



TRAFFIC PREDICTOR

Group Members

Anushka Singh (B22AI008)

Hari Shubha (B22AI021)

Mohanshi Jain (B22ES014)

Aastha Bhore (B22EE002)

Pari Sharma (B22CS039)

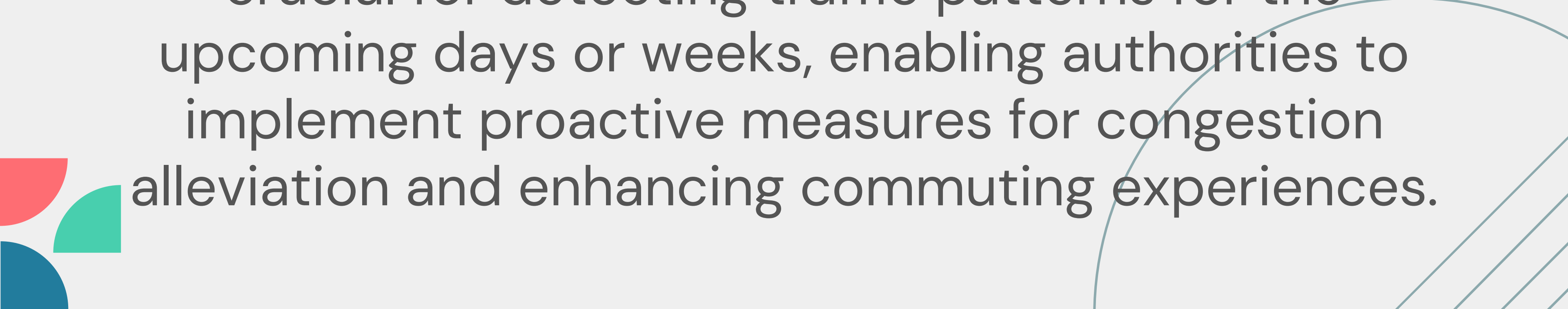
Pranaya Jayaprakash (B22EE086)



