Carpooling Service Using Genetic Algorithm

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Abstract

In most of the developed city there is serious and social problem of traffic congestion. Carpooling is one of the effective solutions for this problem .We can increase the occupation car by reducing the empty seats that means we can share the available seats in the car effectively. We use Genetic Algorithm for rider matching for Genetic-based Carpool and Matching Algorithm (GCRMA). In this paper describe the Carpool System in detail is called as Intelligent Carpooling System(ICS).Carpooling is system which is mainly used for travelling which empty seat offered to additional passengers. In this system Driver share their cars with one or more people who have similar route. The GCRMA operates with small amount of time complexity and give result fast.

Keywords- *Carpool Service Problem (CSP), Genetic Algorithm, Intelligent Carpool System..*

1. INTRODUCTION

Now a day economic development has result in Developed cities and industrial growth, leading to Fast increases in the number of vehicles on roadways and, there is serious problem in traffic congestion in large cities around the world .The Traffic congestion can have many bad effects such as wastage of time , air pollution c, and more consumption of fuel .The Public transportation systems have the capacity to decrease traffic congestion but it provides less flexibility, less comfort, and freedom than the personal vehicles, so personal vehicles are the most famous way to Travel. So , each car mostly travel just one or two persons, that result in many empty seats. For example, a vehicle in the U.S.A is used to transport, on average, 1.9 people. So avoid this problem we are developing the carpooling system using genetic algorithm in that empty seats are offered to additional passengers and it has been found to be friends. the passengers travelling to the same destination based on their trust score. Algorithm used for a fair scheduling of driver and the trust impact on each other [4].A few methods to reduce the impact where public transport, non-conventional fuel resources and walking to reach ones destination. The advantages of the solution where the reductions in the amount of population as well as lesser road congestion .Creating application, both web and mobile based to seamlessly integrate the App's functionality into the everyday user's routines [5].

1.1 EASE OF USE

A. Problem definition

Carpooling Service Using Genetic Algorithm, which is use for solution to the problem traffic congestion by sharing the Car. This System matching the Driver attributes and Passenger attribute based on Genetic Algorithm and give notification to each other for sharing car.

B. Scope

We can recommend a friend based on their life styles for social networking sites. Modules of the system will include life style extraction, friend matching graph ,query and friend recommendation and feedback control. System will update the friend list as per the user response. System also identifies fake account and notifies the friends

2.SYSTEMARCHITECTURE

Following are different modules in the proposed system.
1. Mobile Client Module
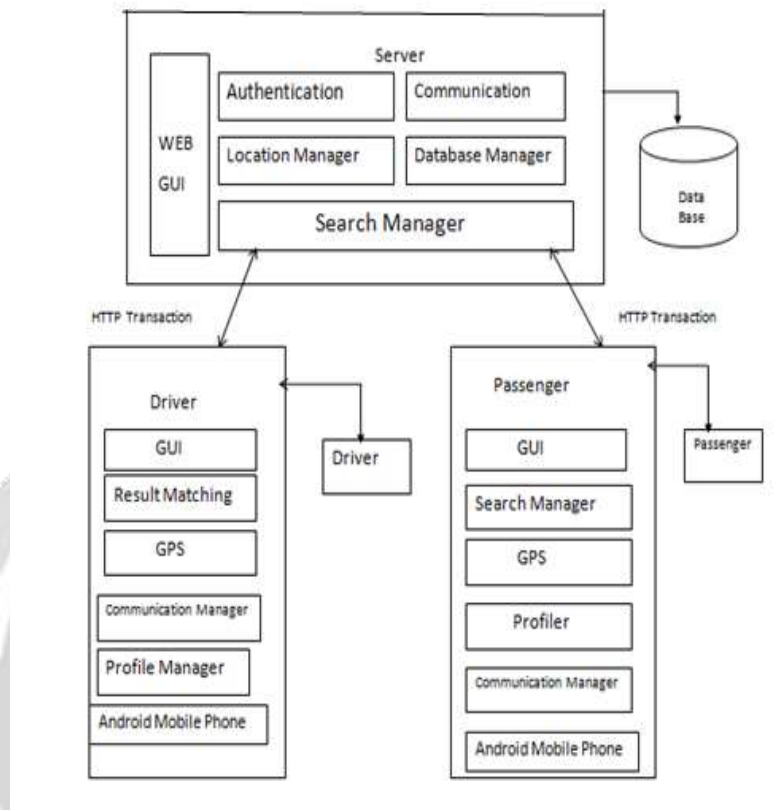2. Genetic-based Carpool Route and Matching Algorithm

Fig-1: System architecture of Carpooling Service

C. Mobile Client Module:

In order to locate suitable carpool Driver and passenger mapping in a reasonable amount of time, users proposed CGCS module by using mobile communication network to submit requests and receive match results at any location and at any time using their personal mobile devices. The proposed MC module provides support to the intelligent carpool system by taking use of GPS technology to automatically track current user location. This information allows the proposed CGCS module to match and track carpool requests. Within the MC module. It provides users information regarding their current location. After completion of the ride, both driver and seeker may provide feedback about each other.
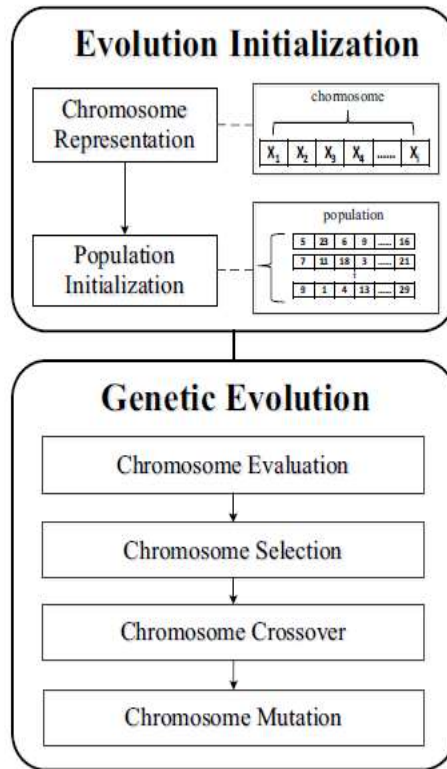
D. Genetic Evolution Module:

