Predicting the Severity of Car Accident

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Introduction

1. Road Accidents are very common now
2. Given Circumstances
    a. High Traffic
    b. Weather, Light and Road Conditions
    c. Driver's condition while driving
3. Problem Statement:

" To predict the Severity of a road accident, given different attributes of the situation, like coordinates, number of vehicles, road condition, light condition, drug usage, alcohol usage during driving, not paying attention. "

4. Stakeholders
    a. Traffic Authority
    b. Woke Individuals

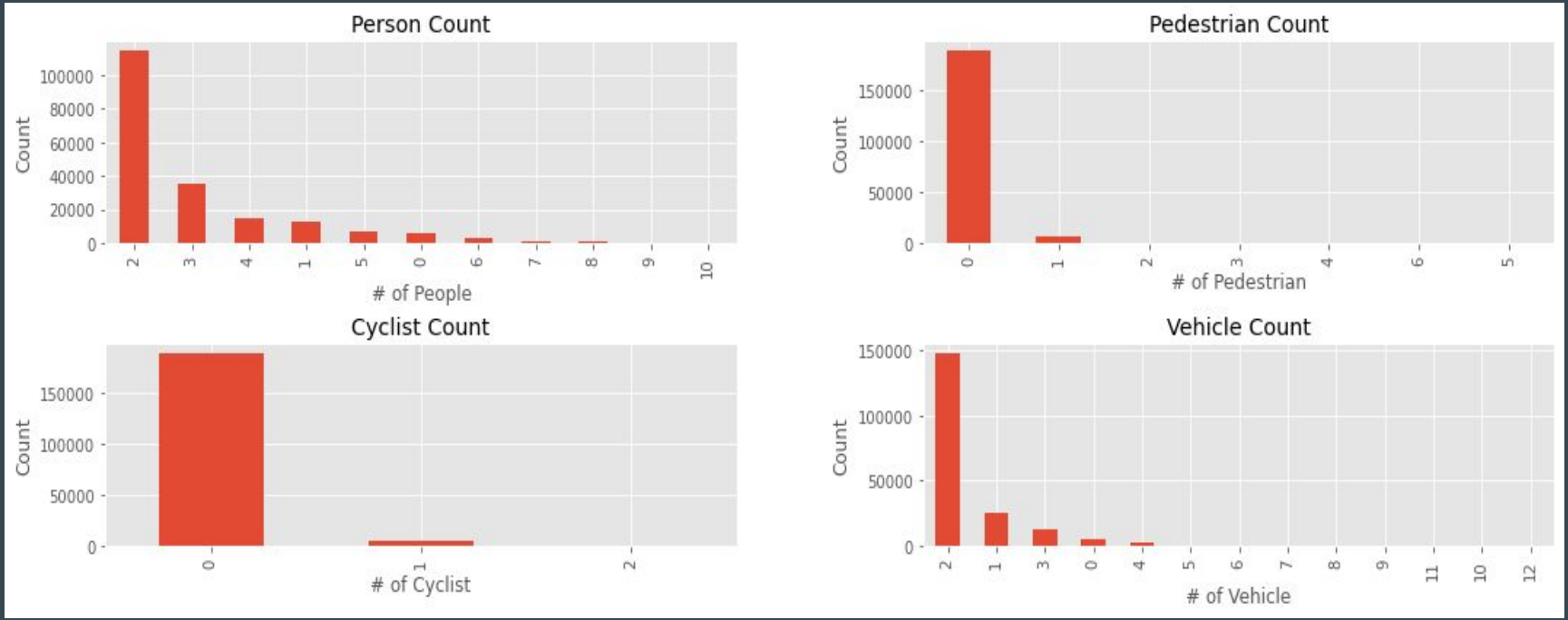
Data

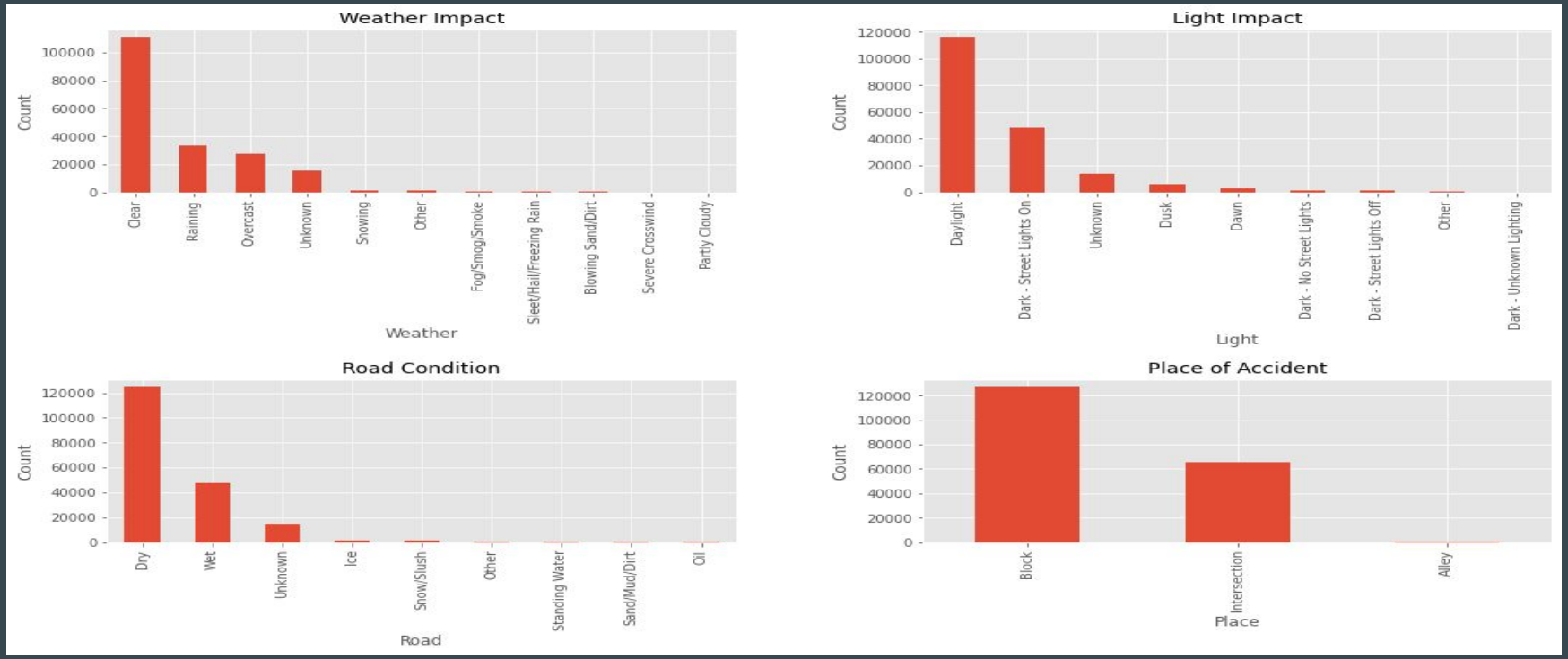
1. **Feature Selection**

['SEVERITYCODE', 'ADDRTYPE', 'INTKEY', 'COLLISIONTYPE', 'PERSONCOUNT', 'PEDCOUNT', 'PEDCYLCOUNT', 'VEHCOUNT', 'JUNCTIONTYPE', 'INATTENTIONIND', 'UNDERINFL', 'WEATHER', 'ROADCOND', 'LIGHTCOND', 'SPEEDING', 'HITPARKEDCAR']

2. **Data Cleansing and Preprocessing**
    a. **One hot encoding**
    b. **Categorical Values**

