iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 5 **Issue:** XI **Month of publication:** November 2017

DOI:

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor:6.887
Volume 5 Issue XI November 2017- Available at www.ijraset.com

Big Data Analysis of Vehicle Sharing With Respect To Environmental Pollution

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Abstract: ***As the populations increase in a rapid phase the commutation between the work and the home in busy street becomes more and more difficult. Personally we spend a lot of money and next time is being wasted, environmental wise due to traffic a lot of pollution is being generated. To address both the issues simultaneously is the main objective is, the taxi ride sharing solves the problem both personally and environmentally. The measure to quantitatively weigh the amount of traffic controlled or total air pollution reduced is a big boost for the government to plan in the future. We get the distance from the map between the present location and target location and calculate the air pollution and traffic saved but it cannot be the same scenario every time, suppose there is heavy traffic in the shortest path instead of taking it we cloud choose the bit longer path avoiding the traffic thus saving the time and fuel . To measure the pollution controlled we get the information from the pollution control board and calculate the time the engine was on and fuel exhausted. We also implement the intelligent routing for choosing the path based on the current traffic scenario so as to find the optimal route which reduces traffic and pollution. The main purpose of the system is to improve the overall efficiency of the traffic control over the city with the effective usage of the vehicles for the cabs. The big data analysis of the traffic graph gives insight to government for the future planning of the roads and other projects.***

Keywords: Big data, Pollution, Traffic, Upload, Route, Graph

I. INTRODUCTION

Big data refer to technologies and initiatives that tackle diverse, massive data to address the traditional technologies, skills, and infrastructure efficiently.

The volume, velocity, and variety of data are greatly high. Big Data is not a single technology or initiative, but it depends on several domains of business and technology. Recently developed technologies make it possible to recognize value from Big Data. For instance, governments and even Google can track the emergence of disease outbreaks through social media signals. In recent times the population growth is high in cities and so the commutation is difficult between the locations, to reduce the hassle we introduce the idea of taxi ride sharing.

The sharing concept has been carried out in few locations but without proper implementation or order, “any plan without planning and order is set to fail”. Hence we give out the concept of sharing the ride so that people can save money and time personally and the environment is also saved.

We will be able to measure the money saved quantitatively but the air pollution controlled. To measure the pollution controlled we get the information from the pollution control board and calculate the time the engine was on and fuel exhausted. We also implement the intelligent routing for choosing the path based on the current traffic scenario so as to find the optimal route which reduces traffic and pollution.

A. Purpose Of The System

The main purpose of the system is to improve the overall efficiency of the traffic control over the city with the effective usage of the vehicles for the cabs. When the number of the vehicles decreases in the area and wide spread across the city the particle levels will the maintained below the critical level so that deceases like asthma and bronchitis is reduced. The vehicle numbers also decreases as it is maintained efficiently and hence the overall traffic is reduced. The cost efficiency of both the individuals and the country is greatly improved. The time spent on the traveling is decreased on city wide hence people don’t have to spend in roads for longer period of time. The big data analysis of the traffic graph gives insight to government for the future planning of the roads and other projects.The government can slow plan for the other modes of cleaning the environment from the particle pollution with the details from graph. Traffic control can be regulated with the timed traffic analysis.

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II. SYSTEM ANALYSIS

A. Existing system

When large groups of people want to travel to same destination the cab allocation becomes a problem. The admin has to input the timing to the server with help of driver which causes the data errors. As the exact GPS positioning is not used the live situation on the traffic is not known until a feed back is got which causes a few cabs to be delayed.A definite value is not given for the amount of pollution is saved, like in the case of the money which can be calculated. The riding algorithm always chooses the shortest path which is not feasible. Analysis on the traffic congestion and avoidance route is not addressed in the existing system. Multiple stakeholders with different of conflicting ideas are present which is not discussed hence it leads to the failure of the system. Only small scale share riding has been proposed but on large scale the current system is not feasible.

B.proposed system

Governments want less traffic and pollution, taxi companies want to maximize their profits and passengers would like to reach their destination quickly and cheaply. Ride sharing has been proposed as a strategy to decrease road traffic and gasoline consumption, while at the same time serving the transportation needs of city dwellers. The effects of this parameter on the total savings and costs of the ride-sharing solution. Heuristic-based solutions have been proposed for real-time dispatching of taxis, but they also have limited scalability. The goal is to minimize the total cost or maximize the total utility of sharing while meeting a set of constraints.
Each taxi will be traveling to definite favorite locations at certain times of the day that it would drive to when it is not occupied to implement the customer trends. Each group is associated with a drop-off location and a set of ride-sharing constraints. The other groups they are willing to share a ride with and how much additional time/distance they can tolerate.

