Hyper Bus System

Jaymin Trivedi[1], Pruthviraj Bhosale[2], Toufik Shaikh[3], Vishal Wayalkar[4], Prasad Ghumare[5], Prof. Kalunge V.V[6]

[1,2,3,4,5] *Student* [6]*Lecturer*
[1,2,3,4,5,6]*Department of Information Technology, Jayawantrao Sawant College of Engineering, Pune, India*

Abstract— The technological rise in mass transit is on the horizon, but the public bus network structure and bus tracking system should first be in place. Bus transport service is on the edge of digital revolution, generating real-time services about the bus transportation using smartphones. This document proposes a Hyperbus system based on web technology to reduce human intervention, latency, and energy. The exact location and arrival time of the bus can be tracked dynamically by using a web application to provide better and efficient bus service. Furthermore, passengers can buy tickets without queuing and book the available seats by making online payments. The proposed scheme allows the driver more flexibility and user-satisfying service in terms of lost time, improving passenger satisfaction. The main goal is to minimize unnecessary waiting times and passenger anxiety caused by waiting times. Users can use their waiting times more productively by choosing the nearest route and alternative transportation. By using the proposed Hyperbus system to provide significant benefits to passengers, the sustainability of public transport services can be maintained.

Key words: Bus Transportation, Image processing, Real-time tracking.

I. INTRODUCTION

Public transportation is the major means of transport service among the people across the world. Growing density of population increases the vehicle density which leading to heavy traffic and large percentage of pollution. Adaptive solution to this problem is preferring common modes of transport. Since common people are the greater ratio in making use of public transportation service, the necessity to provide them with ease of access stands at higher priority. This project mainly focuses on bus transport service. A recent survey by National Transport Survey Organization says that about 60-65% public uses bus transportation as their mode of transport. Hyper Bus System aims at providing the instant status of the bus to the users via a web application

However, the accessibility of public transit is never an easy and comfortable go by issue. People always have to go through tough times getting bus on time due to mismatch in the bus schedule. Consequently, peoples have to face tremendous problems in almost every country.

This paper proposes a web application architecture on the latest technologies for public bus service, so that besides, this web- app will allow a passenger to buy a ticket online via an online wallet or mobile banking system that reduce the time for buying ticket manually, provides bus routes & time schedules. The main purpose of introducing these e-ticketing system operated by individual operators are to ease the process of purchasing a bus ticket, ease the traffic condition in country and to keep up with Information Technology era.

II. FUNCTIONALITIES & Its FEATURES:

The core functionalities of this proposed web application are-

• **Nearest Stoppage**: This web application will show the nearest bus stop from the current location, so that customer can easily able to move forward

• **Real-Time tracking**: Tracking any specific bus via Global Positioning System. This functionality allows user to track the current position of the vehicle where all the audience will be notified

• **Approximate time:** After calculating the road traffic based on your current location, this application shows the approximate time for the bus to arrive at a particular bus stop.

• **Available Tickets:** This application allows users to purchase tickets for specific bus trips. In addition, if a passenger misses the bus, they can change their ticket at another appropriate time.

• **Payment:** Functionalities of buying a ticket via the web application, it allows passenger to pay ticket price through mobile banking or online wallet like google pay

• **Book a seat** : Sometimes it is hard to get a proper seat for a person or family members in the bus. This web application will allow users to choose seat for the trip and also it will be able to know that how many seats are available in bus before booking.

III. RELATED WORK

This research focuses on two parties, i.e. the admin and the customers. The bus operators of the organization are the system administrator. They are able to manipulate information and generate reports to assist them with their daily operations. These back-end activities help bus operators assess their current position and manage their business on how and what actions they need to take to stay ahead of the competition in this competitive business world. Helps you plan. This study examines the views of bus operators as service providers and customers as system users when deploying this system.

This research survey identifies the need of developing and promoting a comprehensive Hyper Bus Online Ticketing System web portal of various bus operators in country. For the bus operators, the survey conducted identifies the responds received from the passengers on the current available system in the market, the cost-effectiveness of developing and maintaining system and the reports from the system. On the other hand, a survey of system personnel confirmed their awareness of the current system and their willingness to change from the practice of conventional methods over the counter purchase of bus ticket to the modern method of purchasing through a web portal. The survey also identifies and introduces acceptance of the creation of bus operator's classification or standard via popularity, performance and maintaining satisfactory road traffic law track record, features available in the system and the level of security to perform a financial transaction.

The research process begins by identifying the everyday social problems that are being investigated to find the best solution for the subject. A literature survey was carried out to study the Online Ticketing System in India and in other countries. The role of an Hyper Bus Online Ticketing System web portal in terms of providing Management Information System and Decision Support System services to both user and admin, security on e-commerce, privacy and payment options. After completing literature review, a survey using close and open-ended questionnaires was carried out to identify the people's perception on bus e-ticketing services that is currently available.

