Dynamic Bus Ticketing & Routing System

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Abstract In Our Everyday Life, Public Transport Plays A Very Important Role And Citizens Expect To Travel Efficiently And In A Timely Manner. We Also Expect That The Frequency Of Busses And Other Public Transport Should Be Increased For Convenience. Sometimes In Buses, There Are Many People Who Travel Without A Ticket And It Is Not Possible For The Bus Conductor To Identify Due To The Overcrowded Bus. Here, In This Project We Are Planning To Make An Android App That Uses Qr Codes To Identify And Authenticate A Person Boarding The Bus. In This System The Qr Code Is A Replacement For The Bus Ticket. The Passenger Can Scan His Qr Code In The Bus For A Ticket. Firstly, The Passenger Is Required To Register Himself Into The App. He Has To Provide His Bank Details While Registering. Then The Passenger Gives His Boarding And Destination Stop. The System Will Then Generate The Ticket Amount Depending Upon His Source And Destination. After That The Passenger Has To Enter His Details. The System Will Have The Head Count Of The Passengers In The Bus. After Entering All The Details The Passenger Will Have To Scan His Qr Code. The Respected Bill Amount Will Be Directly Deducted From The Passenger's Bank Account. The Passenger Will Also Get An Sms Verification When The Ticket Is Confirmed. This System Has A User As Well As Admin. The Admin (Conductor) Can Calculate The Amount Details Through A Web Application. They Can Compute Per Day Ticketing Information And Create Reports Based On The Details. We Basically Use A Machine Learning Algorithm Mainly Svm To Analyse The Data. In This Way It Creates An Efficient System Where Everyone Who Boards The Bus Is Compulsorily Issued A Ticket.

Keywords: **QR CODE, BANK DETAILS,SVM ALGORITHM**

I.   INTRODUCTION

Generally public transport uses a very primitive technology for issuing tickets and other procedures. Initially, the bus conductor used to give paper printed tickets to each passenger. He would go to very passenger and give him the required ticket in hand. Later a little better way was introduced where the conductor used hand held machines to print tickets. Even here the conductor had to go to each passenger, take money from each of them and issue tickets to each one of them. This also is a time consuming task. Also to print the tickets a trained person is required. This system has many disadvantages. It is difficult for one conductor to manage the tickets of the entire bus. Especially, if the bus is overcrowded many a times, passengers often travel without a ticket. There is another disadvantage that the ticket printed in paper has to be safe with the passenger till the end of the journey in case of checking's.

It is difficult for the passenger to carry that small piece of paper till the end of the trip. The time taken for ticketing is more as well as a lot of paper is wasted in printing the ticket. Many other advantages include lack of proper secured data, inefficient, inaccurate methods of computing tickets and wastage of a lot of time. Hence, to overcome all these disadvantages, we have come up with an efficient system that minimises wastage of peer and gives us a smaet way of issuing

II.   LITERATURE SURVEY

J. Gong, M. Liu, S. Zhang, "Hybrid dynamic prediction model of bus arrival time based on weighted of historical and real-time GPS data", *2013 25th Chinese Control and Decision Conference (CCDC)***, pp. 972-976, 2013.**
Real time information on traveller tracking system is one of the arousing topic of current transportation systems. There has been an improvement in the efficiency of automated location driven vehicles enabling to predict the arrival time of the buses well in advance. The question here is how reliable and accurate is the prediction to bring in faith in the riders so that they don't waste much of their time waiting in the bus stands. This paper gives us a broad idea of how the existing system can be improvised with increasing precision to predict the arrival time of buses working with the historical data. After a thorough screening, the two major factors that stand out are the arrival time and the dwell time of the previous stops considering the prediction model. Firstly, we design the algorithm to extract data to get the real time GPS data as one of the input variables. The second factor that we look into is the historical data of running state of the bus for every route and the average dwelling time for each stop in any route taken by the bus. Lastly, the hybrid model which comprises of both statistical and the prediction model helps us in obtaining much accurate data on the arrival time of the bus.

 Foisal Mahedi Hasan et al., "RFID-based Ticketing for Public Transport System: Perspective Megacity Dhaka", *3rd* IEEE International Conference on Computer Science and Information Technology (ICCSIT)*, vol. 6, pp. 459-462, 2010.* This paper basically focuses of the disadvantages that come with the traditional ticket booking system and comes up with a solution for it. It provides a better and automated system for issuing tickets and uses RFID as the main constituent for it. RFID is basically used for the transaction of purchasing the tickets. This makes the system efficient and automated. The main objective of this system is to have a consistent and automated way to issue tickets overcoming all the disadvantages the automated system had. The planned a uniform method amongst all the agencies included to bring about uniformity. A common server will have all of the necessary information. This information is periodically updated every time a passenger makes a transaction using RFID.
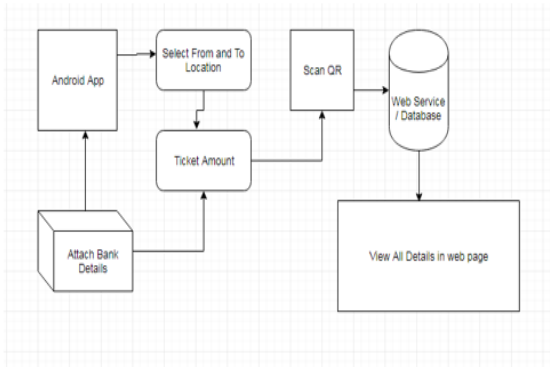
III.   PROPOSED SYSTEM

The main idea here is to make use of a QR code reader. The system is an Android app on which the user has to register. He enters his bank details and selects his from and to destination. He then enters his personal details and purchases the ticket directly through his account. The system also keeps track of all the passenger transactions. This basically creates an automated system efficient for use.

