NITI Aayog | MOVEHACK

Driver Profiling and Accident Hotspot Prediction

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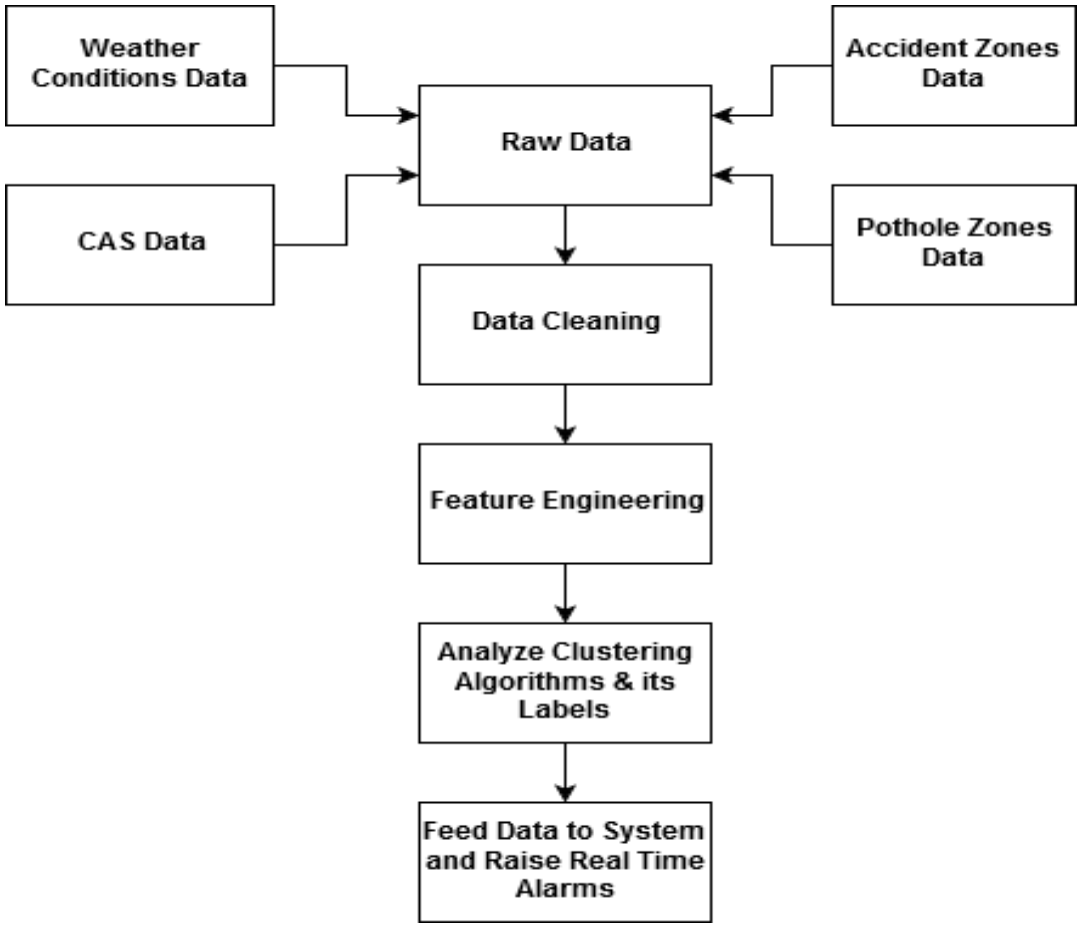
Architecture

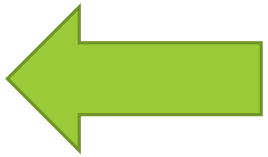


Datasets

This information is already provided in the given datasets.

- Latitude
- Longitude
- Location Name
- Speed
- Time
- Alarm Type

They also have crucial effect on accidents and thus we will consider these attributes in our evaluation.

