, work with other data scientists and machine learning engineers, and enter competitions to solve data science challenges..

DATA PREPROCESSING

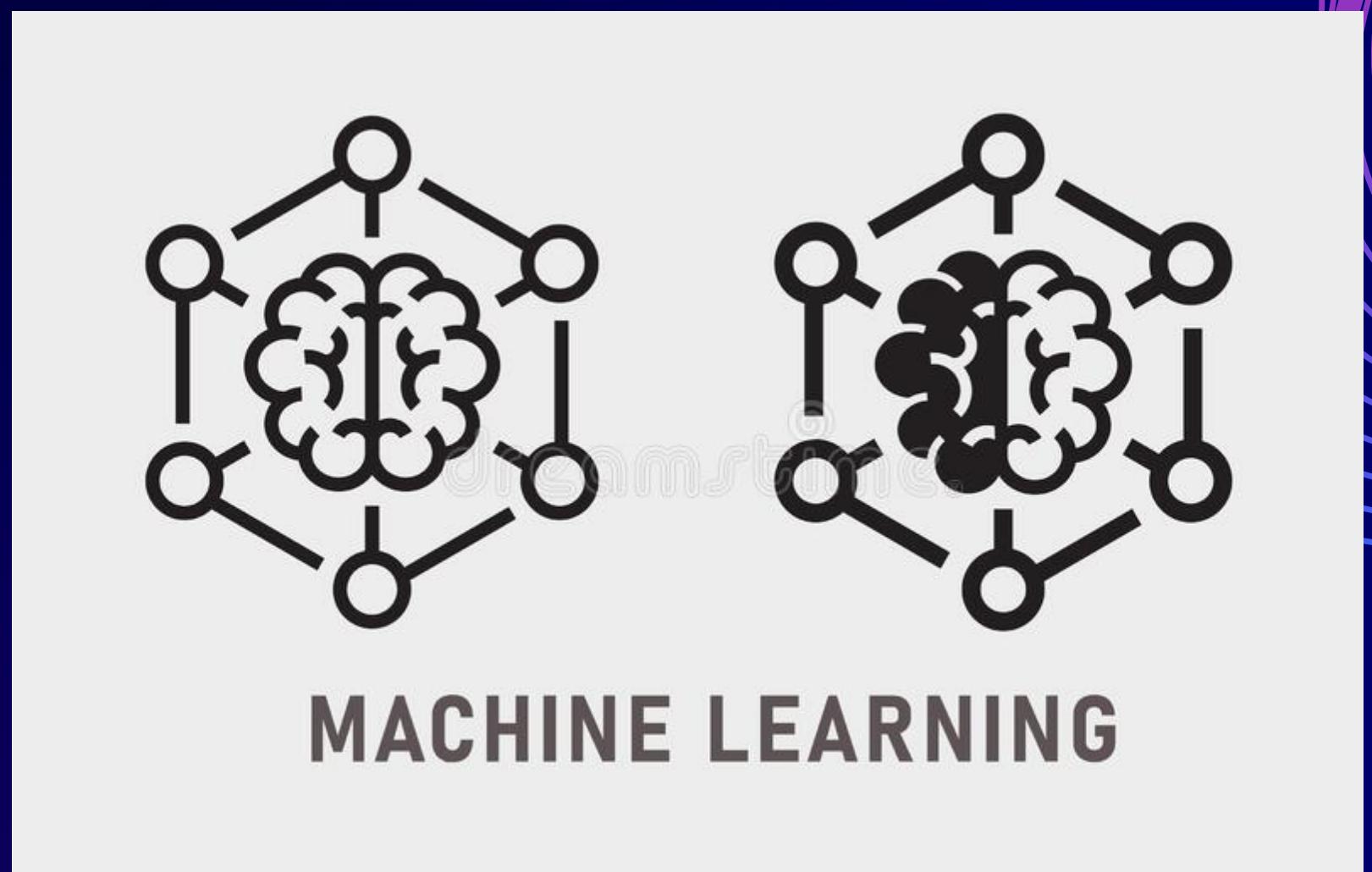


Data Processing is a step in which we preprocess our data i.e. handling missing data, handling outliers, etc.