III. DEVELOPMENT ENVIRONMENT

A. Hardware requirement

Processor Type : Intel Pentium Processor
Processor Speed : 2.6GHZ
RAM : 2 GB
Hard Disk : 20 GB

B. Software requirement

Front end : J2SE, Scripting Languages
Back end : MYSQL
Operating system : Windows 7
Web application : J2EE Frameworks, Hibernate
Web browser : Mozilla Firefox
Server : Tomcat server

IV. MODULE DESCRIPTION

A.Data Upload Collections

The user has been booking the Taxi in different sectors. Thus all the details have been uploaded to the server. The server contains both User Details and Booking Details. Thus the All In formations are Permitting to be viewed by admin. User details are uploaded to the drivers.

B. Ride Allocations

The Drivers having the user in formations. They decide the type of sharing as user wish. Admin gets all the information and segregates the data according to the destination and timing.Then the Driver sends the information about the allocations of the cabs. The ride allocation is entirely based on the preference of the customer if they want to share the ride. If they prefer no sharing of the taxi then they will be allocated separately.

C. Path Definitions

The admin based on the source, destination, timing decides the shortest route to the destination with the allocation of the passengers and informs to the driver along with the contact details of the passengers for further communication between the passenger and the taxi driver.

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D. Trafic Integration With Path

This traffic integration is to mainly reduce the pollution based on the traffic so we must avoid the traffic. To avoid the traffic we decide to integrate the traffic details into the system to chose an alternative path apart from the shortest path so as to save the time and traffic congestion caused by the existing traffic. We take the next shortest path so as to avoid the time based traffic.

E. Graph Generated With Appropriate Values

This graph generation model is to show to the people who so ever is concerned about the pollution saved and the exact number of carbon emission saved by implementing the idea so as to continue the future development of the country.

V. SYSTEM ARCHITECTURE

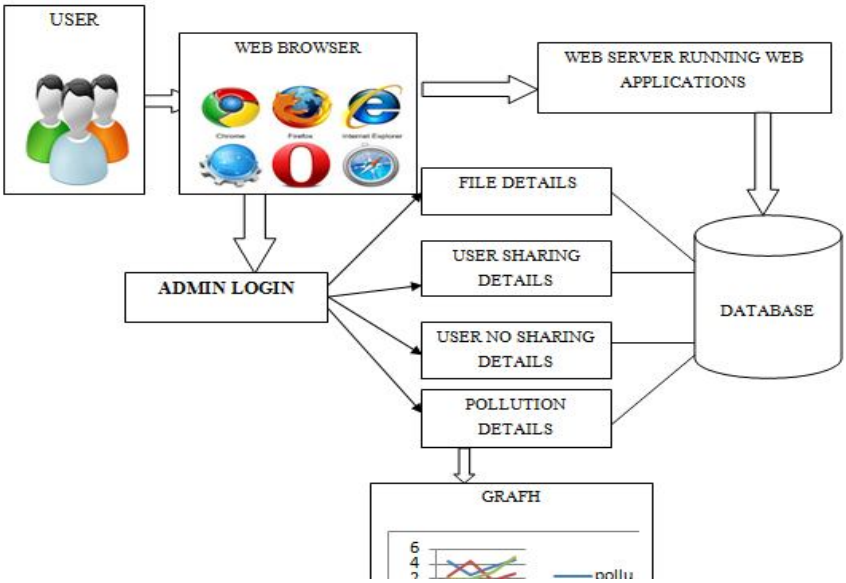


Fig: System architecture

A.Data Flow Diagram

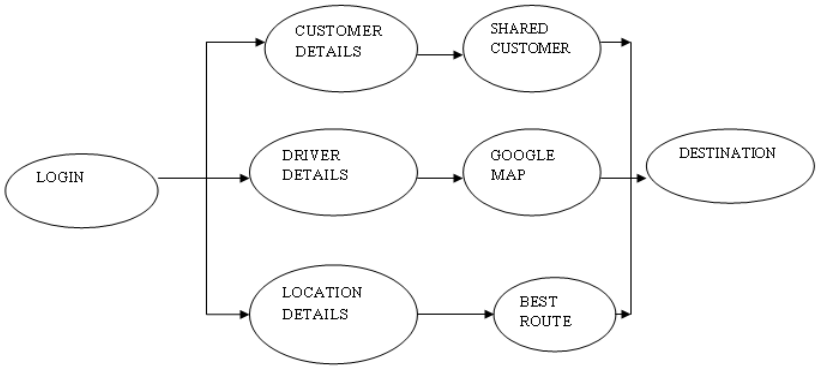


Fig: Dataflow Diagram

VI. CONCLUSION

A new framework that is both scalable and flexible to support the simulation of a rich set of realistic taxi ride-sharing scenarios. The scalability properties of the framework make it possible to run large-scale studies that explore a wide range of what-if scenarios through parameter sweeps. We have shown that this model attains a good balance between simplicity and expressiveness. Another important contribution of this work is the novel shortest path indexing scheme where we make use of cache-coherent layout to speed up shortest path queries substantially. The implementation of our simulation model is fully integrated with Map Reduce, thus, enabling a variety of batch analysis tasks on taxi ride sharing.

