Analysis of Transportation problem in Taxi services of Amravati city and its solution using software technology

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***Abstract*: Taxi aggregation model is found to be more compatible to Indian market with huge potential backed by excess customer demand and is experiencing a double digit growth. Taxi is an important transportation mode, delivering millions of passengers to different locations in urban areas. The growing cities have generated the high levels of demand for travel by motor vehicles in the cities. To match the increasing travel demand commensurate efforts have not been made to develop the mass transport systems. In a smart city, efforts to reduce energy consumption are focused not only on supporting the development of smart grid systems or prosumers, but also on reducing traffic. Traffic adversely affects the environment and can contribute to a lower quality of life due to, for example, air pollution, excessive noise levels and excessive energy consumption. Carpooling is a system through which users with similar routes can use one car. Its main goal is to match people who commute to work; therefore, carpooling can be an effective method of alleviating traffic jams during rush hours. Taxis equipped with GPS sensors are an important sensory device for examining people's movements and activities. Intelligent transportation systems for taxi dispatching and time-saving route finding are already exploring this sensing data. The present implementation has passengers request a taxi when they depart; then they wait until they are being picked up and delivered to their destination.**

***Keywords*: Taxi, taxi transportation system, Intelligent Transportation System, passenger- finding potential, recommendation, carpooling.**

Introduction:

The concept of smart city has emerged as a novel paradigm to deal with existing problems and circumvent potential issues in modern cities, such as traffic congestion, energy consumption, and environment pollution. The Transportation Problem is one of the subclass problems in travelling. We are trying to solve Transportation problem. We proposed a system as solution for transportation problem. It accepts taxi passengers' real-time ride requests sent from smart phones and schedules proper taxis to pick up them via ridesharing, subject to time, capacity, and monetary constraints. Taxi riders and taxi drivers use the taxi-sharing service provided by the system via a smart phone App. The Cloud first finds candidate taxis quickly for a taxi ride request using a taxi searching algorithm supported by a spatio-temporal index. Ridesharing is a promising approach for saving energy consumption and assuaging traffic congestion while satisfying people's needs in commute. Ridesharing based on private cars, often known as carpooling or recurring ridesharing, has been studied for years to deal with people's routine commutes. This project has given me the opportunity to study the possible optimization in the existing system.

Proposed System:

Modules of Proposed System:

Proposed system can be divided into the following modules:

- Registration process for Driver and user

Driver and rider should make registration first to login into the system.

- Login into the application.

Both can login to system using correct username and password. The authentication error will occur in case of wrong username and password.

- Request by rider for taxi

Rider can request for the taxi through this login. His location will be automatically traced by the system.

- Regular customer Preference.

Customer preference will be saved by the system depended on the regular use of the taxi.

- Gender Preference.

Gender preference i.e. male or female will be saved by the system depended on the options that the user mention on the registration form.

- Habit Preference

Habit preference i.e. whether smoker or drinker allowed as taxi shared partner, will be saved by the system depended on the options that the user mention on the registration form.

- Waiting time calculation

As soon as request is floated in the system by the customer, the same is received by the driver available in the vicinity and accordingly based on the location of the driver waiting time is calculated

- Fare calculation

After finishing of the ride sharing request, fare calculation made based on number of customers sharing ride

- Ride Completion and cancellation

In this module the confirmation rejection of the request can be done.

System Architecture:

