DYNAMIC REAL TIME RIDE-SHARING SYSTEM

J.Amsapoorani
ME student
Department Of Computer Science and Engineering Kalasalingam institute of technology, krishnankovil, virudhungar dist ,Tamilnadu
amsapoorani8@gmail.com

Ms.P.Ponnila
Assistant Professor
Department Of Computer Science And Engineering Kalasalingam institute of technology, krishnankovil, virudhungar dist ,Tamilnadu
swathikapons@gmail.com

Abstract— ***Taxi-sharing system is developed using mobile cloud architecture. This project use temporal indexing method to locate the active user position and searching algorithm to track the driver and user positions and scheduling algorithm to schedule the user requests. Proposed taxi riders and drivers can access same mobile app. Passengers submit real time ride request using the same app. On receiving a new request, the server will first search for the taxi with minimal the travel distance and check with existing booked details .if any match found based on the user request then the list of available taxis will shown to users***

.user can select any taxi by touching the taxi details .once, user touch the driver details, the user request will send to driver. If drivers select agree to pick up a new passenger, then the total amount will get divided and refund among them.

Keywords—taxi-sharing; temporal indexing; riders; drivers;schedule.

I. INTRODUCTION

TAXI is an important transportation mode between public and private transportations, delivering millions of passengers to different locations in urban areas. However, taxi demands are usually much higher than the number of taxis in peak hours of major cities, resulting in that many people spend a long time on roadsides before getting a taxi. Increasing the number of taxis seems an obvious solution .But it brings some negative effects, e.g., causing additional traffic on the road surface and more energy consumption, and decreasing taxi drivers income (considering that demands of taxis would be lower than number of taxis during off-peak hours). In this paper, A **Taxi** is a type of vehicle for hire with a driver, used by a single Customer or small group of Customers often for a non-shared ride. A taxi conveys Customers between locations of their choice. The service will run at real time as or at a time designated by the client. This Taxi & Cab Management System is helpful for travel agencies for their cabs, taxis, and their vehicle maintenance. This Taxi project contains car details, pick up and dropping the exact details. The main advantage of this web application is to provide Time Management for their passengers who are using their cabs. This Billing application explains about customer name, vehicle types, vehicle numbers, vehicle driver name, from date, to date, Cab allocation and finally customer booking. Ridesharing is an efficient way to increase vehicle occupancy rates and hence to reduce the number of necessary vehicles and traffic congestion in urban area. Our system saves energy consumption and eases traffic congestion while enhancing the capacity of commuting by taxis. Taxi ridesharing system request sent from smart phone and schedules proper taxis to pickup then via ridesharing, time, capacity and monetary constraints. Monetary constraints provide incentives for both passenger and drivers.

II. RELATED WORKS

Shuo Ma, YuZheng, Senior Member, IEEE, and Ouri wolfson, Fellow, IEEE, IEEE TRANSACTIONS ON KNOWLEDGE AND ENGINEERING, VOL.27, NO.7, JULY 2015, we proposed and developed a taxi-sharing system that 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. The monetary constraints provide incentives for both passengers and taxi drivers: passengers will not pay more compared with no ridesharing and get compensated if their travel time is lengthened due to ridesharing; taxi drivers will make money for all the detour distance due to ridesharing. While such a system is of significant social and environmental benefit, e.g., saving energy consumption and satisfying people's commute, real-time taxi-sharing has not been well studied yet. To this end, we devise a mobile-cloud architecture based taxi-sharing system. 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 patio-temporal index. A scheduling process is then performed in the cloud to select a taxi that satisfies the request with minimum increase in travel distance. We built an experimental platform using the GPS trajectories generated by over 33,000 taxis over a period of three months. A ride request generator is developed (available at http://cs.uic.edu/ s m a /ridesharing) in terms of the stochastic process modeling real ride requests learned from the data set. Tested on this platform with extensive experiments, our proposed system demonstrated its efficiency, effectiveness and scalability. For example, when the ratio of the number of ride requests to the number of taxis is 6, our proposed system serves three times as many taxi riders as that when no ridesharing is performed while saving 11 percent in total travel distance and 7 percent taxi fare per rider.

De-merits:

Experimental results demonstrated the effectiveness and efficiency of our system in real time ride requests. Our system can enhance the delivery capability of taxis in city so as to satisfy commute of more people.

Qinglin Zhao, Soung C. Liew, Fellow, IEEE, Shengli Zhang, and Yao Yu, **Citation information: DOI 10.1109/TMC.2015.2407402, IEEE Transactions on Mobile Computing**, Distance-based Location Management Utilizing Initial Position aims at improving the distance-based location management scheme for android application. It is applied only on positive weights. Distance-based Location Management Utilizing Initial Position Global Positioning System is used for adding a new functionality in Distance-based Location Management Utilizing Initial Position Application. Using Global Positioning System the position parameter is added in the Distance-based Location Management Utilizing Initial Position Application. From this current position is retrieved at any point. By using this current position, the distance can be determined from one node to another node

De-merits:

Not giving more clear details about location area such as (shopping Malls). Location of data must be explicitly coded in the database. These are usually databases such as hotel directors, restaurants lists or similar common services, e.g. Google Maps.