APPLYING ML ALGORITHMS

These are following algorithms that we are going to apply in our preprocessed data:

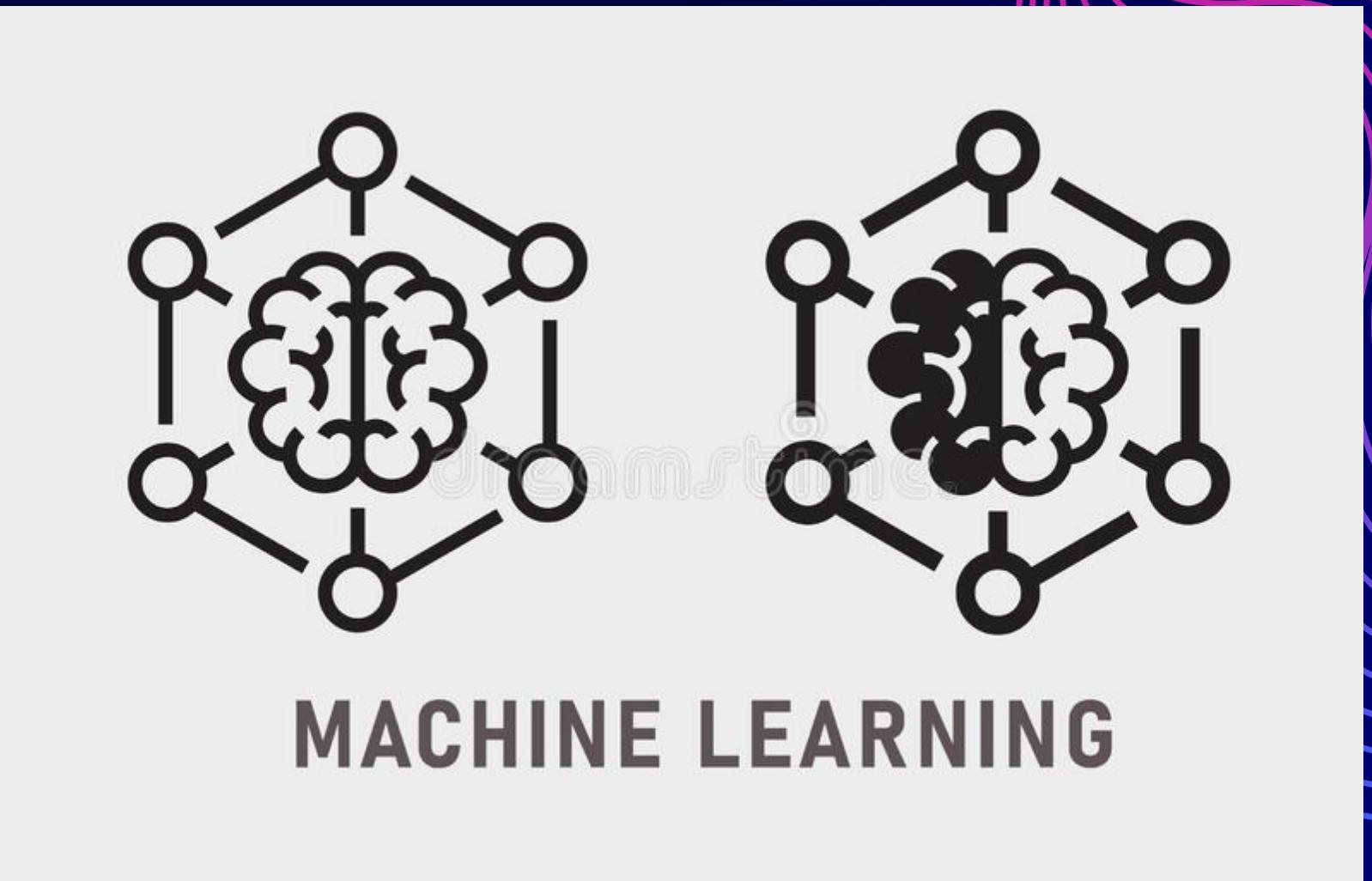
- Logistic Regression
- Random Forest Classifier
- Adaboost Classifier
- Bagging Classifier



