JCSE International Journal of Computer Sciences and Engineering Open Access
Research Paper Volume-6, Special Issue-2, March 2018 E-ISSN: 2347-2693

A Reliable Ridesharing Service Based On Group Queries

R.Akshaya[1*], Umadevi[2], N.Karthikeyan[3]

[1]Department of Computer Science, Srimad Andavan Arts and Science College (Autonomous), Trichy
[2]Department of Computer Science, Srimad Andavan Arts and Science College (Autonomous), Trichy
[3]Department of Computer Science, Srimad Andavan Arts and Science College (Autonomous), Trichy

Available online at: www.ijcseonline.org

Abstract- In recent days, everyone is utilizing taxi for riding but when there is a need of taxi we have to wait for a long time so for dipping the issues and practical a taxi- Sharing system is developed that accepts taxi passenger's real -time ride requests sent from passengers and schedules proper taxis to pick up them via ridesharing and monetary constraints. With the deep penetration of smart phones and ridesharing is envisioned as a capable solution to transportation-related problems in metropolitan cities, such as traffic congestion and air pollution. Despite the probable to afford significant societal and environmental benefits, ridesharing has not so far been as trendy as expected. Notable barriers comprise social discomfort and safety concerns when traveling with strangers. To conquer these barriers, a new type of Social-aware Ridesharing Group (SaRG) queries which retrieves a group of riders by taking into account their social connections and spatial proximities. While SaRG queries are of practical utility. So, new devise provides an Branch and Bound algorithm with a set of powerful techniques to tackle this problem. And also current several incremental strategies to speed up the search speed by sinking recurring computations. Moreover this novel index tailored to the problem to further speed up query processing.

***Keywords*:** Taxicab System, Demand Modeling, Big Transportation Data.

I. INTRODUCTION

Taxi is a vital transportation in the metropolitan mode sandwiched between public and private transportations, delivering millions of passenge r's to different locations in urban areas. Transportation mainly consists of where an entity is, where that individual wants to go, and when that individual wants to do so. After decisive information different algorithms can be useful to convince the user as well as transportation require. Ridesharing is the best move toward for improving transportation. It saves fuel consumption, reduces traffic congestion and fulfills people's requirements in commute. In difference to the recurring ridesharing, taxi ridesharing is most demanding as both passengers' queries and positions of taxis are highly vibrant and difficult to predict: 1) any user can submit a query anytime and anywhere, which is instantaneous in most cases; and 2) a taxi persistently travels on roads, picking passengers up and dropping them off. Their destinations Ridesharing is a method where shared rides can be agreed between strangers, with very short perceive. The purpose of this paper is to advance the ridesharing model. The paper essentially concentrates on various ridesharing algorithms and their impact on prospect transportation systems. In any company that provides taxi-ridesharing service, user submits his query through any mobile device. A query indicates the location of pick-up point, location of delivery point. It also indicates the time interval within which a taxi must reach the pick-up point as well as the objective point. Whenever a new query is established, suitable taxi is assigned to the query that can attain the location within the time interval. After conveying the taxi to the given reservation the route of the taxi is restructured as a result. However, taxi difficulty are erratically much higher than the number of taxis in peak hours of foremost cities, resulting in that several people expend a long time on roadsides before getting a taxi. Ridesharing is a mounting approach for saving energy consumption and extenuating traffic congestion while fulfilling people provisions. Ridesharing based on private c ars, frequently known as carpooling or recurring ridesharing, has been studied for years to treaty with people's routine commutes, e.g., from home to work. Recently it became more complicated for people to call over a taxi during rush hours in ever more crowded urban areas e.g., from home to work. In difference to accessible ridesharing, real-time taxi-sharing is one of the auxiliary challenging

because both ride requests and positions of taxis are highly active and complicated to predict. Firstly we all know that, passengers are habitually lazy to plan a taxi trip in advance, and typically submit a ride request shortly prior to the departure. Understanding and predicting passenger demand are necessary for the taxicab business. With specific knowledge of demand, taxicab companies can schedule their fleet and dispatch individual taxicabs to diminish practical problem and maximize profits. Nowadays, there is tremendous unused transportation capacity worldwide in the form of unoccupied seats in