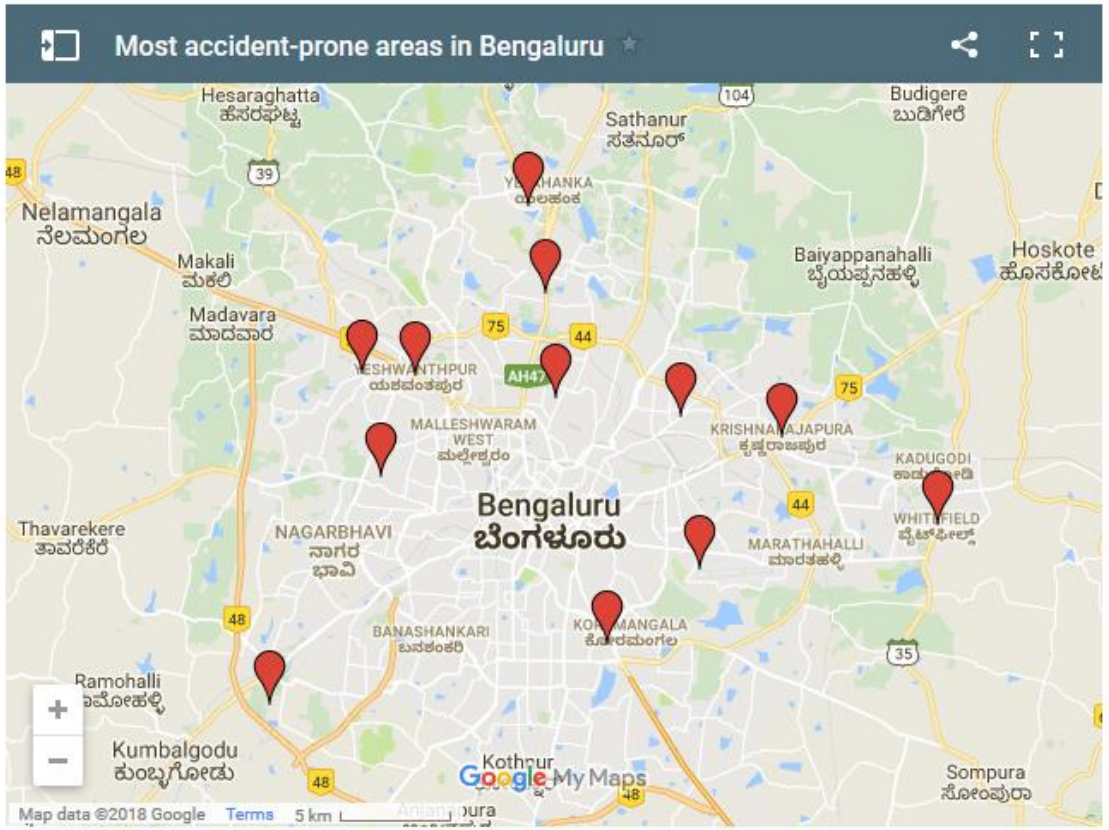


- Weather (visibility, sky conditions, etc.)
- Peak Hour Timings
- Potholes
- Accident prone zones