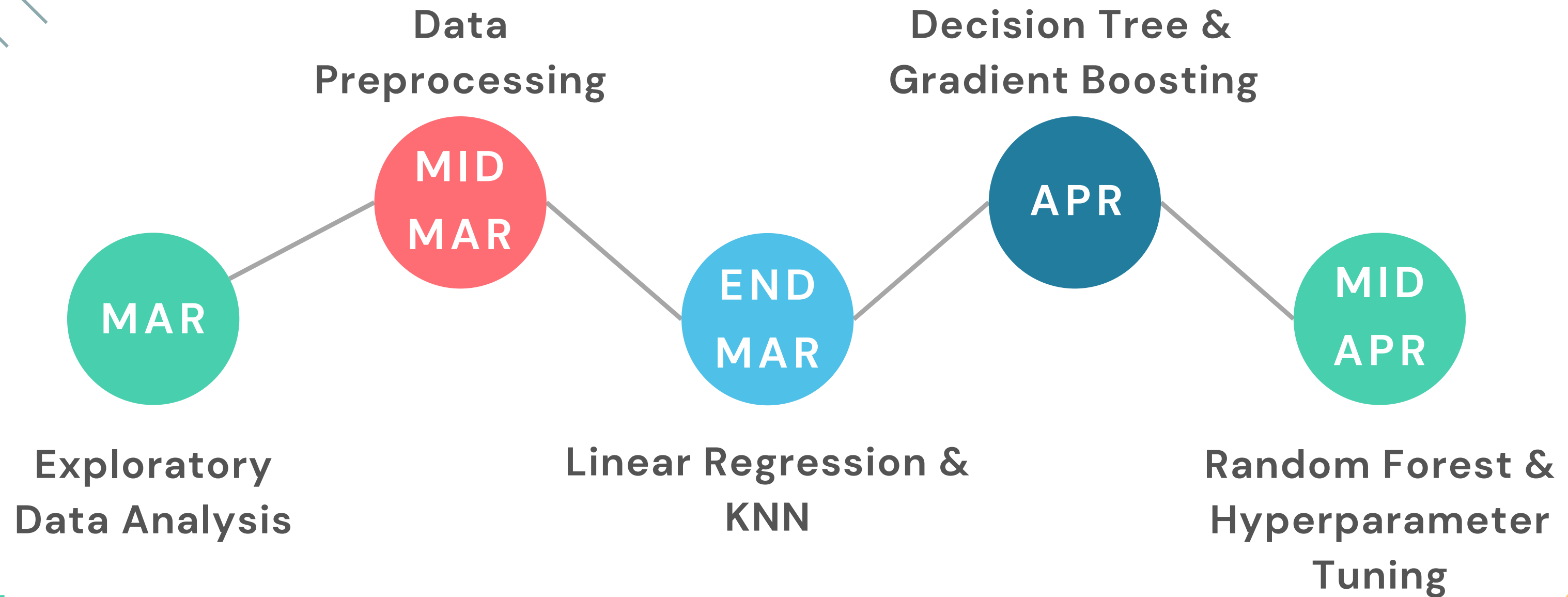


PROBLEM STATEMENT

Traffic prediction involves forecasting traffic volume and density to manage vehicle movement, reduce congestion, and generate optimal routes in terms of time or energy efficiency. This predictive task is crucial for detecting traffic patterns for the upcoming days or weeks, enabling authorities to implement proactive measures for congestion alleviation and enhancing commuting experiences.



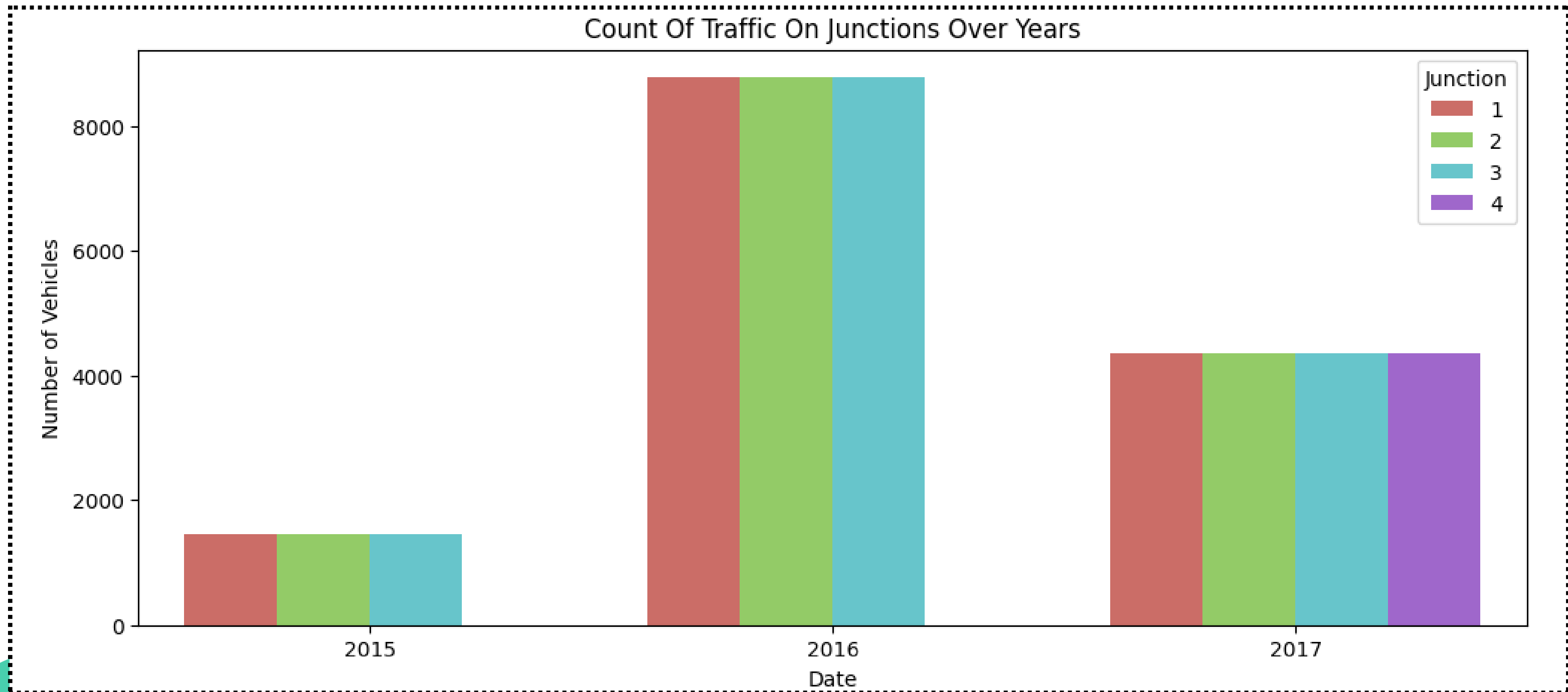
PROJECT TIMELINE



SOME SAMPLES FROM THE DATASET

| DateTime | Junction | Vehicles | ID |
|---------------------|----------|----------|-------------|
| 2015-11-01 00:00:00 | 1 | 15 | 20151101001 |
| 2015-11-01 01:00:00 | 1 | 13 | 20151101011 |
| 2015-11-01 02:00:00 | 1 | 10 | 20151101021 |
| 2015-11-01 03:00:00 | 1 | 7 | 20151101031 |

