

Advance Cashless Transport system

Priyanka Ingale¹, Prof. Ajinkya D. Salpe²

¹ CSMSS Chh.Shahu college of engineering kanchanwadi, Aurangabad

² CSMSS Chh.Shahu college of engineering kanchanwadi, Aurangabad

Abstract -In the modern world, the public transportation system is just as smart as the metro. The country's need for an intelligent transportation system is being driven by requirements such as passenger safety, convenience, and the need to enhance the efficiency of the current public transportation system. It has been discovered that one of the main causes of significant economic loss in India is the paper-based ticket system for collecting bus fares. It is challenging to make sure that every passenger purchases a ticket. Passengers lose the use of a paper ticket when the destination is reached. In addition; conductors have trouble uploading ticket transaction data within a day. Sometimes broken extra took place. Even the number of unsold tickets on a daily basis is fairly significant. In the technological age, India has been focusing on developing an automated bus fare collection system. Therefore, this study suggests an automated card-driven system that makes use of GPS and RFID. For Indian bus travel. With the app, users can keep tabs on the location of the bus and its passenger count. The effort suggests the cashless payments and ticket without paper.

paid registered RFID TAG subscriptions are the basis of the mobile ticketing business. The traveler's identification is verified by scanning the RFID TAG at the vehicle's entrance or exit. The amount taken from the RFID tag balance in the mobile device is based on the passenger's distance travelled. The usage of smart phones has an impact on this system. Users of regular phones are unable to use this technology.



Fig -1:Introduction to the system

Key Words: ESP 8266,RFID, GPS, Public transport, Bus Fare

1.INTRODUCTION

Everything in the modern world is intelligent and automated. There have also been additional developments in the transportation industry. But in India, transport vehicles have always been a place where these new technologies have made their appearance.

Work one of the study areas is intelligent vehicles for transportation. The global positioning system plays a major role in this situation for location identification. A visual milometer is an alternate method of position determination, as there may be mistakes in some metropolitan areas.

Where it has been demonstrated that vision-based algorithms can use a series of photos to monitor a vehicle's position over a large distance without the need for prior environmental knowledge. However, under different weather circumstances, the findings have significant drawbacks, thus GPS works best in comparison with others. Expert rules and fuzzy logic-based control techniques are employed to regulate the time of departure, space between two cars, and traffic-related delays. Particle crowd efficiency was used to fine-tune the settings of fuzzy controllers. Using a PTN operator with positioning sensors to provide on-the-go personalized navigation information is an additional alternative method to GPS. Here, positioning sensors may be used to find the unknown destination location for regular users.

This indicates that the public's preference for it over other forms of transportation is motivated by this. Pre-paid or post-

2. EXISTING SYSTEM.

Everything in the world is digitalized and smart these days.

There have also been other advancements in the transportation industry. But in India, public transit vehicles have always been a place where these new developments have made their appearance. Work One area of study is intelligent vehicles for public transportation. The global positioning system is crucial in this situation for location determination. Visually is a different method that may be used when locating anything in an urban environment where mistakes in location determination may occur [1].

Where it has been demonstrated that vision-based algorithms can monitor a vehicle's position over a considerable distance utilizing a series of photos and no prior environmental knowledge. However, there are certain drawbacks to the findings in different weather circumstances, thus GPS performs the best. Expert rules and fuzzy logic control procedures are employed to regulate the departure time, vehicle spacing, and traffic-related delays. A particle swarm optimization approach was used to fine-tune the settings of fuzzy controllers [2].

Using a PTN operator with positioning sensors to provide on-the-go personalized navigational data is an additional alternate method to GPS [4].

Here, positioning sensors may be used to find the unknown destination location for infrequent users. This indicates that the public's preference for it over other forms of transportation is motivated by this. A registered mobile subscription, either prepaid or post-paid, is the foundation of the mobile ticketing business [5].

The traveler's identification is verified by scanning their mobile phone number at the vehicle's entrance or exit. The amount deducted from their balance is then determined by the passenger's distance travelled. The usage of smart phones has an impact on this system. Users of regular phones are unable to use this technology.

3. Body of Paper

Conductors keep an eye on the buses while they issue paper or token tickets and collect fares from the passengers. Still, there are problems with this approach. Conductors are responsible for making sure that every passenger has a ticket; printing tickets takes extra time and paper.

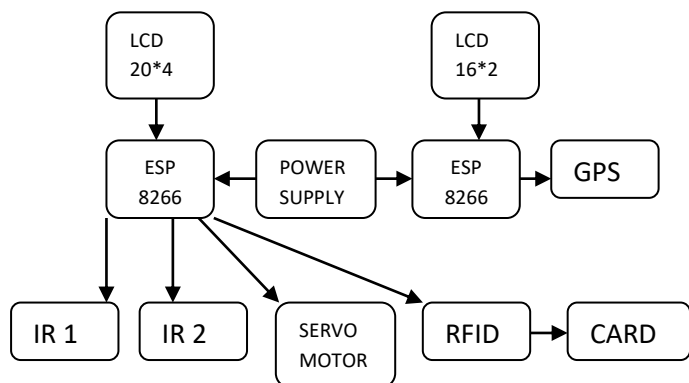


Fig -2: Block Diagram of the system

Additionally, tickets must be retained by passengers until they arrive at their destination. These days, people employ portable gadgets to get around these problems. However, there is still a chance that this technique may squander time and effort. For example, in order to board a bus, a traveler has to present payment. The conductor will then issue a ticket once the money has been collected.