© 2018, IJCSE All Rights Reserved

private cars. Not only would filling some of these seats reduce smog, carbon emissions, and fuel consumption, but it also could make opportunities for escalating local social capital. Ridesharing is a usual and practical approach to make use of these unoccupied seats and is envisioned as a capable clarification to transportation-related harms (e.g., traffic congestion, air pollution) in metropolitan cities. As reported in a recent study, the potential traffic decline in a city could be as high as 31-59% if users are ready to share a ride with people whose travel patterns are analogous. Moreover, ridesharing can save on traffic expenditure for both drivers and riders. There have been some available works on the ridesharing trouble from both industry and academia with a focus on organization of ridesharing trips and schedules. Given a driver's origin and destination, a ridesharing system precedes the driver a set of riders by allowing for the trip and schedule association. usually, current works can be categorized into three types: i) static ridesharing which denotes to the state of affairs where the needs of drivers and riders are known in advance; ii) dynamic ridesharing where riders and drivers continuously enter and disappear the system and are harmonized up in real time or on a short notice; iii) trust-conscious ridesharing which addresses the trust concern in ridesharing. This paper is troubled with trust-conscious ridesharing. Existing approaches comprise the adoption of reputation-based systems and profile checking by linking with social networks like Facebook. However, these attempts cannot remove the major barriers in current ridesharing systems such as social anxiety and safety concerns when traveling with strangers. For example, they do not allow drivers to check whether their riders are trustable and may direct to ridesharing groups full of strangers. Little work studies ridesharing by captivating social relations into consideration.

II. RELATED WORK

[1] Most of the early studies measured static ridesharing, which refers to the scenario where the requirements of drivers and riders are known in advance. We inspection static ridesharing in the following categories: slugging, carpooling, and dial-a-ride. Slugging is a typical structure of ridesharing where passengers walk to the basis of the driver's trip, board at the departure time, debark at the driver's destination and then walk to their own destinations.

[2] Carpooling is another delegate application of ridesharing for daily commutes, where private car drivers affirm their availability for pick-up and later bring back riders. The main concern in carpooling is the obligation of riders to drivers and the recognition of each driver's route to reduce the travel cost. For small-size carpooling, it can be solved by using linear programming techniques. To compact with the large-size problem, several heuristic algorithms have been proposed more recently, engaged a time-space network flow technique to extend a model for the many-to many carpooling scheme with multiple vehicle and person types. They built-up a solution based on Lagrangian relaxation.

[3] In the dial-a-ride problem, no private car is occupied and the transportation is agreed out by public vehicles (such as taxis) that afford a shared service. Users devise requests by specifying the beginning and purpose locations. The aim is to design a minimum-cost set of vehicle routes to accommodate all requirements under a number of spatial-temporal constraints. Earlier works on DARP can be established in a survey. DARP is NP-hard in general. Only problems that grip a small number of vehicles and ride requests can be solved faithfully and the methods are often based on integer programming techniques. For large-scale DARP, heuristics are still the most admired methods. These approaches usually have two phases, where the first one is to get an early schedule and the second one is to progress the clarification by local search.

[4] GPS trajectory can be used to recommend pick-up points for taxi-drivers. In this method GPS data and spatio-temporal clustering is used for recommending pickup points for taxi-drivers. It is a two-step process: data processing and real-time recommendation. Firstly, historical pick-up points are analyzed according to their intervals. Clustering of these points are done at different time and different regions to create candidate pick-up points. In the second step, ranking of candidate pick-up points are done around the taxi. According to this ranking top-5 valuable pick-up points are recommended for taxi drivers.

[5] Recurring ridesharing deals with routine commutes. There are already existing websites and mobile applications for this purpose, such as Avego. Given the usual small size of the problem, researchers are able to solve it optimally by using linear programming techniques [6][2]. Compared to recurring ridesharing where queries are static, i.e., routes and time schedules are known in advance, the dynamic taxi ridesharing problem we studied here is more challenging, as queries are generated in real time and the routes of taxis change continuously.