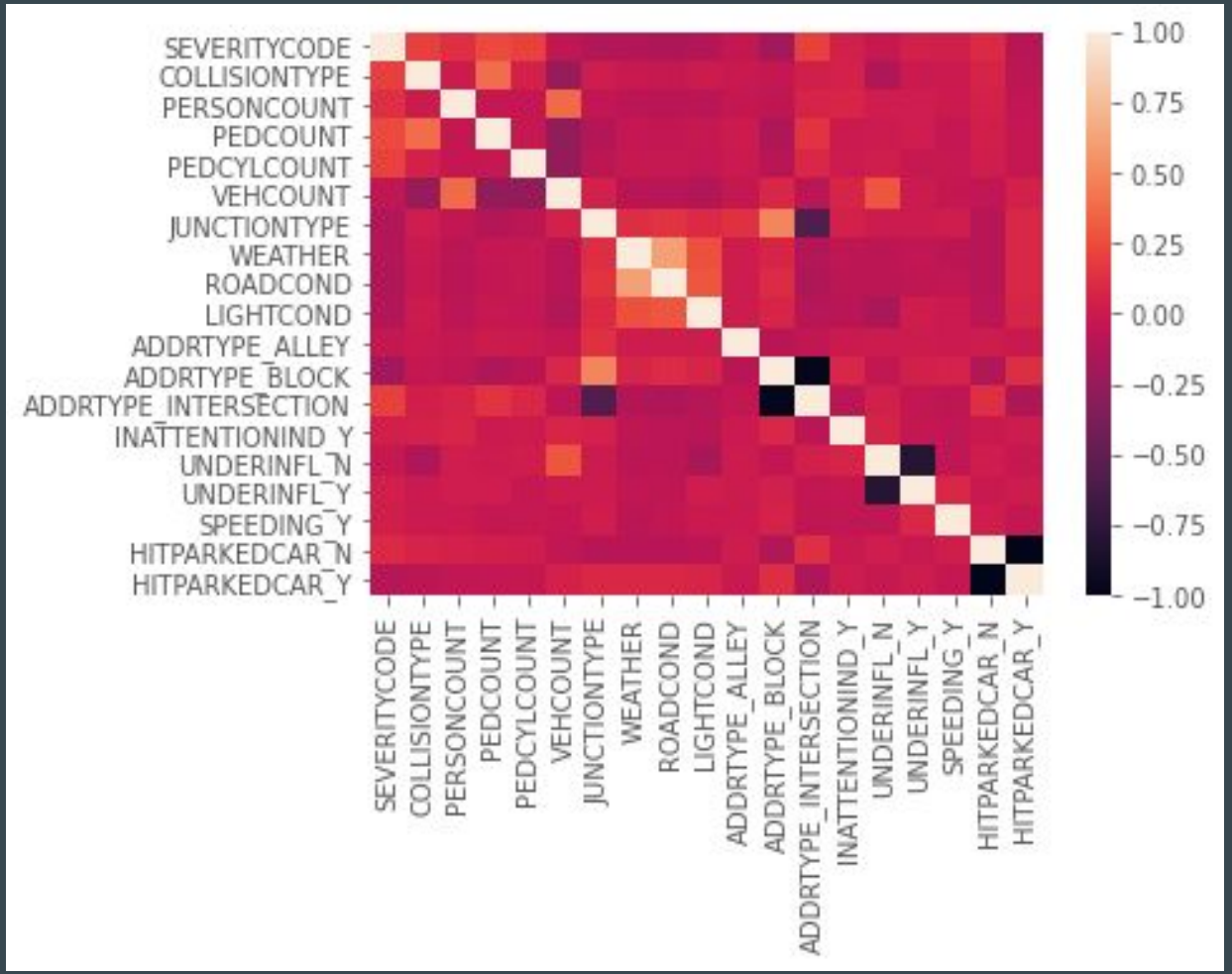
3. **Data interpretations and Visualization**


Person Count
Count
100000
80000
60000
40000
20000
0
2
3
4
1
5
0
6
7
8
9
10
# of People
Pedestrian Count
Count
150000
100000
50000
0
0
1
2
3
4
6
5
# of Pedestrian
Cyclist Count
Count
150000
100000
50000
0
0
1
2
# of Cyclist
Vehicle Count
Count
150000
100000
50000
0
2
1
3
0
4
5
6
7
8
9
11
10
12
# of Vehicle