ACCURACY OF MODELS

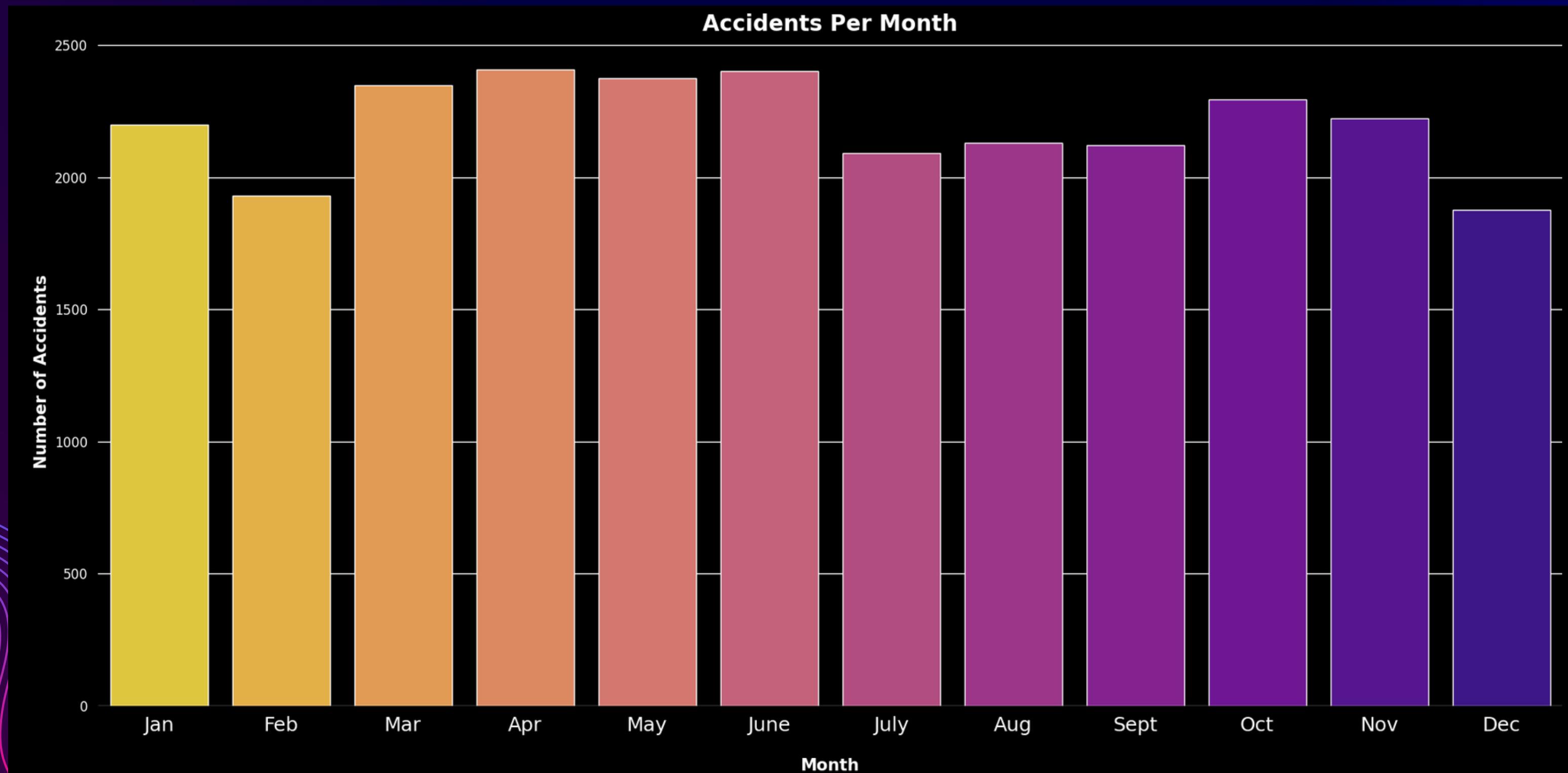
The following is the accuracy of the models:

- Logistic Regression(85.38%)
- Random Forest classifier(83.71%)
- Adaboost Classifier(85.36%)
- Bagging Classifier(85.38%)