The proposed system has been proved efficient because :-
- It is not time consuming. The passengers can book their tickets beforehand and do not have to waste time waiting for the conductor.
- The use of QR code is automating the system through which the passenger can directly enter his bank details and perform transactions.
- This is another step towards a cashless economy. It might be difficult for all passengers to carry the exact change every time. Now-a-days our country is taking steps towards being a cashless economy. This is a step towards that.
- It saves a lot of paper as the entire process is digitized by the use of QR code.
- This system brings about uniformity and eliminates many of the disadvantages of the existing system.

IV.   SYSTEM ARCHITECTURE

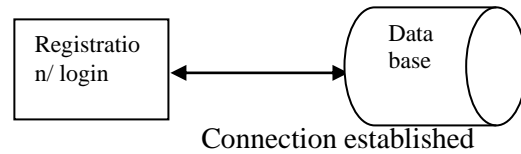4.1 **SYSTEM ENGINEER**

V.   MODULE IDENTIFICATION

This section describes about the important modules which we are implementing in the project. The modules are as follows

- o **User registration module**
- o **Location Selection module**
- o **Web service module**
- o **Database module**
- O **Classification module**

A. User Registration Module

In this module we are using an application for which the user uses the machine learning SVM algorithm which implements the application. Here users can register the data in this application. The users can add bank details along with their profile. In this the users need to select the 'From' and 'To' location or source and destination and after that the
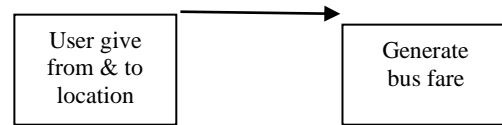
user can select the type of bus like government or private that he want to board and bank details for the payment purpose can be provided by the user in this module.

Connection established

5.1 **USER REGISTRATION MODULE**
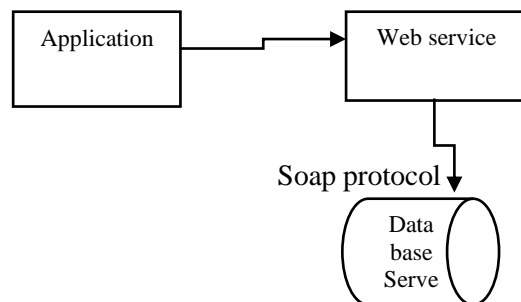
B. Location selection Module

As we discussed in the above module user should enter the 'From' and 'To' location and it is going to generate the fare details for that based on the location. Then we will get the number of the passengers who booked the tickets and the total amount can be calculated. After this step we use the QR scanner for mobile payment.

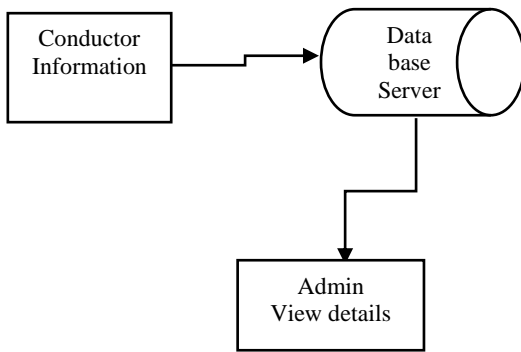5.2 **LOCATION SELECTION MODULE**

C. Web service Module

This module describes about connection between application and server. Server must
be in running state all the time and that should store the data of the users into database. By using SOAP protocol we can establish the connection between application and server. So after successful connection the SOAP protocol will help to collect the details of users and sends to the server.

Soap protocol

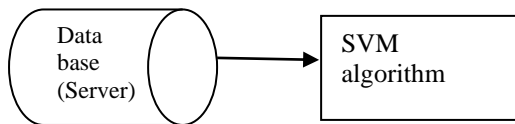5.2 **WEB SERVICE MODULE**

D. Database Module

Admin can view all the details of the user like location of the user and the bus which they are going to be boarded. Then admin has to analyse all the details like users name, From location, To location and the total amount to be paid by the user and admin id.

5.4 DATABASE MODULE

E. Classification Module

We have to monitor for each and every 3 hours on regular basis using SVM algorithm. Because when the bus reaches from one place to another place, it has to extract all the details from users who were using QR scanner in bus. So that we can provide the information about the location of the bus and to provide an extra bus if there is a need

5.5 CLASSIFICATION MODULE

VI. RESULT

This application performs with an optimum level of 85% by increasing the efficiency in the process. In this model QR reader was used and we create one application for selecting the travelling route and generating amount. After generation of the amount the user has to read the QR image then automatically it will send the amount from the wallet or using the bank details.

VII. DISCUSSION

The basic idea behind this system is to create a more efficient and automated system to issue tickets. It aims at minimizing user effort and creating a simple and accurate mode if issuing tickets. The QR code is an efficient technology which can be used to make a system automated. Also it creates transparency among the user as he can see the entire process. Besides the major goal of carrying passengers around, providing a comfortable travel experience for passengers is also a key business consideration.

VIII. FUTURE ENHANCEMENTS

Some of the future works of the research for this online bus ticketing system can be taken into consideration like selecting the language, improvements in the user interface, administrator's task can be improved so that it will be easy to handle the maintenance process like data mining and data backup can be handled. Implementing other modes of transport.

IX. CONCLUSION

A thorough implementation of bus ticketing system has been conducted. How to manage user's data and generate the tickets using QR codes and payment interface is implemented using the algorithms. This provides much convenience to users and this is the important part of our daily lives. This will help to improve the bus transport system by offering the best service in terms of performance, security and safety.

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