

# ROAD TRAFFIC PREDICTION & FORECASTING

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## MACHINE INTELLIGENCE PROJECT

# **PROBLEM STATEMENT**

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This project is an attempt to create Machine Learning models to **Predict & Forecast** the Traffic Flow using available historical traffic datasets with attributes such as Day, Zone and Temperature. By using Time series Forecasting, we seek to estimate traffic conditions for a time period in the future.

# REAL WORLD APPLICATIONS



## PLANNING

Availability of forecasted Traffic Conditions using Machine Learning will enable better urban planning & layout to minimize congestion.



## LOGISTICS

Forecasting Traffic Conditions a week in advance will enable Optimization of the Delivery Routes to decrease latency and reduce fuel consumption.

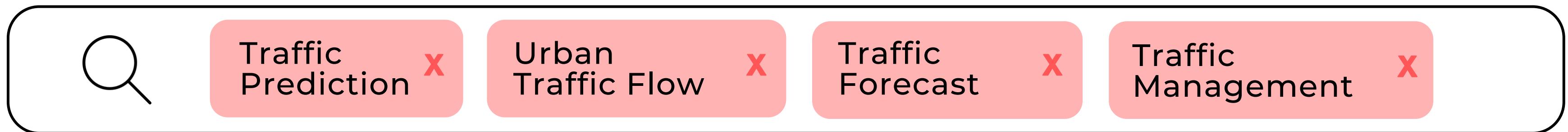


## BUSINESSES

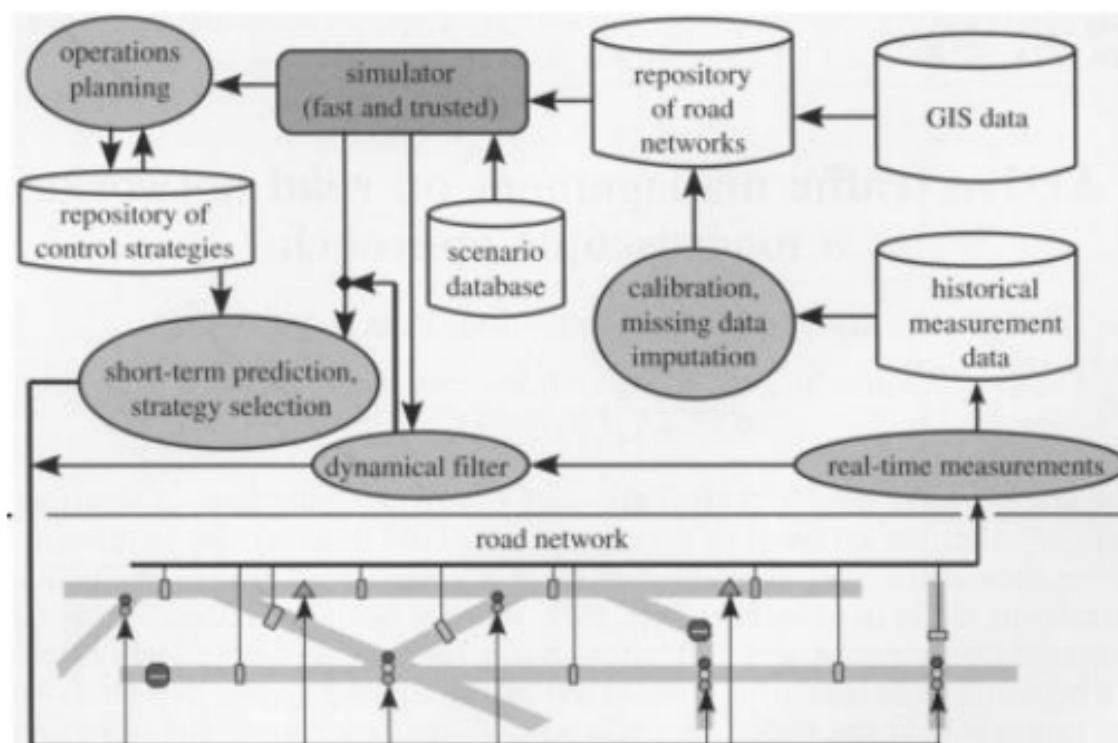
Estimating Traffic Flow will enable businesses such as Petrol Pumps, Shopping Centre & Restaurants be located in areas with more traffic