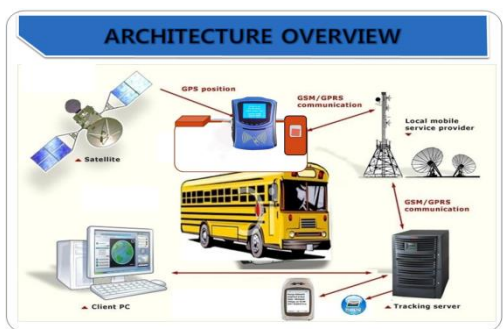


Fig -4: Advance Overview of the system

The Automatic Fare Collection (AFC) system offers an alternative. It consists of an automated vehicle finding system that tracks each passenger as they board a bus and logs transaction information such the route, bus number, trip card used, and the time and place of the trip. This device may be used for onboard ticket inspection and does away with the requirement for paper tickets. To further increase its use, it can include fresh spatial validation components.

4. PROPOSED METHOD

In addition to introducing innovative features, the suggested technique raises India's public transport bus system to the level of the rest of the world by introducing an Automated

Fare Collection System (AFCS) and Contactless Fare Media Technology (CFMT). There were numerous malfunctions, nasty arguments among the public, and corruption in the current ticketing system. Additionally, it seeks to lessen income loss and fraud associated to fees by using open, standard, secure transaction technologies.

According to the paper "GPS based automatic bus fare collecting system using electronic Ticket," if the user has previously specified the locations he plans to visit, a system that utilizes the same RFID-based location information will provide navigational indications based on his current location. Bus moment timing may be predicted using collected data to deliver improved service.



Fig -3: Hardware of the project

Instead of utilizing RFID and GPS, we may locate the entry and exit points for passengers by employing smart cards. We can determine the amount and distance travelled by using the location.

The smart card may be used to withdraw the money. This system may be programmed using a microcontroller that interfaces with a smart card and GPS. This approach may be used to establish effective ticketing and decrease the use of loose currency.

This paper's goal is to count passengers using an infrared sensor, calculate each passenger's automated trip distance using a motor and a u-slot sensor, and debit the appropriate amount from the passenger's RFID card. The signals that a passenger receives will stop as they cross, and fare collection will happen automatically. This RFID tag is rechargeable; however, it can be charged at the closest retail store or bus terminal.

4.1. RESULTS

Discussing the process of this project step by step. RFID reader in idle condition, ready to scan a card or tag. The project title is displayed on the LCD display along with a tap-your-card instruction.



Fig -5: Step 1 of the system

The RFID tag data and the location's latitude and longitude are saved by the ESP 8266 device for later use upon a passenger's initial card punch.

GPS Tracking

Location Details

Latitude	19.867741
Longitude	75.382607
Date	05 / 12 / 2023
Time	08 : 47 : 03

[Click here](#) to open the location in Google Maps.

Fig -6: Getting Coordinates process

When the same passenger punches the card again, this allows the ESP 8266 to determine the separation between the first and second punch sites. The RFID reader is constantly prepared to scan an RFID tag or card, even when it is not in use. The passenger can tap their card to get instructions, while the LCD display shows the project title.

	A	B	C	D	E	F
1	Date	Time	Card User Name	Station	Fair	
2	9/8/2023	9:28:55 PM	Mark_Zuckerberg	CBS	20RS	
3	9/8/2023	9:29:09 PM	Sunder_Pichai	CBS	20RS	
4	9/8/2023	9:29:29 PM	Eilon_Musk	CBS	20RS	
5	9/8/2023	9:33:12 PM	Sunder_Pichai	CBS	20RS	
6	9/8/2023	21:44:24	Sunder_Pichai	CBS	20RS	
7	9/8/2023	21:44:49	Sunder_Pichai	CBS	20RS	
8	9/8/2023	21:48:45	Sunder_Pichai	CBS	20RS	
9	11/6/2023	19:31:58	Eilon_Musk	CBS	20RS	
10	11/6/2023	19:32:42	Eilon_Musk	KRANTI_CHOWK	40RS	
11	11/6/2023	19:34:22	Eilon_Musk	CBS	20RS	
12	12/5/2023	8:59:14	Mark_Zuckerberg	KRANTI_CHOWK	40RS	
13						

Fig -7: Enrollment of the data to the system

In the following blow first, let's look at ESP 8266 new or second punch. If it's the second punch, ESP 8266 measures the distance from the previously recorded position using the current location. Additionally, ESP 8266 determines fee based on distance.

