

Projecting Climate Impacts on Transportation by Diagnosing and Examining the Metropolitan Cities

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Abstract - In this work, we focus on the High Impacts of climate change in Metropolitan cities due to Transportation in India. We first make a study about the Climate change that occur in major Metropolitan Cities (i.e.) any four such as Delhi, Chennai, Bangalore and Vishakhapatnam and Traffic Updates in those Cities. First, We are going to create a Map of our own using Google Maps API which includes features such as Location Detection, Auto Completion and Custom Style Maps which are available in Web Platform. Secondly we will be using open weather map API to fetch the current weather data for cities. These both observation will result us to a statistics showing that Heavy Traffic Places tends to change in Climate and the result is emphasized in the form of Graph. These observations are mailed to the concerned user containing the information about weather of the respected area.

Key Words: Weather Traffic Index, Climate Impacts, Heavy Traffic, Metropolitan Cities, API, Mail.

1. INTRODUCTION

Various studies have shown that the weather conditions affects the transportation system. But, have you ever thought what affects the weather condition? Traffic has broad and significant effects on the climatic changes. This in turn says that both are dependent on each other. As weather can be predicted but can't be controlled, so we are ought to control the traffic. Nearly all drivers surveyed want appropriate relevant weather conditions included with their traffic information. This report provides a roadmap for moving these concepts to reality.

1.1 EXISTING SYSTEM

The Existing work is related on two things WEATHER and TRAFFIC: Weather detection is only being forecasted using algorithms which may not give you 100% current accurate data so we are moving on to API's. API's access current weather data for any location including over 200,000 cities. Current weather is frequently updated based on global models and data from more than 40,000 weather stations. Data is available in JSON, XML, or HTML format which is easy for use and to detect. It is available for Free. Traffic detection is done by using algorithms but it is not efficient and accurate because traffic is dynamic, It varies from minute to minute even seconds so the time you start to detect and fetch may vary so we are moving on to API's. To make our app stand out with detailed information about 100

million places across a wide range of categories, from the same database as Google Maps. There are Google Maps available for specific website for respective usage and also application which forecast the weather. There are no application which has given both Real time Traffic Updates and Weather Forecast together and there are no real time working application which projects the high impacts of Climate Change due to Transportation.

1.2 PROPOSED SYSTEM

To create an application which integrates Real time Traffic Updates and Weather Forecast and provides us the result in form of graph to demonstrate the high impacts of Climate Change due to Transportation. To create a map which gives us the real time traffic updates and to forecast weather for any 4 Metropolitan Cities such as Chennai, Delhi, Vishakhapatnam and Bangalore.

We are using two API's one for weather and other for traffic namely Open Weather Map API and Google Developers Map API. In open weather map API, we use current weather data API to fetch current weather data for places across globe. And in Google Developers Map API, we use Google Maps JavaScript Places API to get live traffic updates.

1.3 PROBLEM STATEMENT

Does the seasonal rainfall occurred in December'17 "as predicted" by Regional Meteorological Department? Any real time application which continuously monitor traffic updates and gives weather forecast as well?



Fig -1: Heavy Traffic during rain in Nov-Dec 2017

1.4 SCOPE

To reduce the Impact of climate caused by Heavy Traffic by predicting the changes in Advance. To benefit the Government Agency to understand the functional characteristics of Metropolitan cities .To reduce much damage to the Society and to prevent from Calamities such as Flood, Cyclone etc .To reduce Inadequate Rainfall, Air Pollution, Global Warming etc.

2. WORKING MODULE

2.1 ARCHITECTURE DESIGN

Client/server architecture is a producer/consumer computing architecture where the server acts as the producer and the client as a consumer. The server houses and provides high-end, computing-intensive services to the client on demand. These services can include application access, storage, file sharing, printer access and/or direct access to the server’s raw computing power. Client/server architecture works when the client computer sends a resource or process request to the server over the network connection, which is then processed and delivered to the client. A server computer can manage several clients simultaneously, whereas one client can be connected to several servers at a time, each providing a different set of services. Internet is also based on client/server architecture where web servers serve many simultaneous users with website data.