Weather Impact
Count
100000
80000
60000
40000
20000
0
Clear
Raining
Overcast
Unknown
Snowing
Other
Fog/Smog/Smoke
Sleet/Hail/Freezing Rain
Blowing Sand/Dirt
Severe Crosswind
Partly Cloudy
Weather
Light Impact
Count
120000
100000
80000
60000
40000
20000
0
Daylight
Dark - Street Lights On
Unknown
Dusk
Dawn
Dark - No Street Lights
Dark - Street Lights Off
Other
Dark - Unknown Lighting
Light
Road Condition
Count
120000
100000
80000
60000
40000
20000
0
Dry
Wet
Unknown
Ice
Snow/Slush
Other
Standing Water
Sand/Mud/Dirt
Oil
Road
Place of Accident
Count
120000
100000
80000
60000
40000
20000
0
Block
Intersection
Alley
Place

Methodology

Correlation between Selected Features



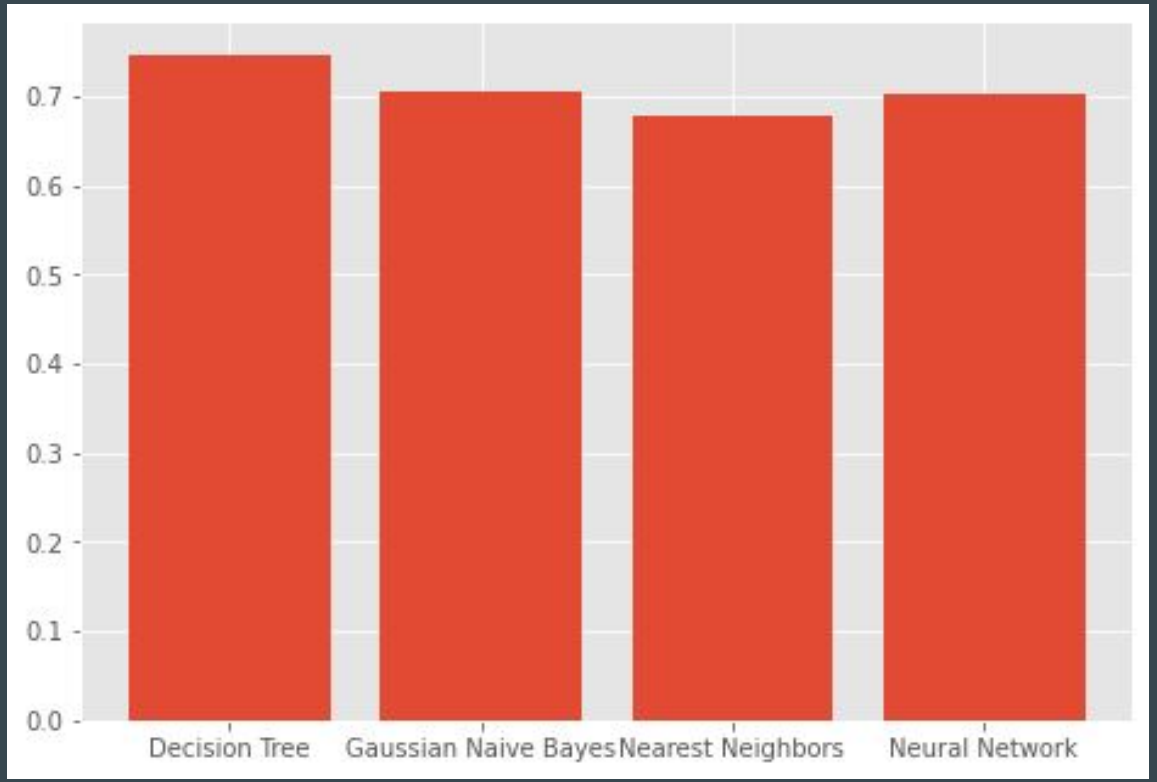
The Machine Learning Models used in the Project:

1. Decision Tree
2. Gaussian Naive Bayes
3. Nearest Neighbors
4. Neura; Networks

Result

Accuracy of Models are as follows:

1. Decision Tree: 0.747
2. Gaussian naive Bayes: 0.704
3. Nearest Neighbors: 0.697
4. Neural Network: 0.703



Conclusion and Follow Ups

1. The best accuracy was 74.7%
2. More Training is required
3. A lt of scenarios covered in data, need more extensive data
4. Better efforts to collect data

Thank You