S. Ma, Y. Zheng, and O. Wolfson, in Proc. 29th IEEE Int. Conf. Data Eng., 2013, said that Taxi Ridesharing can be of significant social and environmental benefit, by saving energy consumption and satisfying people commute needs. Despite to the great potential, taxi ridesharing, especially with dynamic queries, is not well studied. In this paper, we formally define a dynamic ridesharing problem and propose a large-scale taxi ridesharing service. It efficiently serves real-time requests are sent by taxi users and generates ridesharing schedules that reduce the total travel distance significantly. In our method, we are first propose a taxi searching algorithm using a spatio-temporal index to quickly retrieve candidate

Taxis that likely to satisfy a user query. A scheduling algorithm is then proposed. It checks each candidate taxi. This satisfies the query with minimum additional incurred travel distance. To tackle heavy computational load, a lazy shortest path calculation strategy is devised to speed up the scheduling algorithm. We are evaluated our service using a GPS trajectory dataset generated by over 33,000 taxis during a period of 3 months. By learning the spatio-temporal distributions of real user queries from this dataset, we built an experimental platform that simulates user real behaviors in taking a taxi. Tested on this platform with extensive experiments, our approach demonstrated its efficiency, effectiveness, and scalability. For example, our proposed service serves 25% additional taxi users while saving 13% travel distance compared with no-ridesharing (when the ratio of the number of queries to that of taxis is 6).

De-merits:

Doesn’t identify travel time estimation and also improve the prediction of taxi travel time. We will also schedule queries that arrive within a small time interval in batch mode, to further optimize the total travel distance in ridesharing.

E. Kamar and E. Horvitz, in Proc. 21st Int. Jont Conf. Artif. Intell., 2009, said that We develop and test computational methods for guiding collaboration that demonstrate how to shared plans can be created in real-world settings, where agents can be expected have diverse and varying goals, preferences, and availabilities. The methods are motivated and evaluated in the realm of ridesharing, using GPS logs of the commuting data. We consider challenges with coordination among self-interested people aimed at minimize the cost of transportation and the impact of travel on the environment. We present planning, optimization, and payment of mechanisms that provide fair and efficient solutions to the ride share collaboration challenge. We evaluate the different VCG-based payment schemes in terms of their computational efficiency, budget balance, incentive compatibility, and strategy proofness. We are present the behavior and analyses provided by the ABC ridesharing prototype system. The system learns about the destinations and preferences from GPS traces and calendars, and considers time, fuel, environmental, and cognitive costs. We review how ABC generates rideshare plans from hundreds of real-life GPS traces collected from a community of commuters and reflect about the promise of employing the ABC methods to reduce the number of vehicles on the road, thus reducing CO2 emissions and fuel expenditures.

De-Merits:

The optimization component has been the following properties that make it difficult for agents to find out about other agents in the system and thus collude the mechanism; the component combines multiple user preferences and contextual factors to determine the best possible plan, and agents do not get to know about other users’ preferences or rideshare plans that they are not involved in.

III. ARCHITECTURE DESIGN

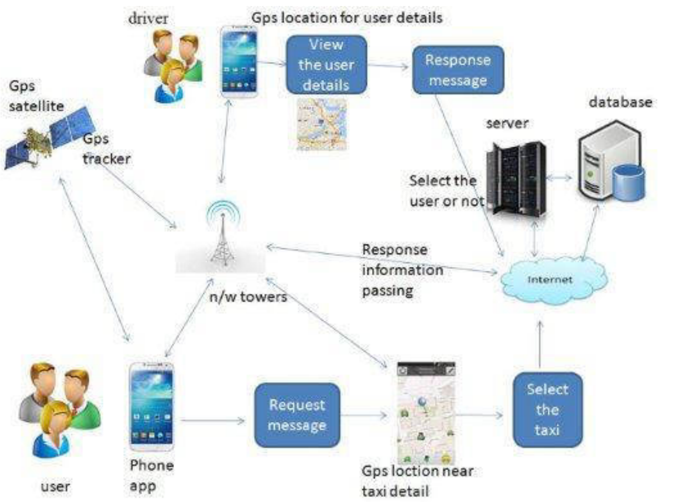

Fig. 1. The architecture of the real-time taxi-sharing system.