Figure GCRMA Diagram

1. Route and Matching Evaluation:

To evaluate the quality of the chromosomes in the population, the fitness function is used to determine the fitness score for the global carpool matches represented by a chromosome.

2. Elitist Chromosome Selection:

After evaluating the population, the chromosomes with the highest values and the highest quality traits in the population are chosen by the elitist section strategy to proceed to the next generation.
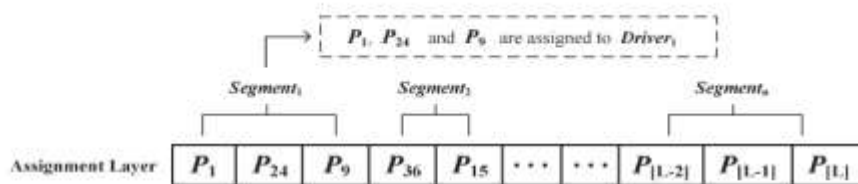
3. Assignment layer for the proposed chromosome representation.
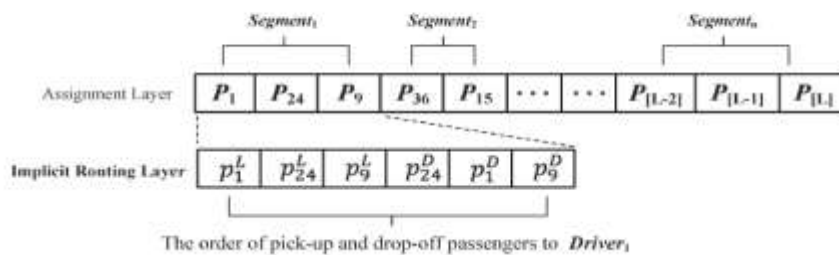
Individuals of evolution population into ascending order and then partition them into two sub Population's top and lower tiers.
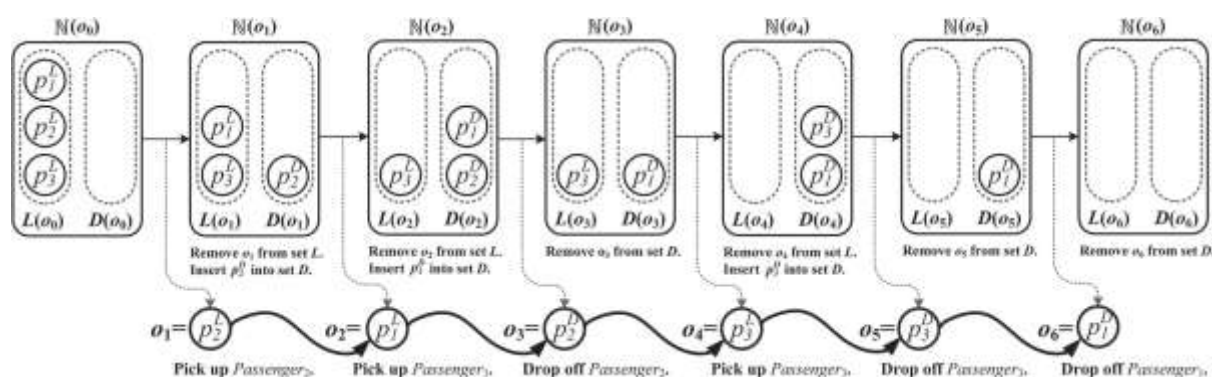
Figure. Change of Node Set

3. Exceptional Trait Crossover:

The offspring chromosome produced by the recombination of selected parents results in superior carpool matches. The initial parent chromosome is randomly and uniformly selected from among the top-tier chromosomes the second parent is selected from the lower-tier chromosomes to introduce mating diversity.

4. Optimization-Oriented Mutation:

There are two mutation operators customized to the optimization-oriented scheme that is made to fit the objectives of the CSP. First, the mutation operator maximizes the number of matched seekers using the insertion mutation.

5. Invalid Chromosome Repair:

The procedures of GE may affect the chromosome to become invalid. The seeker could be assigned to more than one driver after the chromosome is operated through these procedures.

6. Early Stop Option:

Subsequently, the approximate optimal solutions to the carpool route and matching problem is consider by the GE module by repeating the process. An early stop option for the evolution process, which is based on the differences between the fitness values of generations, is applied to reduce the computational cost of the GCRMA.

3. CONCLUSION

In this paper, basically, We proposes an intelligent carpool System which provides a platform in which users can rapidly search for and locate Carpool Alternatives in any Location; we are going to address the entire framework of the ICS. Which provides an platform in which drivers and seekers can easily find carpool matching at any Location. The Genetic Algorithm is used for matching the route.

4. ACKNOWLEDGMENT

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