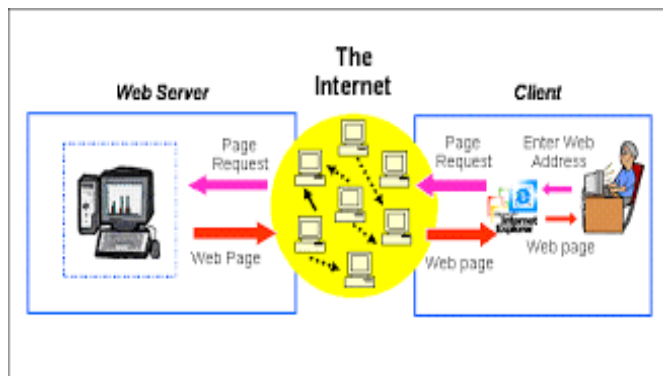


Fig -2: Client –Server Architecture Design

2.2 TRAFFIC UPDATES

Live Traffic Updates are fetched by API from Google .Google Maps JavaScript Places API is the API used to get live traffic updates across places in the Globe . Users can search for places in the search box using city name or pin code . Search box gives you suggestions through auto completion . Users can search through Addresses , Geocodes , Establishments and Strict Bounds . The green, yellow and red routes that Google Maps uses to indicate clear, slow-moving, or heavily congested traffic are a great help when you're trying to determine the fastest way to your destination . Google Maps bases its traffic views and faster-route recommendations on two different kinds of

information: historical data about the average time it takes to travel a particular section of road at specific times on specific days and real-time data sent by sensors and smart phones that report how fast cars are moving right . If Google Maps doesn't have enough data to estimate the traffic flow for a particular section of road, that section will appear in gray on the traffic layer

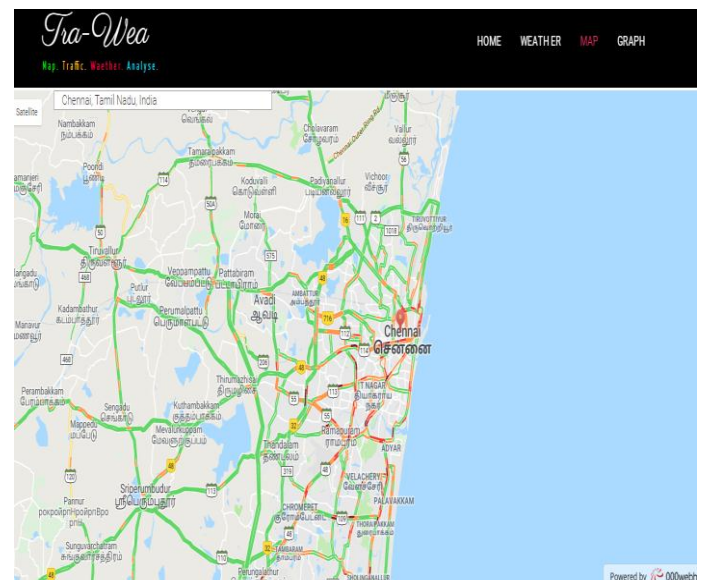


Fig -3: Traffic Updates of Chennai

2.3 CURRENT WEATHER DATA

Current Weather Data is fetched from API by Open Weather Map .Current Weather Data API is the API used to get current weather data across places in the Globe . Users can search for places in the search box by city name . Results will display the city name along with the country . API gives us you results such as Weather , Temperature , Description , Pressure , Humidity , Min Temp , Max Temp , Wind Speed and Wind Direction .



Fig -4: Weather Data of Chennai

2.4 MAIL NOTIFICATION

Mail access is given by API from Google .Google Mail API is the API used to send mail to users regarding their respective search place . Information includes details about weather such as min temp , max temp , pressure , degree , speed , sunrise , sunset , longitude and latitude . This feature overcomes the disadvantage that web application provides to the users so that they can view the information directly from their mail .