A survey was carried out on the common people to find out the awareness about digital system, efficient service, and effectiveness of the current bus e-ticketing system on conducting their bus ticket booking. In addition, we conducted numerous interviews with bus operators in the city to obtain detailed information on daily operations and the methods and functions required for the HyperBus online ticket system web portal. After collecting feedback from various bus operators and passengers, an analysis was conducted to obtain important information for the development of the portal. This research identifies the importance of adopting a comprehensive Hyper Bus System web portal by inviting all bus operators to utilize the web portal and to provide various options for a customer to purchase bus tickets and monthly subscription.

IV.PROPOSED SYSTEM

Bus Information:

System administrators can view, add, edit, search, and delete company bus information The bus information includes bus registration number, bus type, seat count, departure time, bus departure date and bus depot.

Users:

The customers can access some of the functions in this system, which includes the main page module, registration module, bus schedule and details module, booking module, payment module, ticket module, booking cancellation module and polling module. The functional requirements for the users section are as following.

Registration

(A) Member:

This registration module will allows the passenger to register as a user and be able to do bookings from this system. The user must provide personal information into the registration form such as user name, email ID, password.

Bus Schedule and Details:

The user is able to view the fares and bus details with route in this module after selecting the journey details and

bus ranking that will be a decision criterion for a customer. The user then can proceed to book the

tickets from this form. Both a non-member and a member can view this form. The system will display buses that are scheduled to depart on the specified date and time given by the customer and the system will show all buses availability. The criteria used for this function is available when there are 26% to 100% of seats available on a particular bus ii. Limited when there is only 25% of seats available on a particular bus iii. Sold out when there is are no available seats on a particular bus

Booking:

(A) Booking:

The booking module can only be used by a user. This module will display the history of bookings and the total amount. User should asked to confirm the booking to continue to the seat selection.

(B) Seat Selection:

The member will then require to make a seat selection based on the number of tickets to be purchased. Seating plans vary by bus type: double-decker, VIP, super VIP.

(C) Payment:

The payment module will allow a member to select the type of payment method, i.e. online banking, credit card or loyalty points. If a user selects banking, then the banks details and links will appear for the user to proceeds with the payment. If a user wants to deduct their loyalty points, then there must be enough points to deduct for a purchased ticket. A member obtains 1 loyalty point for each Rs.100 spent. Each loyalty points can then be deducted for Rs.50 from the ticket price.

Ticket Generation:

In ticket generation module, the booked ticket will be displayed for future correspondence. The user can then download and access the ticket for their journey.

Booking Cancellation:

This feature will allows the users to cancel a booking by inserting the booking number.

IV.SYSTEM ARCHITECTURE

Student:

Student can approach to bus using our application which gives user friendly experience.

Firstly student needs to do registration on application and then he can access all facilities and service provided to them. Student can select source and destination with date and select the bus available on their route. Student can select multiple seat & also get fare information base on seat book by student.

Later, student get information about bus booked, information about bus & time to reach to pick up location. Student get this information in system as well by message send to them prier to some time by bus reach to location.

Student can have different option while payment. It include different wallet, netbanking and credit or debit card. Also student have provided facilities while travelling such as education content.

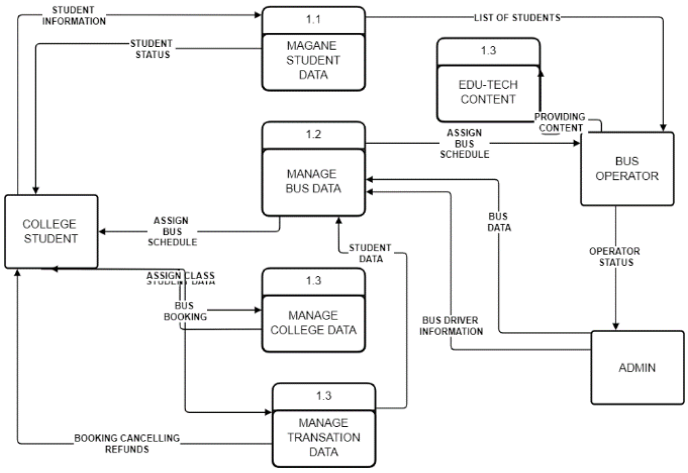

Fig.: Architecture of Hyper Bus System

Admin:

In this, we have centralized information that can be view & handle by admin on single system/ machine. Admin have access to different component included, route management, bus management, driver management, student information, etc.

At single, admin can do handle ticket booking, number of bus available on that particular routes & total number of student that going through buses. An admin can track how many buses are schedule, running on their current time & route.

In the event of an emergency when a bus breaks down or becomes unavailable, the administrator can schedule or hand over another bus for that particular route. In certain cases, some incident happens so admin can have track of it. Then he can do what he needs, if he wants.

In simple way, an admin have full control over system.

Bus Operator/ Driver:

Bus operator is something that have list of student going through bus route & he can manage all operation regarding on route pick up and drop. He can provide education content in time when bus travelling to student so that can utilize their time while travelling and be productive on their school or colleges.