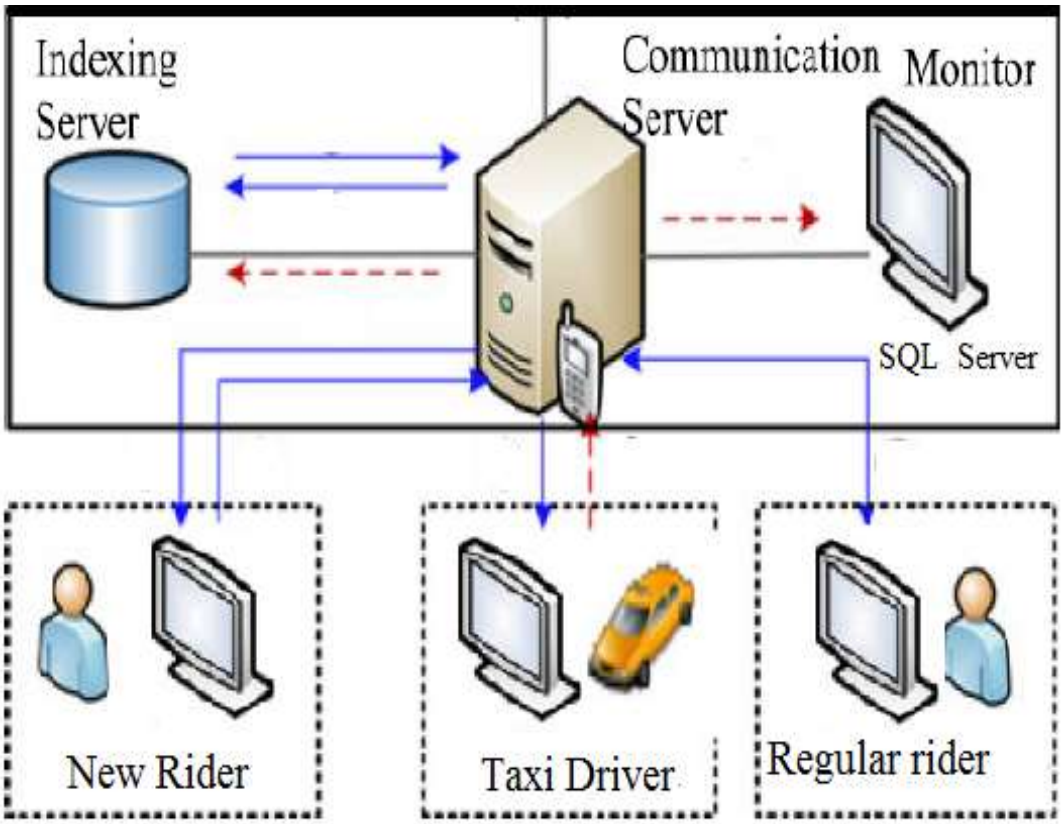

Fig: System Architecture

The architecture of our system is presented in Fig. 3.1 The communication server is main server from this system it consist the multiple server for different purposes. Communication server can provide communication between rider, taxi driver and a monitor for administers to oversee the running of the system. Taxi drivers and riders use the same system to interact with the system, but are provided with different user interfaces by choosing different roles. Rider can send request to communication server then communication server send this request to the sql server this server save all data of the rider this next to it will sent the notification to the taxi driver then they will send confirmation and rejection to the communication server then communication server will send the this notification to the index server then it can provide priority to the driver. Then send confirmation to the rider and also send the waiting time to the rider.

Application

This system basically developed for taxi driver and taxi rider. This system more applicable in the metro cities because in the metro cities delivering millions of passengers to different locations. However, taxi demands are usually much higher than the number of taxis in peak hours of major cities, so that time this taxi ride sharing system can help to getting the taxi.

Advantages

The advantages of the proposed system are as follows:

• **Environmental protection.**

Multiple people taking the same trip in a single vehicle can decrease their net and per capita emissions pollution significantly, depending on the size of the vehicle and its propensity to emit greenhouse gases and other air pollutants.

• Avoidance of costly car-related expenses.
Ridesharing programs allow people to pool resources or obtain fully subsidized funding for expenses including operating costs (fuel, oil, tires, etc.), maintenance, license and insurance, parking, and taxes and finance charges.

• Reduced congestion, and construction and maintenance costs.
Ridesharing leads to fewer cars on the road, which has an immediate impact on congestion and, over the long-term, can reduce roadway construction and maintenance costs. Public agencies are now able to monetize these cost savings more accurately and reallocate funding to support the startup and expansion of ridesharing programs.

Disadvantages
The proposed work is for seen to have significant uses in application. This work helps us to provide the significant input to get desired output avoiding ambiguity. But it has some limitations like,

- Internet connection required.
- Waiting time may increase if the taxi get breakdown while reaching the source location.