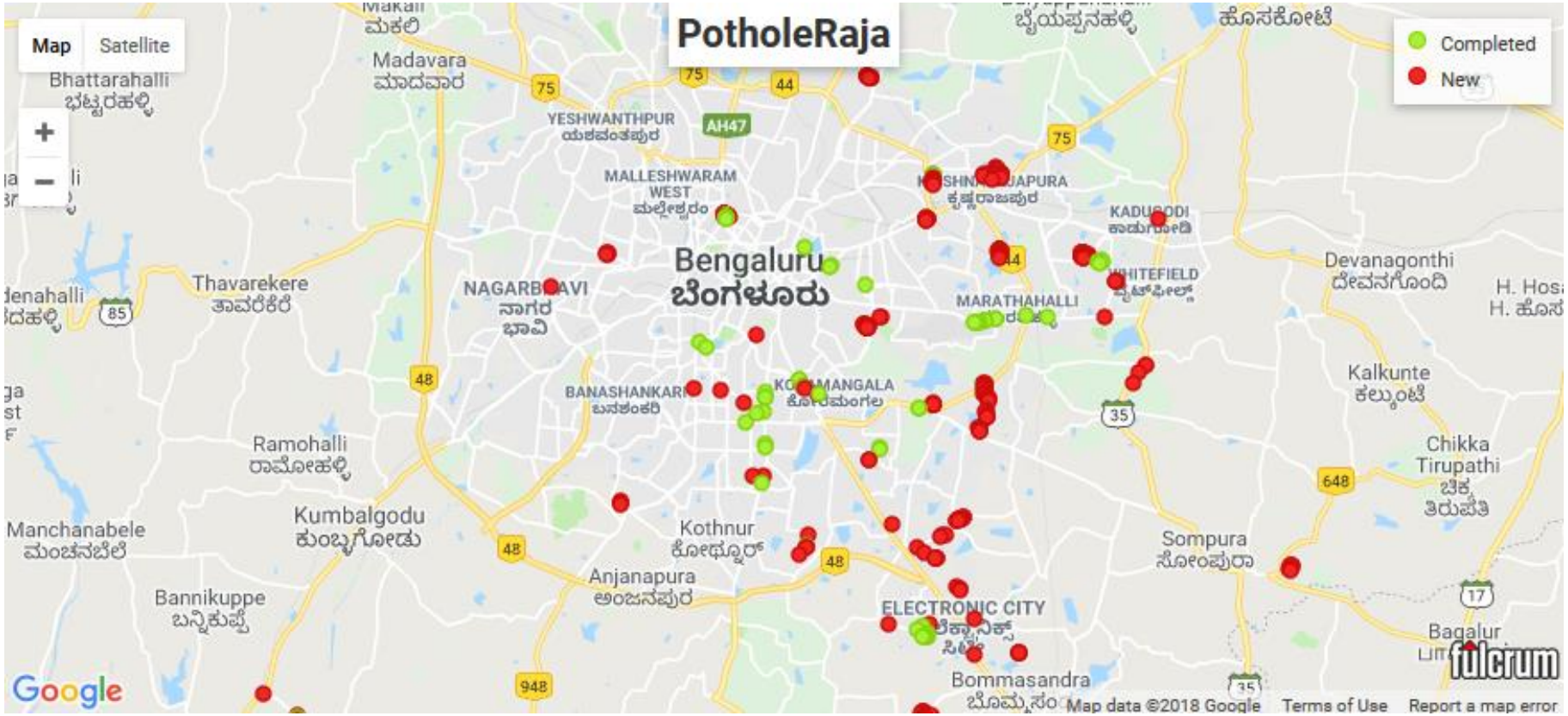
Scrape Weather Data

	Conditions			Comfort				
Time		Temp	Weather	Wind		Humidity	Barometer	Visibility
14:30 Mon, 27 Aug		26 °C	Scattered clouds.	19 km/h	↗	70%	1009 mbar	8 km
14:00		26 °C	Scattered clouds.	15 km/h	→	70%	1010 mbar	8 km
13:30		26 °C	Scattered clouds.	19 km/h	↗	70%	1010 mbar	8 km
13:00		26 °C	Scattered clouds.	22 km/h	↗	65%	1011 mbar	8 km
12:30		27 °C	Scattered clouds.	20 km/h	↗	62%	1011 mbar	8 km
12:00		25 °C	Scattered clouds.	17 km/h	→	69%	1012 mbar	8 km

Get Accident Zones Data

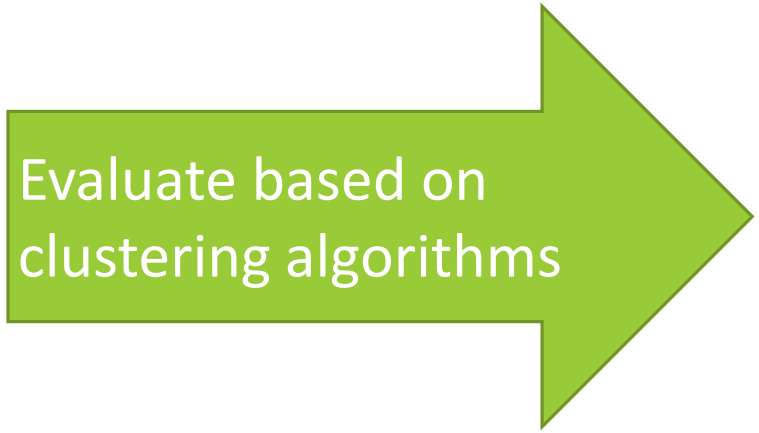


Get Pothole Zones Data



Accident Likelihood Labels

Latitude
Longitude
Location Name
Speed
Time
Alarm Type
Weather Conditions
Peak hour timings
Potholes
Accident prone zones



Labels

High

Low

Machine Learning Algorithms

Latitude
Longitude
Location Name
Speed
Time
Alarm Type
Weather Conditions
Peak hour timings
Potholes
Accident prone zones

Labels
High
Low

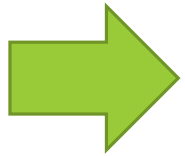
Compare the performance of accident likelihood labelling based on clustering samples

Solution

Latitude
Longitude
Location Name
Speed
Time
Alarm Type
Weather Conditions
Peak hour timings
Potholes
Accident prone zones

Labels
High
Low

ML algorithm training and comparison



Find the best ML solution to predict accident hotspots to raise alarms

Algorithms Tested

K-Means <= Best Performance
DBSCAN
Gaussian Mixture
Mini Batch K-Means
Birch