Bus operator have track of different pick up location or drop location. He also manages whether payments / fares are paid by students and the amount that needs to be paid by a particular student. Bus operator can inform to helpline if bus fails and get late on specific route because of traffic on route.

VI. A* ALGORITHM:

What is an A* Algorithm?

This is the search algorithm used to find the shortest path between the start and end points. This is a convenient algorithm often used to traverse a map to find the shortest path. A * was originally developed as a graft rubber monkey problem to help build a robot that can find its own course. It still remains a widely used algorithm for graft traversal attacks. First look for a short path and make it the best and complete algorithm. The best algorithm finds the cheapest result of the problem, while the complete algorithm finds all the possible results of the problem. Another aspect that makes A * very powerful is the use of weighted graphs in its implementation. Weighted charts use numbers to show the cost of each pass or set of actions. This means that the algorithm can follow the path at the lowest cost and find the best route in terms of distance and time.

Basic concept of A * algorithm

Heuristic algorithms prioritize speed and sacrifice accuracy and precision to solve problems faster and more efficiently. Every graph has different nodes or points that the algorithm needs to reach the final node. All paths between these nodes have a number that is considered the weight of the path. The sum of all cross paths shows the cost of this route. First, the algorithm calculates the cost of all adjacent nodes n and selects the node with the lowest cost. This process repeats until no node can be selected and all paths are traversed. Next, you need to consider the best of them. If f (n) represents the final cost, it can be expressed as:

f (n) = g (n) + h (n), where:

g (n) = Cost of moving from one node to another. This varies from node to node

h (n) = Heuristic approximation of the value of the node..

h(n) = heuristic approximation of the node's value.

VII. APPLICATION AREA:

-Rural areas where buses are less available.

-Students leaving far away from public bus stops.

-Some colleges & schools situated far away from public bus stop.

-Student who can't afford private vehicle.

-Sometimes buses not available in time or cancelled.

-Public Buses available in odd schedules of school/colleges.

VI. CONCLUSION:

Hyper Bus System web portal is a system with its own strengths and limitations. A through study and implementation of a Hyper Bus System had been conducted. An investigation on all bus e-ticketing sites in Maharashtra and overseas had also been conducted, and the discovery that there are not many of these sites offers a collaborated bus operators and none not many has an awarding star ranking to their bus operators, which will be considered a niche and vital information to the customers. Thus, an introduction of the Hyper Bus that creating convenience to bus users, conducting virtual business transaction more efficiently, and over the Internet, which has already become a crucial part of our daily lives.

Overall, Hyper Bus Ticketing System has been successfully built and has achieved and fulfilled the objectives and requirements that are stated in the project proposal. The use of web-based approach bring along many benefits include the ability to access information anywhere and at any time of the day.

This will help to improve the country's bus transport service industry by offering the best service in terms of performance, security and safety.

VII. REFERENCES:

[1] MELISA KAUR A/P NARJAN SINGH,"A STUDY AND DEVELOPMENT OF AN ONLINE BUS TICKETING SYSTEM",FACULTY OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY UNIVERSITY OF MALAYA KUALA LUMPUR JUNE 2007.

[2] Shubham Jain, Adarsh Trivedi, Shweta Sharma, "Application Based Bus Tracking System",2019 International Conference on Machine Learning, Big Data, Cloud and Parallel Computing (Com-IT-Con), India, 14th -16th Feb 2019.

[3] Mr. S.V.Dhole*1, Jay Shrivastava2 , Garima Sachdeva3 , Komal Kalra City Bus Tracking System INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY.

[4] Ahsan Ullah , Mohammad Anwar Hossain, Nusrat Zaman, Mampy Dey, Tanwy Kundu, Enhanced Women Safety and Well-Suited Public Bus Management System in Bangladesh Using IoT, Advances in Internet of Things, 2019, 9, 72-84.

[5] Naila Ajith Muhammad Murshid M. A Smart Bus Ticketing System International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056.

[6] Online Bus Ticket Reservation System Nwakanma Ifeanyi Cosmas, Etus C, Ajere I.U. & Agomuo Uchechukwu Godswill IIARD International Journal Of Computer Science And Statistics Vol. 1 No.2, 2015.

[7] Impact of commuting distance and school timing on sleep of school students Rohit Kumar Pradhan1 • Niharika Sinha1 Sleep Biol. Rhythms DOI 10.1007/s41105-017-0091-0.

[8] Whitten J.L et al., (2002), Systems Analysis and Design Methods, 5th Edition, 2002.

[9] Wikepedia, (2006), [Online] Puduraya,<http://en.wikipedia.org/wiki/Puduraya>, 20/1/2006

[10] Yoris A. Au et al., (2001), "Should We Wait? Network Externalities, Compatibility and Electronic Billing Adoption", in Journal of Management Information Systems, Fall 2001,Pg 4.

[11] James F. Courtney, (2000), "Decision Making and Knowledge Management In Inquiring Organizations: Toward A New Decision-Making Paradigm for DSS", June 2000