A system based on mobile cloud architecture, which enables real-time taxi-sharing in a practical setting. Taxi drivers independently determine for when to join and leave the service using an App installed on their smartphones. Passengers submit real-time ride requests using the same App. Each ride request consists of the origin and destination of the trip, time windows constraining when the passengers want to be picked up and dropped off. On receiving a new request, the Cloud will search for the taxi which minimizes the travel distance increased for the ride request and satisfies both the new request and the trips of existing passengers who are already assigned to the taxi, subject to time, capacity, and monetary constraints. The existing passengers assigned to the taxi will be inquired by the cloud whether they agree to pick up a new passenger given the possible decrease in fare and increase in travel time. The updated schedules will be given to the corresponding taxi drivers and passengers. To existing carpooling systems our proposed ridesharing model consider for more practical constraints which include time windows, capacity, and monetary constraints for taxi trips. Proposes efficient searching and scheduling algorithms that are capable of allocating the “right” taxi among tens of thousands of taxis for a query in milliseconds. A spatio-temporal indexing structure, a taxi searching algorithm, and a scheduling algorithm. Supported by the index, the two algorithms quickly serve a large number of real-time ride requests while reducing the travel distance of taxis compared with the case without taxi-sharing. The fraction of ride requests that get satisfied is significantly increased by three times meanwhile riders save 7 percent in taxi fare via taxis-haring when the taxis are in high demand. The architecture of our system is presented. The cloud consists of multiple servers for different purposes and a monitor for administers to oversee the running of the system.

IV. ALGORITHMS

A. MF ALGORITHM.

Finds the shortest path from x to y in order of increasing distance from x. That is, it chooses the first minimum edge, stores this value and adds the next minimum value from the next edge it selects.

B. SEARCH MEETS GRAPH ALGORITHM

Search in combination with a new graph-theoretic lower-bounding technique based on landmarks and the triangle inequality. Algorithms compute optimal shortest paths and work on any directed graph.

C. SINGLE VARIABLE OPTIMIZATION ALGORITHM

Single optimization is the basis for many results in economics. However, many optimization problems can only be solved with numerical methods. To illustrate, consider the building of a dam where the choice variable, x, is dam capacity. The dam produces a constant stream of benefits equal to A. The cost of the dam is a quadratic function of capacity, namely cx^2 for a suitable positive constant c. There is also a probability that the dam may overflow causing damage worth K, and the probability of this happening is a decreasing function of capacity, given by e^{-gx}. The benefits is thus $g(x) = A - e^{-gx}K - cx^2$.

V.PROPOSED METHODOLOGY

Taxi-sharing system request sent from smart phones and schedules proper taxis to pick up them via ridesharing , subject to time, capacity and monetary constraints. Monetary provides incentives for both passenger and drivers . Passenger will not pay more compared with no ridesharing system and get compensated if their travel time is lengthened due to ridesharing .Passenger will make money for all the reroute distance due to ridesharing.

A. *MODULES*

∑ User Interface Design

∑ Taxi Booking Module

∑ Customer Management Module

∑ Taxi Dispatch Module

∑ Alert and Confirmation Status Module

B. *Modules Description*:

∑ User Interface Design-This is the first module of our project. This Model plays an important role for the users choose the taxi one place to another. This module has created for the customer security purpose. In this model we have to enter the details for the taxi which required for the Customer. It will Store all the details into the database and it will verify whether the particular Taxi is Available or not. If we enter any invalid Details we can't get any Confirmation Details it will shows error message.

- Taxi Booking Module-This is the second module of our project in this with the advent of web applications. This captures Booking details for a given customer. Capturing of Booking Details: Functionality of this screen is to capture all the information related to booking received from the customer. Assigning pickup a drop location. Integrated Time Management feature for booking functionality. Taxi Booking Modification and Cancellation module. By Using this Module User can book the taxi as they need.

- Customer Management Module-Now coming to our third module in this we are going to implementing our customer information. This module encompasses Customer Identification & capturing of various customer related information. And this will maintain Caller ID display, Customer identification, new customer data entry facility, Lost and Found details entry facility, Customer complaint capture, Customer feedback capture.

- Taxi Dispatch Module-Dispatch module handles the allocation of Taxis to the bookings and creation of job orders for the same. Module will assist in identifying the nearest available taxi to the pickup location so that the time to reach the customer is reduced to the minimum possible. Identifying nearest available taxis based on pre determined algorithm. Taxi Allocation module, Job order creation, Kerb side pickups, Updating of on Road / Off Road Vehicles & Driver Allocation.

- Alert and Confirmation Status Module-In this module we will alert's the Upcoming customer information and Customer Status like he or she reached their Destination or not. These are the information we are storing in our project module. And the customer confirmed their Booking or not, what their status like all the information we are going to update in our Database.

VI.CONCLUSION AND FUTURE ENHANCEMENT

This paper proposed and developed a mobile-based real-time sharing taxi-sharing system. The taxi riders and drivers interact with each other through GPS. The resulting system is fast and efficient. The delivery capability of taxi is enhanced. The system saves the travel distance of taxis. System reduces riders fare because of sharing.

In the future, we consider incorporating the creditability of taxi drivers and rider into the taxi searching and scheduling algorithms. Additionally, we will further reduce the travel distance of taxis via ridesharing.

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