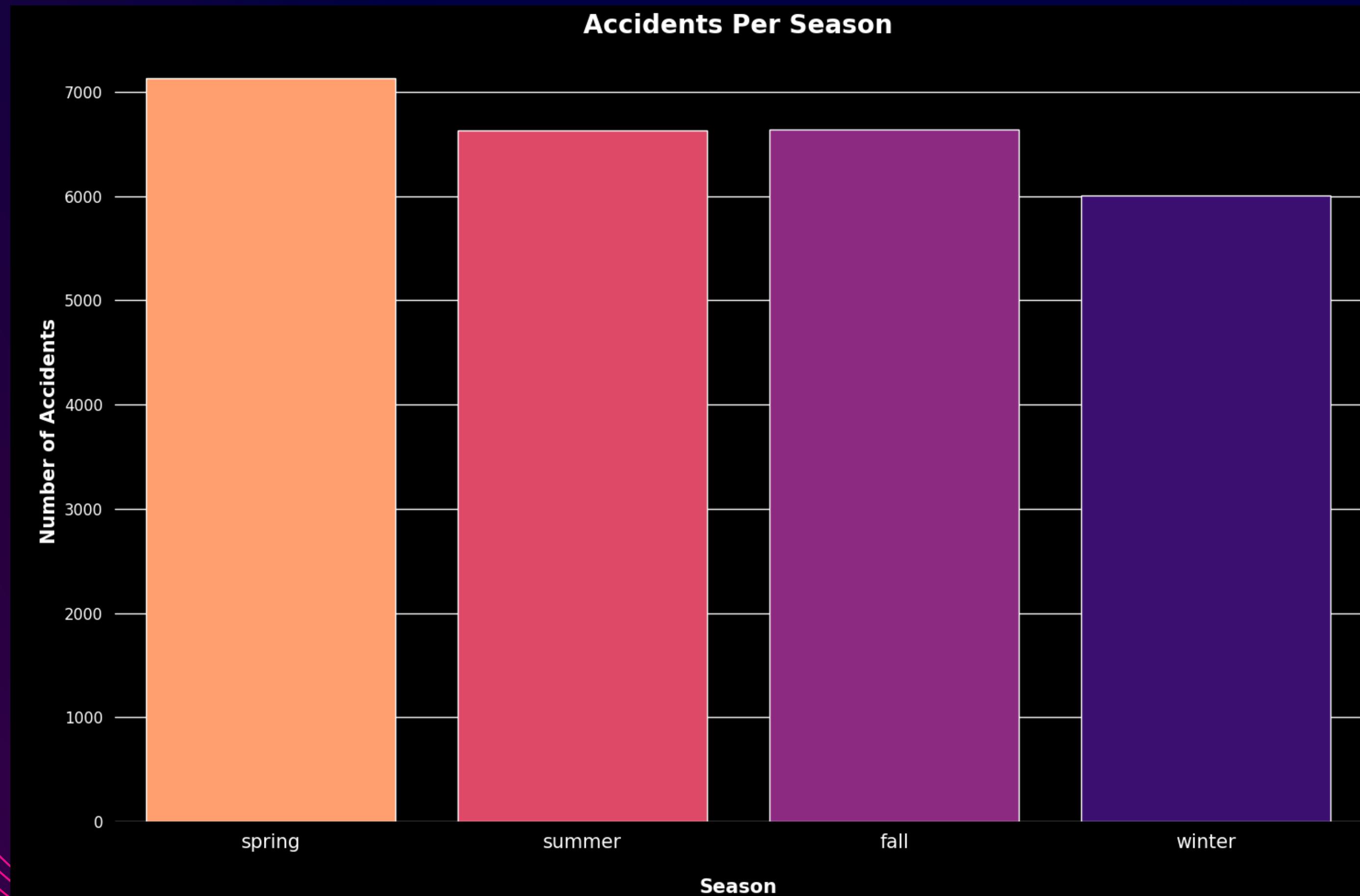


GRAPHICAL ANALYSIS

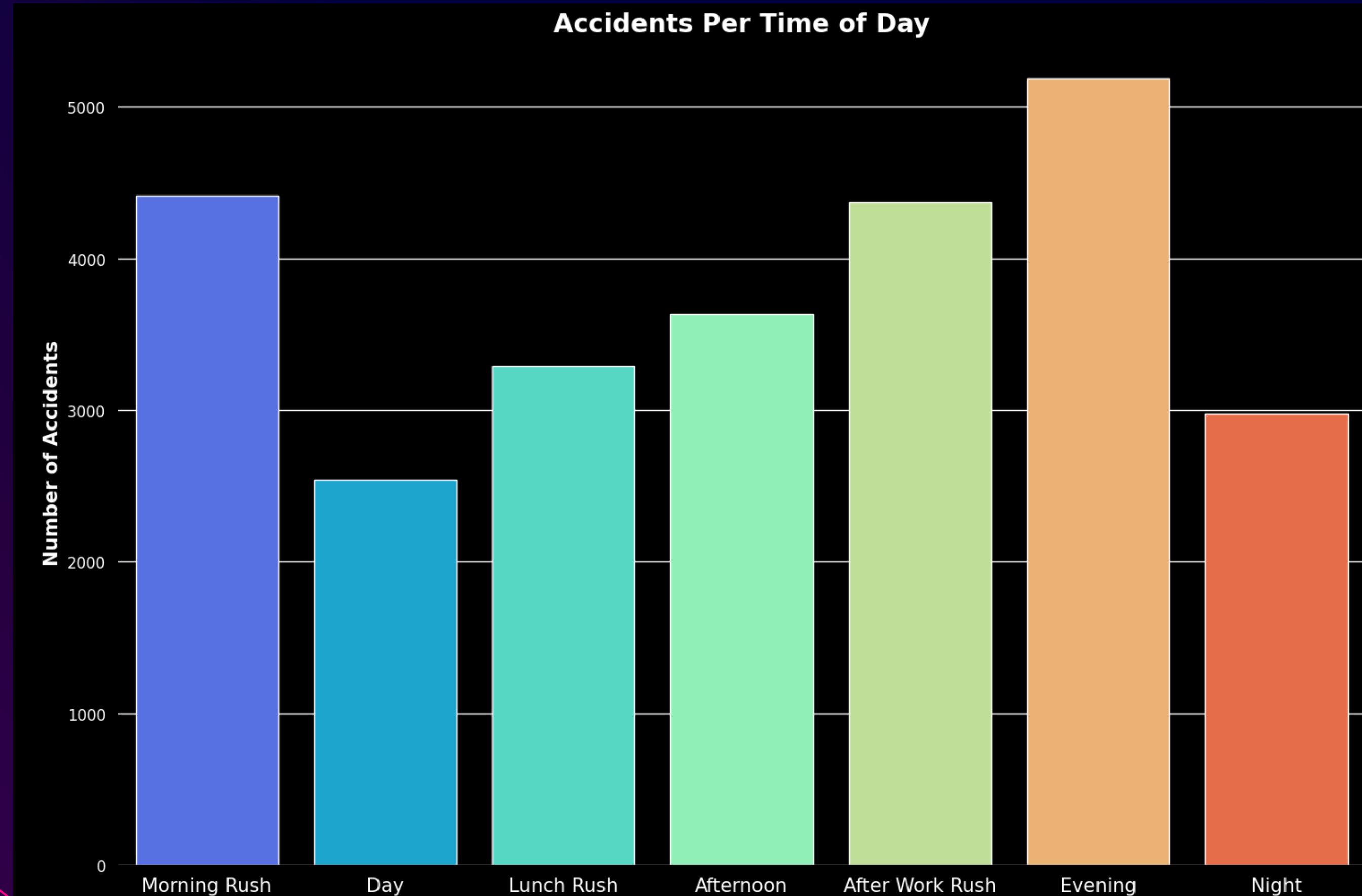
Accidents Per Month



Accidents Per Season



Accidents Per Time of Day



Speed Limit of Vehicles During Accident



SCREENSHOTS OF FRONTEND

The screenshot shows a Streamlit application running at `localhost:8501`. The title bar indicates the application is named "Road_accident_Model · Streamlit". The browser's address bar also shows `localhost:8501`. The page content is titled "Road Accident Analysis" with a subtitle "Road Accident Analysis". On the left, there is a sidebar menu with three items: "Home" (highlighted in red), "Predict using Model", and "Data Analysis". The main area displays a photograph of a road accident. A red car is翻倒 (flipped) onto its side on the left side of the road. Several emergency vehicles, including an ambulance and a police car, are present. Other cars are stopped behind the accident scene. In the background, there is a bridge or overpass with a digital sign that is partially visible, showing some text.