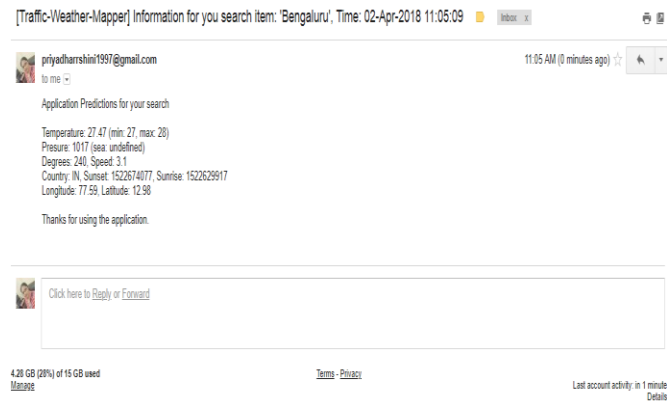


Fig -5: Mail notifying the weather report for Bangalore

3. PROJECT OUTCOME

3.1 GRAPH



Chart -1: Graph Analysis

Graph represents the dynamic representation of traffic and weather ratio of the respected area .It contains two axis : x and y . x represents the traffic value and y represents the time in terms of HH:MM:SS .Weather data is taken directly to the graph This graph showcases that traffic changes dynamically with respect to the change of weather and it proves the climatic changes happens with respect to the traffic .

3.2 OBSERVATION

Statistics representing the Climate change when the Traffic is Heavy .Comparative Study of any four Metropolitan Cities and their Climate changes.

3.3 CONCLUSION

In this project we proposed an idea of integrating traffic and weather updates into real time application. It provides scope for government agency and for drivers. It also notifies the information to the respective users mail .

REFERENCES

- [1] Ye Ding, Yanhua Li, Ke Deng, Haoyu Tan, Mingxuan and Lionel M. Ni , “Detecting and Analyzing Urban Regions with High Impact of Weather Change on Transport “, IEEE Trans. on Big Data ,Vol 3 ,No . 2, pp. 126-138, Jun. 2017.
- [2] M. A. Abdel-Aty and R. Pemmanaboina, “Calibrating a real-time traffic crash-prediction model using archived weather and its traffic data,” IEEE Trans. Intell. Transp. Syst., vol. 7, no. 2, pp. 167–174, Jun. 2006.
- [3] Sanjay D. Sawaitul, Prof. K. P. Wagh, Dr. P. N. Chatur, “Classification and prediction of future weather by using back propagation algorithm-an approach”, IJETAE , ISSN 2250-2459, Volume 2, Issue 1, Jan. 2012.
- [4] A. Muthulakshmi and S. Bhagavathi Priya, “A Survey on weather forecast to predict rainfall using Big Data Analytics “, IJSET Int. Conf. Big Data Analytics, Vol 2 , Issue 10 , 2015 , pp. 879-886 , Oct. 2015 .
- [5] Badhiye S. S, Dr. Chatur P. N, Wakode B. V, “Temperature And Humidity Data Analysis For Future Value Prediction Using Clustering Technique: An Approach”, IJETAE, ISSN: 2250-2459, Volume 2, Issue 1, Jan. 2012.
- [6] Darcin Akina, Virginia P. Sisiopikub and Alexander Skabardonisc “Impacts of Weather on Traffic Flow Characteristics of Urban Freeways in Istanbul”, Procedia Social and Behavioral Sciences, pp. 89-99, July 2011.
- [7] Mihir Mavalankar, Akshata Patel and Usha Patel, “ A novel approach for traffic updates based on user feedback for smart city” , IJCSC, Volume 7, number 2 , pp.8-11 , March 2016-Sept 2016.
- [8] Application Programming Interface [Online]. Available: <https://www.youtube.com/watch?v=s7wmiS2mSXY>
- [9] Google Maps API Introduction [Online]. Available: <https://www.youtube.com/watch?v=ZE8ODPL2VPI>
- [10] Material Design Bootstrap [Online]. Available: <https://mdbbootstrap.com/getting-started/>

[11] Google Maps JavaScript API [Online]. Available:
<https://developers.google.com/maps/documentation/javascript/>

[12] Google Maps JavaScript API Library [Online]. Available:
<https://developers.google.com/places/javascript/>

[13] Google Maps Static Maps API [Online]. Available:
<https://developers.google.com/maps/documentation/static-maps/>

[14] Java Script [Online]. Available:
<https://www.w3schools.com/js/default.asp>

[15] Spring Framework [Online]. Available:
<https://spring.io/>, <https://www.javatpoint.com/spring-tutorial>, <https://www.tutorialspoint.com/spring/>,