After confirmation of ride no additional passengers can be accommodated even if seats are available.

System Flow Diagram

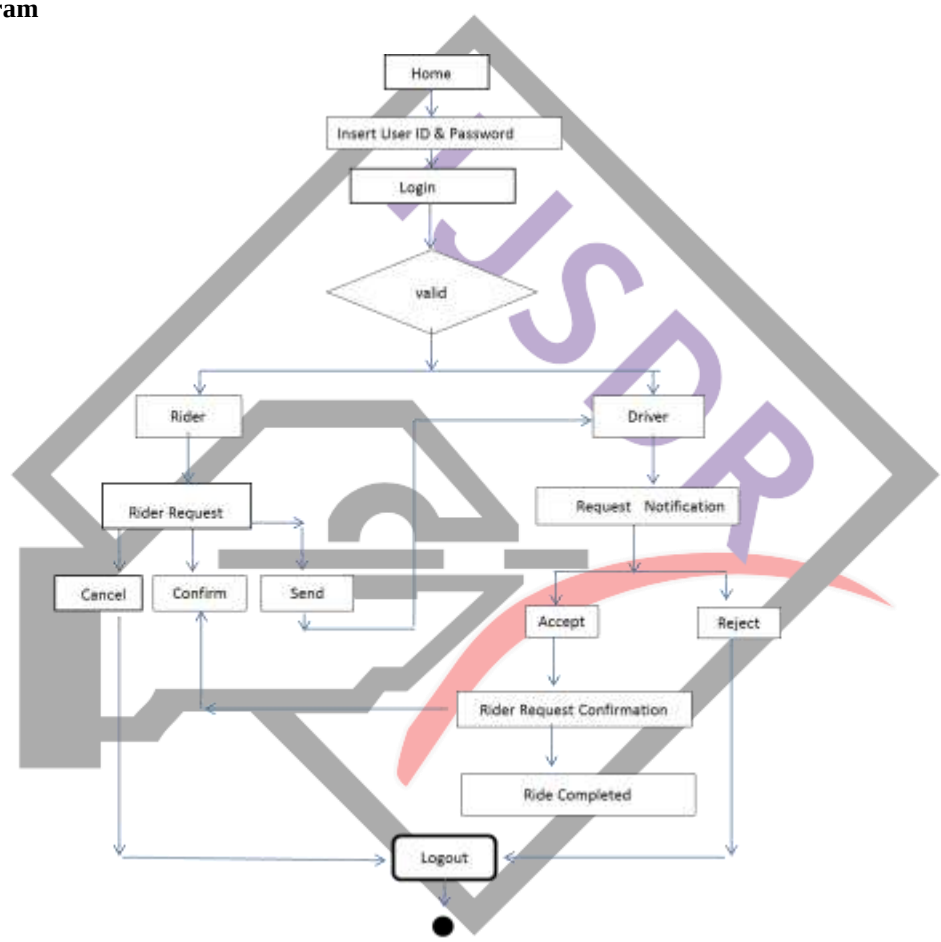

Fig : System Flow Diagram for proposed system

In this above diagram of proposed system can show the overall flow of the system. In that rider and driver can enter their user id and password then enter in the system application then they can do their work. Rider can send the request to the driver for the rid then driver give the notification to rider he can accept their request or not then ride is complete.

Conclusion:
Real time taxi sharing system is very effective, to reduce pollution and the congestion of vehicles in cities. It also provides an opportunity to meet new people. System saves the total travel distance of taxis, while delivering passengers. Amravati city is facing a lot of traffic related problems like construction of flyovers, railway lines, roads has added more to it. This system can enhance the delivery capability of taxis so as to satisfy the commute of more people. The system can also save the taxi fare for each individual rider while the profit of taxi drivers does not decrease compared with the case where no taxi sharing is conducted. To save the time for finding a taxicab and reduce unnecessary traffic flows as well as energy consumptions caused by cruising taxicabs, we proposed a taxi-passenger recommender system based on the pick-up behaviors of high-profit taxi drivers.

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