SCREENSHOTS OF FRONTEND

The screenshot shows a Streamlit application titled "Road Accident Analysis" running in a web browser. The browser's address bar indicates the URL is `localhost:8501`. The Streamlit interface has a sidebar on the left with three options: "Home" (highlighted in red), "Predict using Model", and "Data Analysis". The main content area features a large image of a road with a white dashed line. Below the image, two sections are visible: "Introduction" and "Objective".

Introduction

Road accidents continue to be a leading cause of death, disabilities and hospitalization in the country despite our commitment and efforts. India ranks first in the number of road accident deaths across the 199 countries and accounts for almost 11% of the accident related deaths in the World. A total number of 449,002 accidents took place in the country during the calendar year 2019 leading to 151,113 deaths and 451,361 injuries. In percentage terms, the number of accidents decreased by 3.86 % in 2019 over that of the previous year, while the accident related deaths decreased by 0.20 % and the persons injured decreased by 3.86.

Objective

As the number of accidents are increasing day by day our aim is to detect some factors that are responsible for these accidents. We are using a predefined dataset which has some attributes and we are going to detect the factors from those attributes.

SCREENSHOTS OF FRONTEND

The screenshot shows a Streamlit application running on localhost:8501. The title of the browser tab is "Road_accident_Model · Streamlit". The main content area is titled "Predicting using ML Models". On the left, there is a sidebar with the title "Road Accident Analysis" and three buttons: "Home", "Predict using Model" (which is highlighted with a red background), and "Data Analysis". Below these buttons, there is a section titled "Select a model 😊 :" with a list of six models. "Model 1(Logistic_Regression)" is selected, indicated by a red dot next to it. The main form contains several input fields:

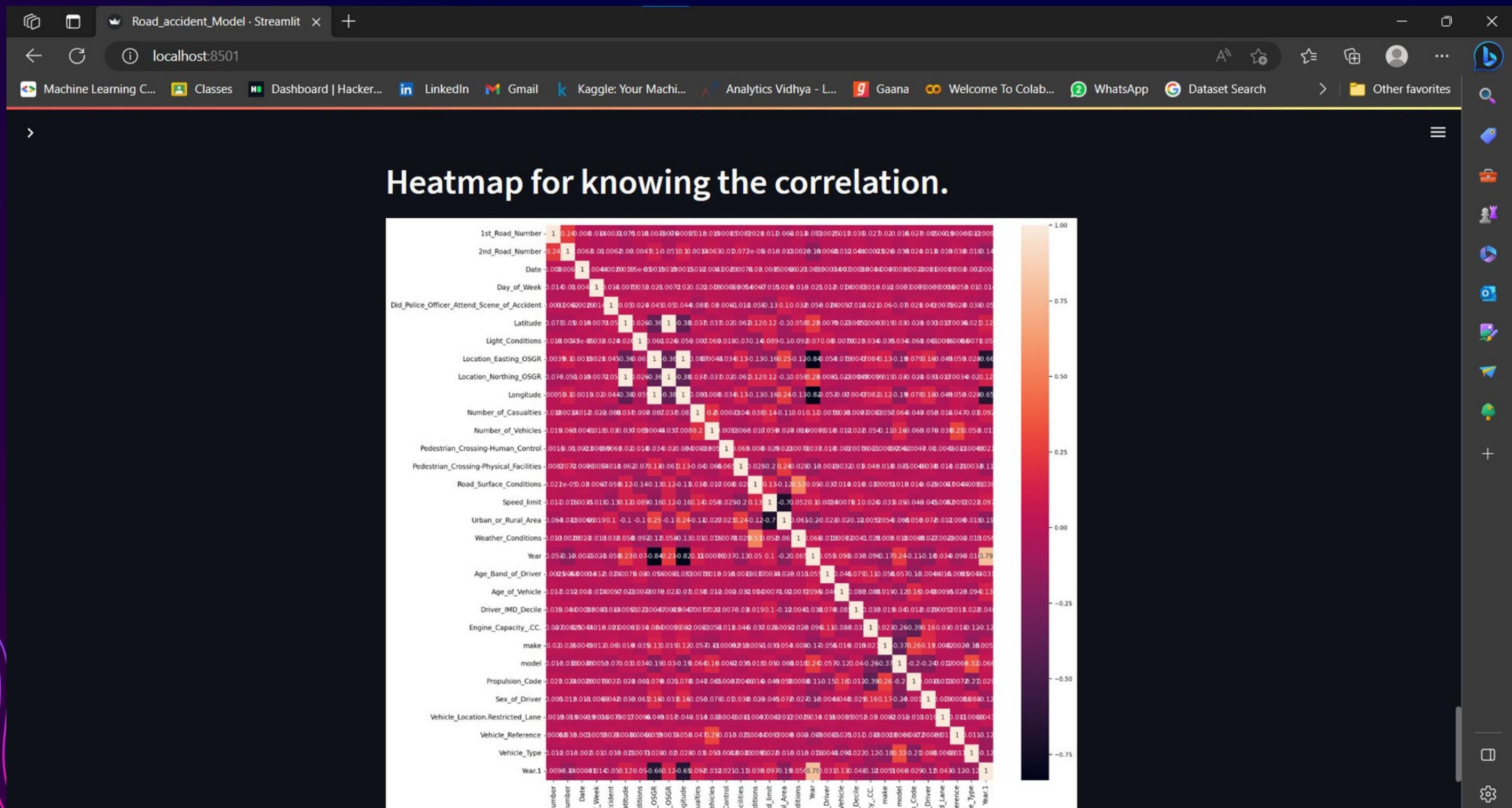
- "Select Company :" dropdown menu showing "ABARTH".
- "Select model :" dropdown menu showing "GRANDE PUNTO 155 BHP".
- "Select vehicle Type :" dropdown menu showing "Car".
- "Select Age of Vehicle:" slider with values 6 and 30.
- "Select speed limit:" slider with values 0 and 120.
- "Select Weather Condition:" dropdown menu showing "Raining no high winds".
- "Select Road Type:" dropdown menu showing "Single carriageway".
- "Select the light conditions:" dropdown menu showing "Daylight".
- "Select Pedestrian_Crossing-Human_Control:" dropdown menu showing "0.0".
- "Select Did_Police_Officer_Attend_Scene_of_Accident:" dropdown menu showing "1.0".
- "Select Road_Surface_Conditions:" dropdown menu showing "Wet or damp".
- "Select Age_Band_of_Driver:" dropdown menu showing "36 - 45".
- "Select Gender:" radio buttons showing "Male" is selected.
- "Accident Severity Result:" empty text input field.

SCREENSHOTS OF FRONTEND

The screenshot shows a Streamlit application titled "Road Accident Analysis" running in a Microsoft Edge browser. The application has a sidebar on the left with options: "Home", "Predict using Model", and "Data Analysis". The "Data Analysis" button is highlighted with a red background. The main content area displays the title "Analysis of Road Accidents" and a bulleted list: "Analyzing the data which has around 26k data points. The goal is to get some insights about the data for model Building." Below this, there is a section titled "A small portion of data" containing a table with 10 rows of accident data.

	Accident_Index	1st_Road_Class	1st_Road_Number	2nd_Road_Class	2nd_Road_Number	Accident_
0	200501BS00001	A	3,218	Unclassified	0	Serious
1	200501BS00002	B	450	C	0	Slight
2	200501BS00003	C	0	Unclassified	0	Slight
3	200501BS00004	A	3,220	Unclassified	0	Slight
4	200501BS00005	Unclassified	0	Unclassified	0	Slight
5	200501BS00006	Unclassified	0	Unclassified	0	Slight
6	200501BS00007	C	0	Unclassified	0	Slight
7	200501BS00009	A	315	Unclassified	0	Slight
8	200501BS00010	A	3,212	B	304	Slight
9	200501BS00011	B	450	C	0	Slight

SCREENSHOTS OF FRONTEND



CONCLUSION

Road traffic accidents are the key reason for serious injuries as well as the death of precious human lives. Discovering the factors that are related to the class values that are important to achieve an accurate result.

FUTURE SCOPE

- We can increase the number of rows in future.
- Currently we have worked upon only 27407 rows.
- We can increase the number of attributes also such as potholes in road etc.

Thank
you!