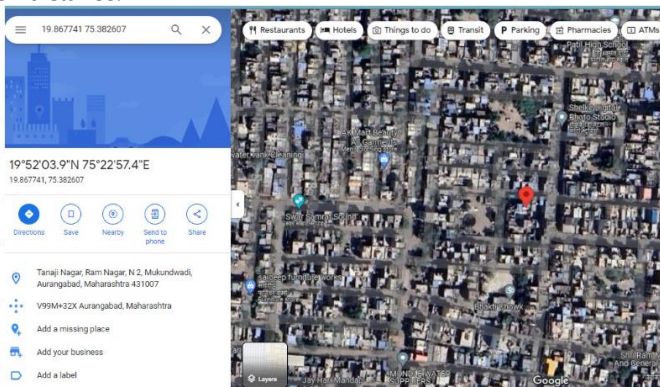


Fig -8: Exact location of the bus

5. CONCLUSIONS

A number of issues with the manual fare collection method are resolved by the solution we propose.

Using GPS to automate fare collecting for transportation is a creative solution that saves effort. Our suggested method solves many of the problems with the manual fare collection mechanism.

Automated fare collecting for public transport is a creative concept that saves time. It is anticipated that by putting these systems in place, issues like the number of buses being used less frequently may arise. Because real-time information is

supplied, the technology will benefit both bus station management and passengers. The previously mentioned problems can be resolved by combining the RFID ticketing systems. In fact, this idea proposes the use of RFID-based tickets in an automated ticketing system that is far more user-friendly. The transport system can incorporate this intelligent embedded technology to handle automated fare collecting. Megacities like Chennai and Bangalore, where a sizable number of people use transportation options every day, are good choices for this system.

ACKNOWLEDGEMENT

I express my sincere thanks to my guide **Prof. Ajinkya Salpe** for guiding me at every step in making of this project. He motivated me and boosted my confidence and I must admit that the work would not have been accomplished without his guidance and encouragement.

Lastly I would like to thank all the staff member of Electronics & Telecommunication Engineering department and my friends without whom the Dissertation report would not have been completed.

REFERENCES

- [1] "Accurate Global Localization Using Visual Odometry and Digital Maps on Urban Environments" Ignacio Parra Alonso, David Fernandez Llorca, Member, IEEE, Miguel Gavilan, Sergio Alvarez Pardo, Miguel Angel GarciaGarrido, LjuboVlacic, and Miguel Angel Sotelo, Member, IEE.
- [2] "Bus-Stop Control Strategies Based on Fuzzy Rules for the Operation of a Public Transport System" Freddy Milla, Member, IEEE, Doris Saez, Senior Member, IEEE, Cristian E. Cortes, and Aldo Cipriano, Senior Member, IEEE
- [3] "Enhancing the Experience of Public Transport Users with Urban Screens and Mobile Applications" M. Foth and R. Schroeter Proc. 14th Int'l Academic Mind Trek Conf.: Envisioning Future Media Environments (Mind Trek 10), ACM, 2010, pp. 33–40.
- [4] "Leveraging Electronic Ticketing to Provide Personalized Navigation in a Public Transport Network" Ana Aguiar, Member, IEEE, Francisco Maria Cruz Nunes, Manuel Joao Fernandes Paula Alexandra Silva, and Dirk Elias
- [5] "Mobile Ticketing System for Automatic Fare Collection Model for Public Transport" Chandra, DekaGanesh ;Prakash Ravi ; Lamdharia, swati
- [6] Evaluation of an active RFID system for fast tag collection," Computer Communications, 2008.
- [7] Wei Liu et al., RFID Applications in Assets and Vehicles Tracking, The internet of things, Auerbach Publications Taylor & Francis Group 2008
- [8] Roussos, G., 2008. Networked RFID systems, software and services. springer.
- [9] Penttila, K., Keskilammi, M., Sydanheimo, L., Kivikoski, M., 2006. Radio frequency technology.
- [10] S.V.Manikanthan and K.Baskaran "Low Cost VLSI Design Implementation of Sorting Network for ACSFD in Wireless Sensor Network", CiiT International Journal of Programmable Device Circuits and Systems, Print: ISSN 0974 – 973X & Online: ISSN 0974 – 9624, Issue :November 2011, PDCS112011008.

[11] T. Padmapriya, V.Saminadan, “Performance Improvement in long term Evolution-advanced network using multiple input multiple output technique”, Journal of Advanced Research in Dynamical and Control Systems, Vol. 9, Sp-6, pp: 990-1010, 2017.

[12] Anisha.E.J, E.Parkavi, S.Aarthi, P.Komalavalli, “H6 Inverter For Solar Power Generation With Automatic Tracking System”, International Innovative Research Journal of Engineering and Technology, Vol 02, pp.01-09, 2017.