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VII.FUTURE ENHANCEMENT

Our current shortest path indexing technique maintains a full distance matrix in memory. Though this could be mapped on disk, the storage size will not scale well for a large road network. We would like to experiment with a tiled caching strategy where we only keep the distance matrix for the most popular intersections and perform full shortest path computation for less popular nodes.

In addition, we would like to implement a load balancer for the shortest path queries where the shortest path database could be located on a separate machine/cluster. This would allow us to make better use of the computing resources when having multiple simulator instances.

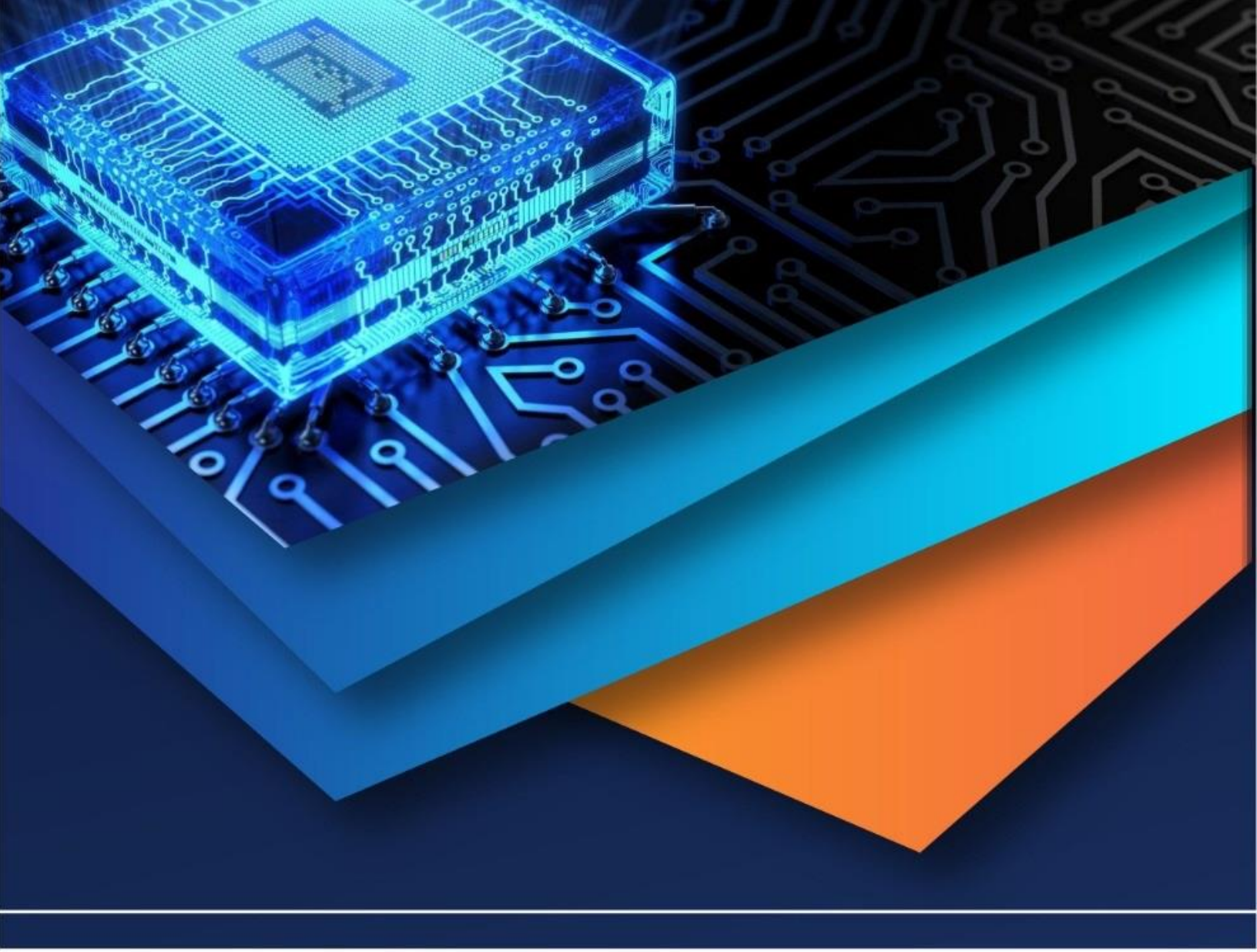
VIII. ACKNOWLEDGEMENT

We express our thanks to all faculty and staff members of the Department of MCA, TPGIT. Also thanks to Surya informatics Pvt ltd, Chennai for their constant support and encouragement.

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