SOME SAMPLES FROM THE DATASET



DATASET AFTER PREPROCESSING

| Junctions | Year | Month | DayOfMonth | Hour | Weekday | Vehicles |
|-----------|------|-------|------------|------|---------|----------|
| 1 | 2015 | 11 | 1 | 0 | 7 | 15 |
| 1 | 2015 | 11 | 1 | 1 | 7 | 13 |
| 1 | 2015 | 11 | 1 | 2 | 7 | 10 |
| 1 | 2015 | 11 | 1 | 3 | 7 | 7 |

DATASET

SIGNIFICANT FEATURES

YEAR

MONTH

DAY OF MONTH

DAY OF WEEK

HOUR

TARGET VARIABLE
VEHICLES

PROPOSED APPROACHES FOR PREDICTION

LINEAR REGRESSION

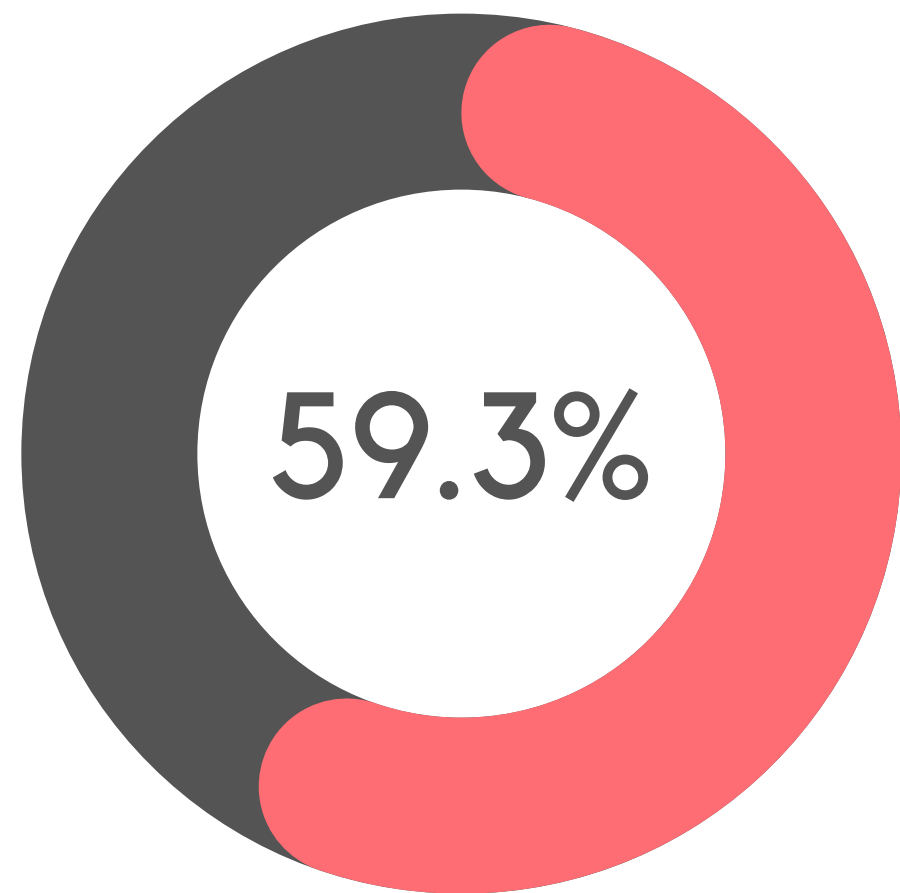
DECISION TREE

KNN

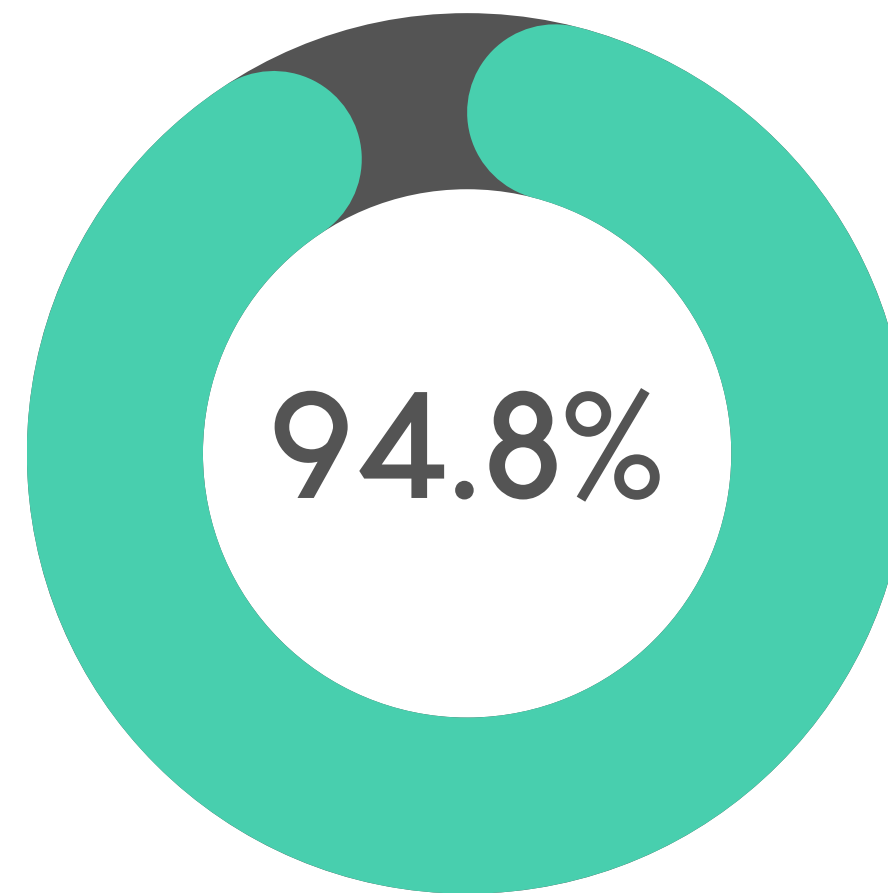
GRADIENT BOOSTING

RANDOM FOREST

R-SQUARED SCORES

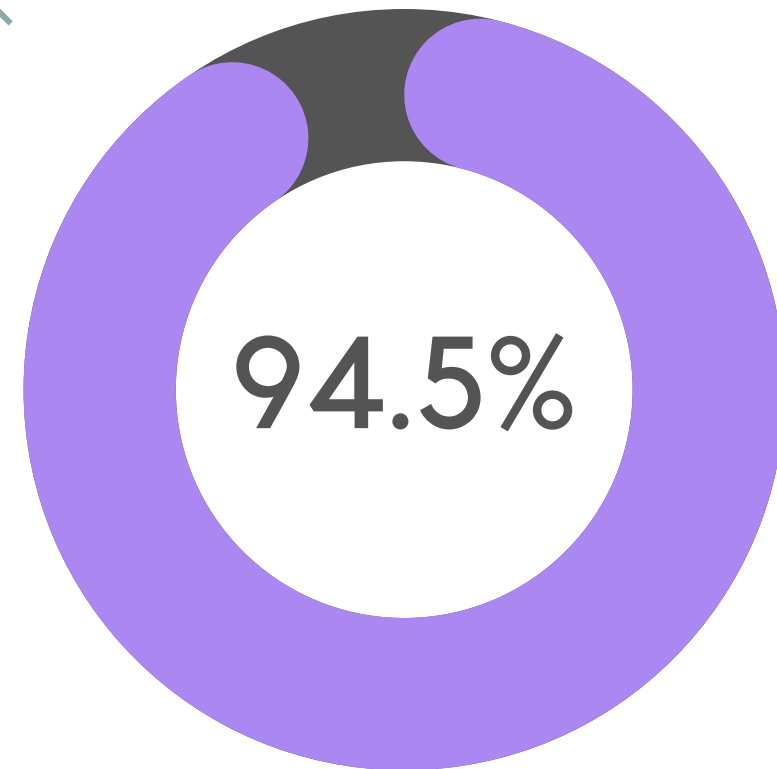


LINEAR REGRESSION

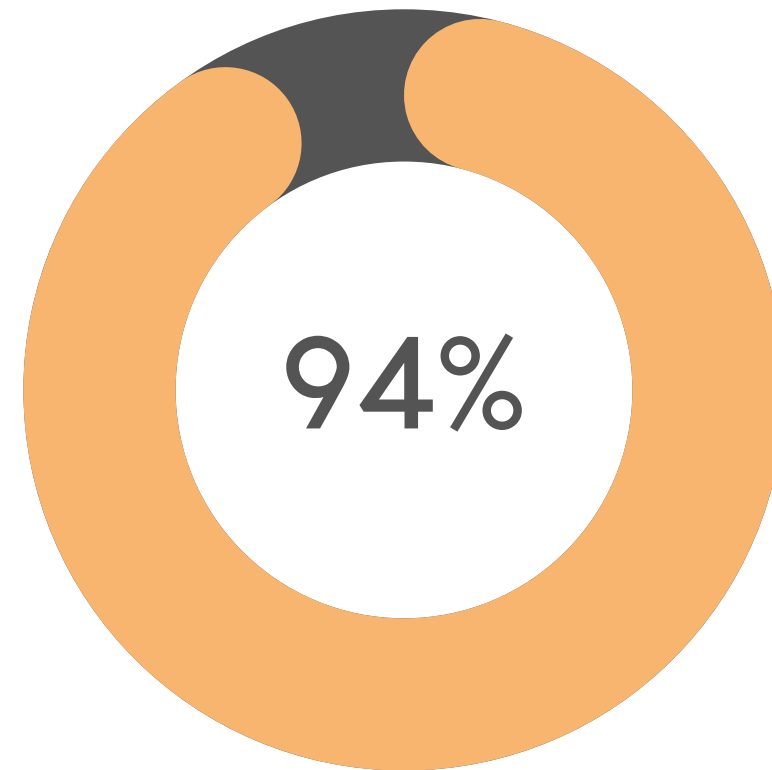


KNN REGRESSION

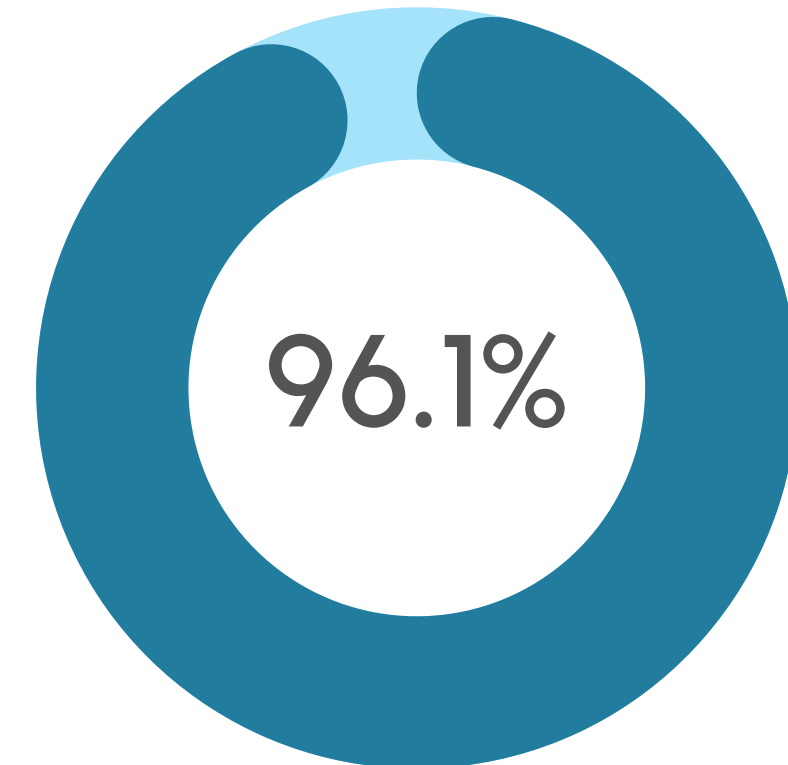
R-SQUARED SCORES



DECISION TREE

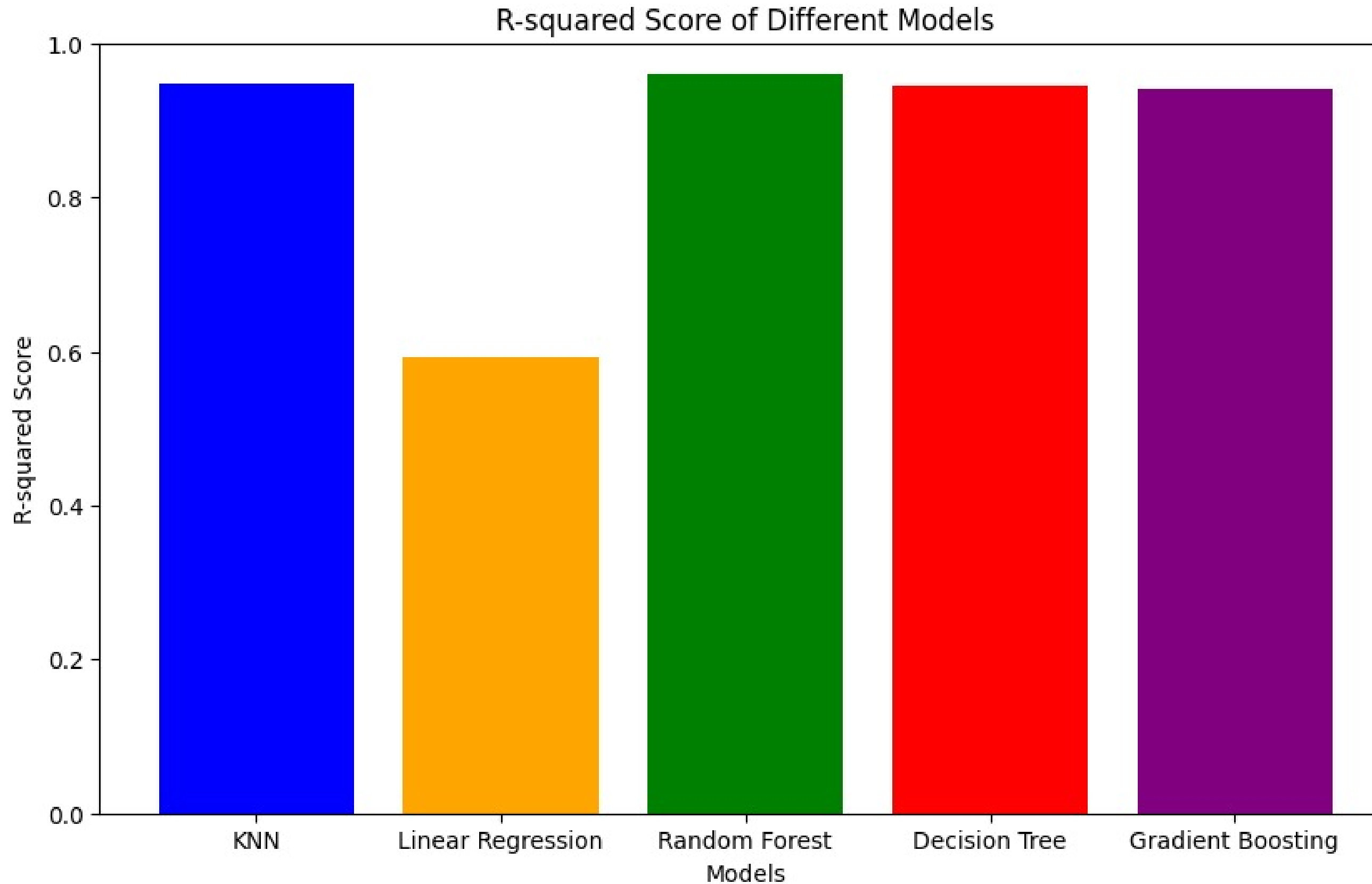


GRADIENT BOOSTING



RANDOM FOREST



COMPARISION





CONCLUSION

The results indicate that Random Forest and Gradient Boosting along with KNN Regressor and Decision Tree surpassed Linear Regression in predictive accuracy, suggesting their superiority in capturing complex data dependencies. These ensemble methods showcased their effectiveness in modeling intricate relationships within the dataset, leading to more accurate traffic predictions compared to Linear Regression.



The image features a light gray background with the text "THANK YOU" centered in a bold, blue, sans-serif font. The corners are decorated with abstract geometric patterns. The top-left corner has a series of parallel diagonal lines in a light blue-gray color. The top-right corner features a cluster of overlapping semi-circles in yellow, red, and teal. The bottom-left corner shows a similar cluster of overlapping semi-circles in red, teal, and blue. The bottom-right corner contains a large, light blue-gray arc with several parallel diagonal lines extending from its base.

THANK YOU