# LITERATURE SURVEY

Google JSTOR SEARCH



## RESEARCH/JOURNAL/CONFERENCE PAPERS



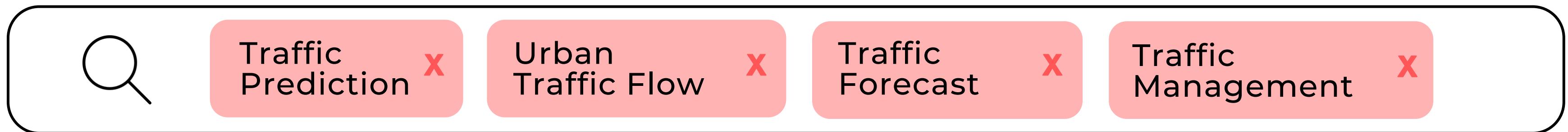
### ACTIVE TRAFFIC MANAGEMENT ON ROAD NETWORKS: A MACROSCOPIC APPROACH

*Alex A. Kurzhanskiy and Pravin Varaiya*

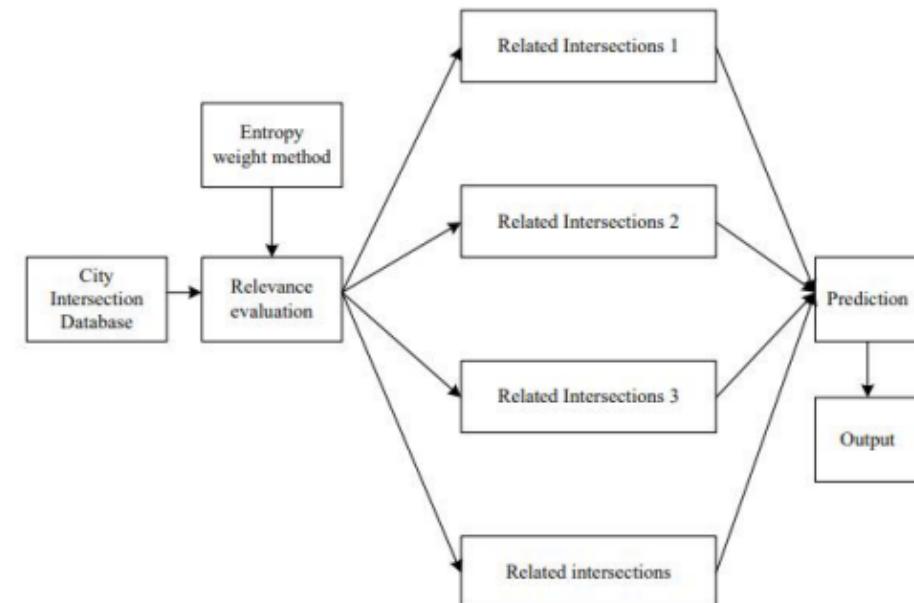
Dynamic Traffic Prediction model that intermittently collects data from a Sensor.  
Does not forecast Traffic for a given time period.  
Requires a large amount of data to make a singular prediction

# LITERATURE SURVEY

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## RESEARCH/JOURNAL/CONFERENCE PAPERS



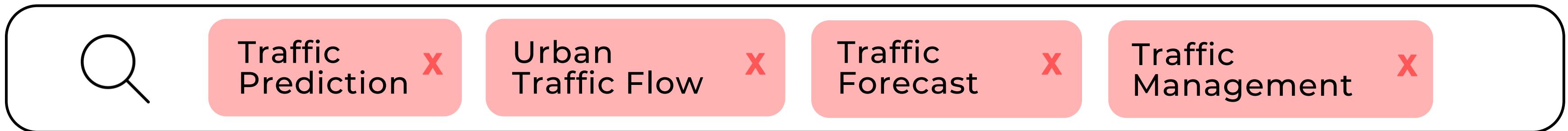
### SHORT-TERM TRAFFIC FLOW PREDICTION OF COASTAL CITIES BASED ON ENTROPY WEIGHT METHOD