III. METHODOLOGY

EXISTING PROCESS

Taxi is an important transportation mode between marketable and private transportation, delivering millions of passengers to different locations in urban areas. However, the number of taxi is much less than its demand in peak hours of major cities, due to this many people

© 2018, IJCSE All Rights Reserved

stand at roadside waiting for the taxis. Historically, such passenger demand has been investigated by manual procedures (e.g., creating surveys or sampling. However, these manual studies are often dated, incomplete and difficult to use in real time. In particular, passengers have more complexity in riding service. As a result, both long-term historical and short-term real-time demand knowledge shall be utilized to capture such dynamics. However, we face a challenge to create an accurate demand model by combining both historical and real-time demand and facing stranger's problem while acquiring the service.

ARCHITECTURE

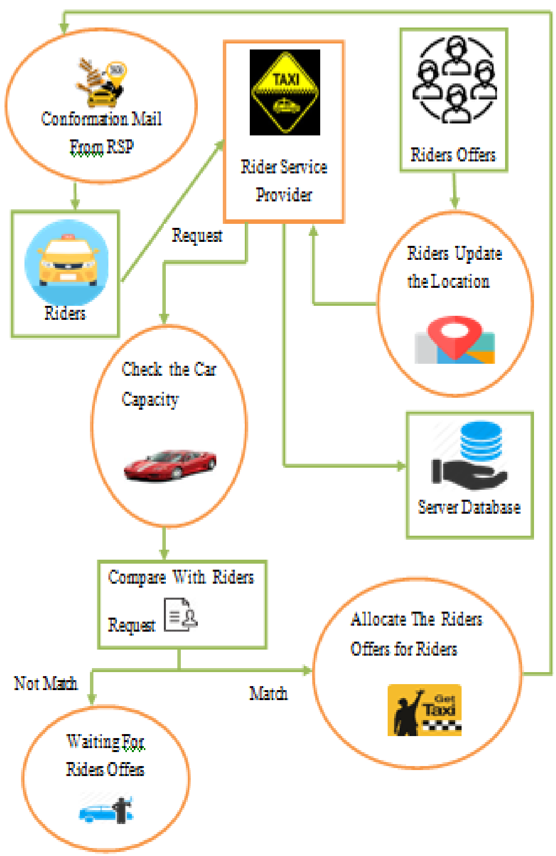


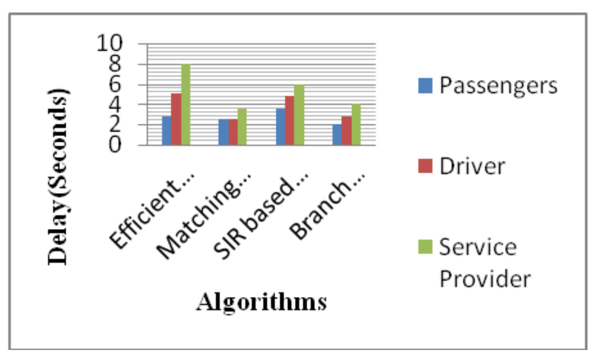
Fig 1. Architecture

Fig. 1 shows the architecture diagram of Taxi-ridesharing system. The System contains of two parts Driver and Rider. Both of them access the ride distribution system through the ride sharing submission installed in their mobile device. To contribute in the ride sharing, both of them have to register for the first time using their application. This registration and login process is exaggerated by the registration service and the user account data is stored in the Accounts profile database. Apart from the login data, the accounts profile database also comprises of other details such as the user address, Phone no, number of seats and the car type in holder of a driver. The process begins with the rider registering his ride through this application. The rider registration data comprising of source, destination address and start time of the ride is then permitted on to the service through the ride sharing service part. The rider after login searches for the ride through his application. The ride request is handled by the ride sharing service provider. The processed search result is accessible to the rider along with the driver information and cost. After the rider chooses a driver, rider request is approved on to the driver's application by the ride sharing service. After the driver's authorization, driver send confirmation message on rider's side and rider are enabled to converse through the ride sharing application.

PROPOSED SYSTEM

This system saves energy use and eases traffic congestion while attractive the capacity of commuting by taxis. In the system, taxi drivers independently decide when to join and leave the repair using browser. Passengers present real-time ride needs using the similar browser. Each ride request consists of the source and purpose of the trip. After getting a new request, it will first search for the taxi which minimize the travel distance augmented for the ride ask for and satisfies both the new ask for and the trips of obtainable passengers who are by now assign to the taxi, subject to occasion, ability, and financial constraints. With a solid agreement, the updated schedules will be then given to the matching taxi drivers and passengers. In the proposed system a new type of Social-aware Ridesharing Group (SaRG) queries to house the real-world need of considering communal comfort and faith in ridesharing. An SaRG query retrieve a ridesharing group where each rider's trip is alike to that of the driver, and each associate of the ridesharing group should be recognizable with at least k additional group members. Ridesharing is a natural and realistic approach to make use of these vacant seats and is envisioned as a talented solution to transportation-related problems.