*Hong Wang and Peng Yue*

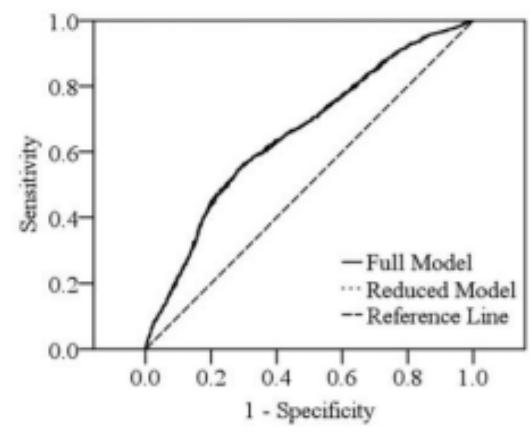
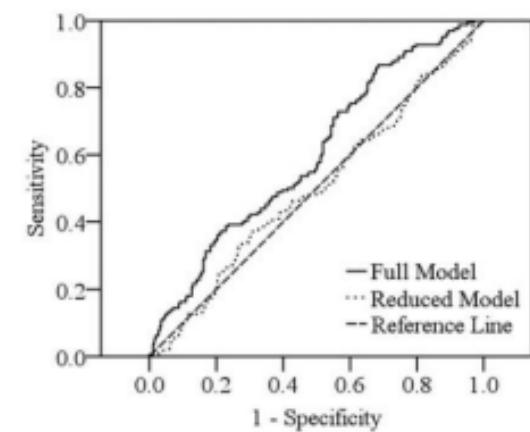
Collects historical Traffic Flow Data in Coastal Cities to make a prediction.  
This was applicable only at lane intersections.  
Limited to Coastal Cities

# LITERATURE SURVEY

Google JSTOR SEARCH



## RESEARCH/JOURNAL/CONFERENCE PAPERS

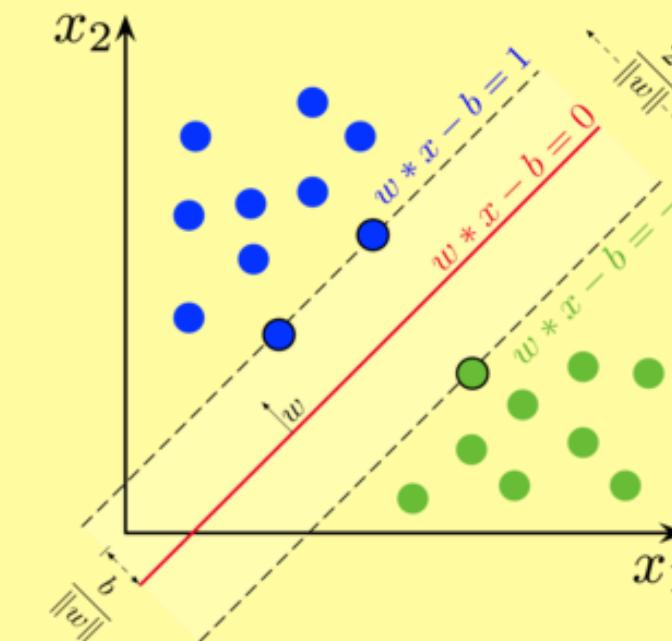


### EVALUATING THE COMBINED EFFECTS OF WEATHER AND REAL-TIME TRAFFIC CONDITIONS ON FREEWAY CRASH RISKS Chengcheng Xu, Chen Wang, And Pan Liu

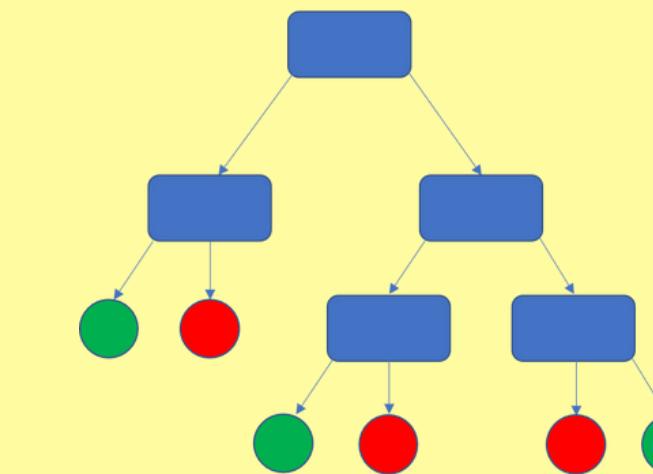
Does not predict Traffic Flow, but estimates the risk of Car Crashes given the Traffic Conditions. The results showed that the risks of crashes would increase by 1.875 times during moderate/heavy rains.

# PROPOSED APPROACH

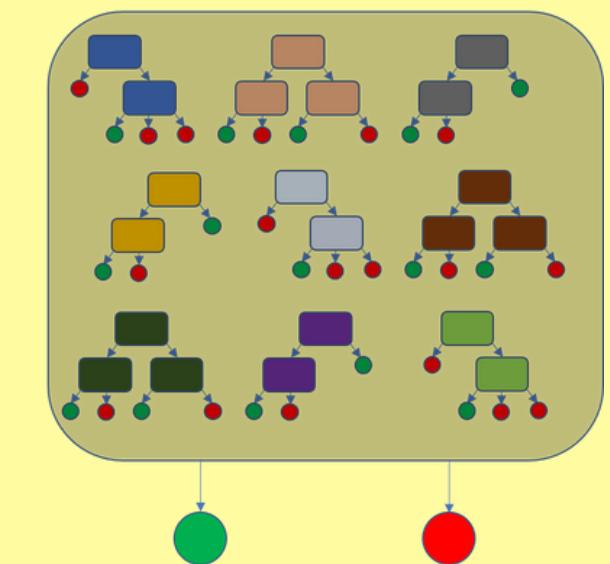
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SVM



DECISION  
TREES



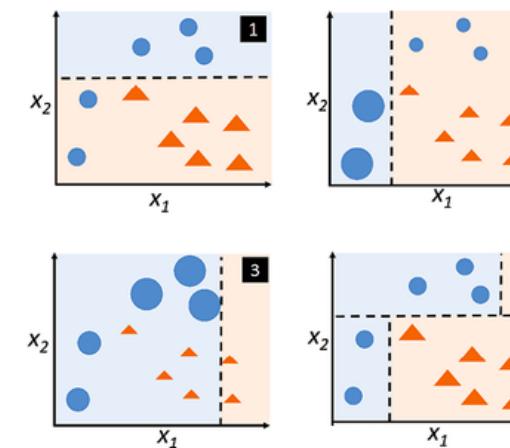
RANDOM  
FOREST

We implemented 3 Machine Learning Models on the obtained Dataset to predict the Traffic Flow.

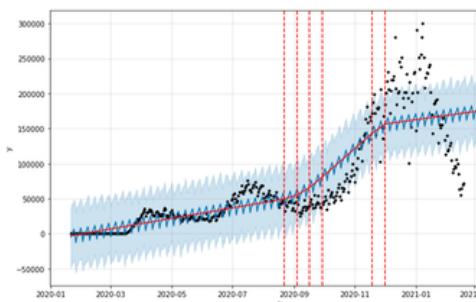
# PROPOSED APPROACH

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We implemented 2 Machine Learning Techniques on the obtained Dataset to forecast the Traffic Flow.



ADABOOST & BAGGING  
(ENSEMBLE METHODS)