PERFORMANCE ANALYSIS



© 2018, IJCSE All Rights Reserved

Fig.2 Performance Analysis

From the above graph, the performance of this proposed ride sharing service is evaluated by comparing the response time among the different parts in this system. So the proposed branch and bound algorithm provides reliable service and very low latency compared with other existing algorithms.

IV. CONCLUSION

Real time taxi allocation system is very effectual means to reduce contagion and the jamming of vehicles in cities System saves the entirety travel coldness of taxis when delivering passengers. Our system can improve the delivery ability of taxis in a as to satisfy the travel of more people. The system can as well save the taxi fare for each person rider while the income of taxi drivers does not reduce compared with the case anywhere no cab sharing is conducted. In this system, have introduced a new practical type of SaRG queries solves the ridesharing difficulty with flexible social constraints. An SaRG query aims to find a collection of riders in which each rider's ridesharing trip is close to that of the inquiry issuer and each member in this group is recognizable with at least k other members. To planned a series of efficient algorithms to tackle SaRG queries. A wide empirical study on real datasets demonstrates that the proposed techniques achieve attractive query performance. As for future work, plan to work on the following three extensions. First, intent to examine weighted relations in social-aware ridesharing group queries. Second, plan to design more modified ride requests in our ridesharing system to make proposed SaRG queries more sensible.

REFERENCES

[1] N. Agatz, A. Erera, M. Savelsbergh, and X. Wang. Sustainable passenger transportation: Dynamic ridesharing. Erasmus Research Inst. of Management, 2009.

[2] N. Agatz, A. Erera, M. Savelsbergh, and X. Wang. Optimization for dynamic ride-sharing: A review. European Journal of Operational Research, 223(2):295–303, 2012.

[3] A. Attanasio, J. F. Cordeau, G. Ghiani, and G. Laporte. Parallel tabu search heuristics for the dynamic multi-vehicle dial-a-ride problem. Parallel Computing, 30(3):377–387, 2004.

[4] E. Badger. Slugging–the people transit. 2011.

[5] B. Balasundaram, S. Butenko, and I. V. Hicks. Clique relaxations in social network analysis: The maximum k-plex problem. Journal of Operations Research, 59(1):133–142, 2011.

[6] R. Baldacci, V. Maniezzo, and A. Mingozzi. An exact method for the car pooling problem based on lagrangean column generation. Journal of Operations Research, 52(3):422–439, 2004.

[7] R. W. Calvo, F. de Luigi, P. Haastrup, and V. Maniezzo. A distributed geographic information system for the daily carpooling problem. Computer Operation Research, 31(13):2263– 2278, 2004.

[8] B. Cici, A. Markopoulou, Frias-Martinez E., and N. Laoutaris. Assessing the potential of ride-sharing using mobile and social data: A tale of four cities. In Proc. ACM Int'l Conf. Pervasive and Ubiquitous Computing (UbiComp '14), pages 34–43, 2014.

[9] Standford Large Network Dataset Collection. Online available at: http://snap.standford.edu/data/index.html.

[10] J. Cordeau. A branch-and-cut algorithm for the dial-a-ride problem. Journal of Operations Research, 54(1):573–586, 2003.

[11] J. F. Cordeau and G. Laporte. The dial-a-ride problem: Models and algorithms. Annals of Operations Research, 153(1):29–46, 2007.

[12] Dianping. http://www.dianping.com.

[13] P. M. d'Orey, R. Fernandes, and M. Ferreira. Empirical evaluation of a dynamic and distributed taxi-sharing system. In Proc. IEEE Int'l Conf. Intelligent Transportation Systems (CITS '12), pages 140–146, 2012.

[14]Geolife.http://research.microsoft.com/projects/geolife.

[15] A. Guttman. R-trees: A dynamic index structure for spatial searching. In Proc. ACM Int'l Conf. Management of Data (SIGMOD '84), pages 47–57, 1984.