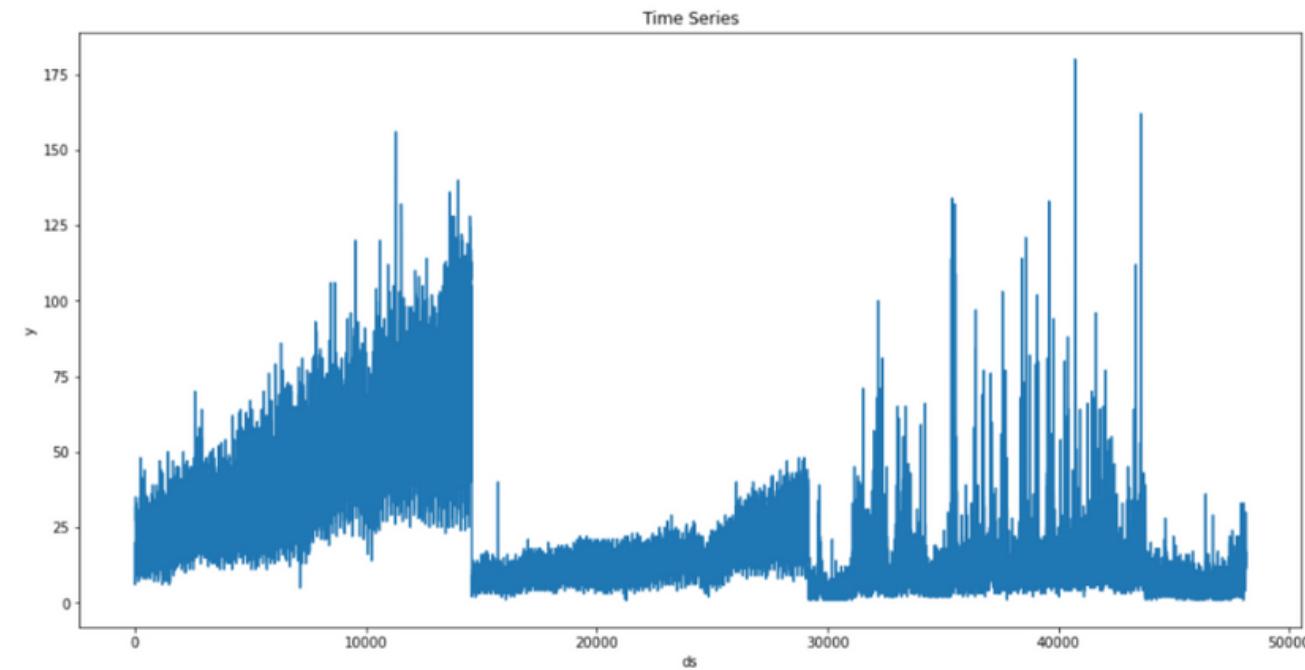


FACEBOOK PROPHET

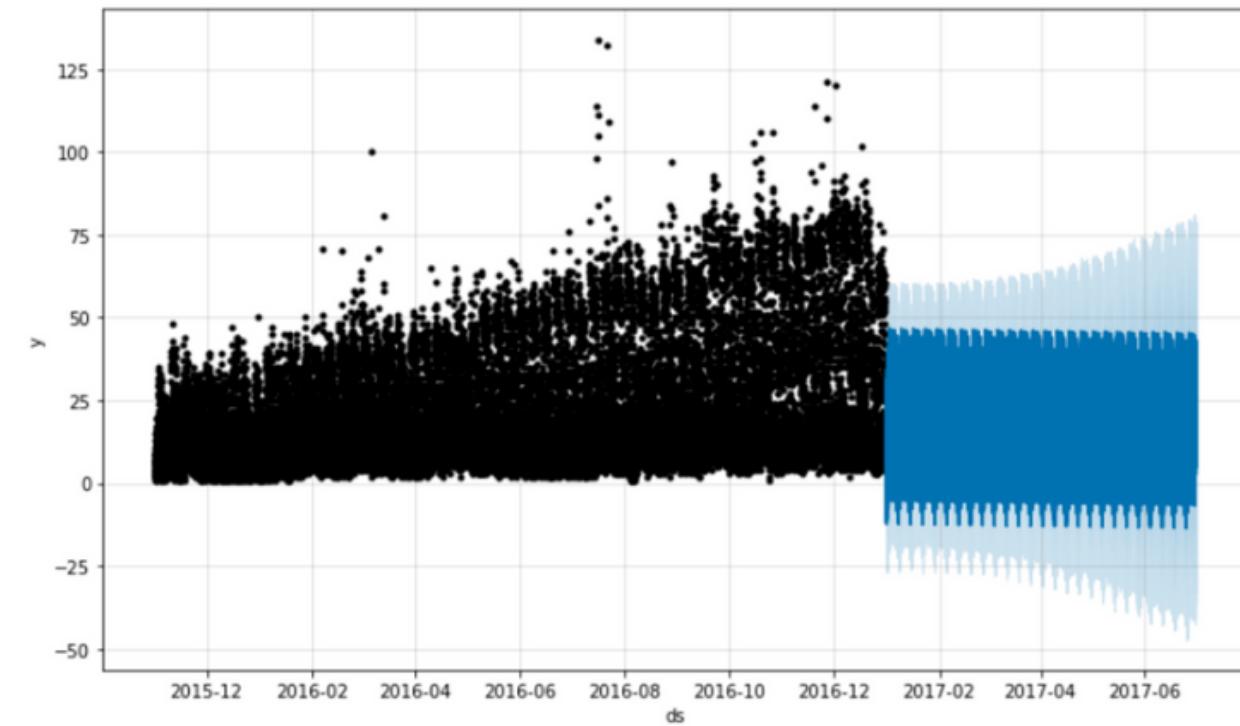
# RESULTS & CONCLUSION

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## ADABOOST FORECASTING



## FB PROPHET

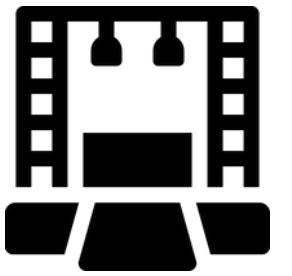


# FUTURE SCOPE



## IoT DEVICES

Use IoT Devices to collect Real Time Data and accurately estimate the Traffic using several attributes



## DISRUPTION

Factor annual events such as fares & festivals in the model, to accurately predict congestion in the network



## ROUTING

Use Routing Algorithms to estimate future routes with minimal traffic congestion using Time Series forecasted



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