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INTELLIGENT TICKETING MECHANISM FOR PUBLIC TRANSPORT

Ms.R.Monisha,¹ Ms.P.Sandhiya².

^{1,2} Assistant Professor (Karpagam institute of technology)
Department Of Electronics And Communication Engineering

ABSTRACT: We often come across the pathetic scene of roadside bystanders patiently waiting at the bus stop for a bus to take them to their destination in time safely. The anxious, tired and pathetic face tells the entire story behind the misery and fate. The helplessness of the authorities is another story difficult to gulp. The proposed project work will totally eradicate this problem by taking care of the scheduling of vehicles. With the modern device possessed by the conductors of the vehicles, the owners can get instant collection details, scheduling other vehicles, tracking the movement, etc. Further using GPS technologies, position, arrival and departure of the vehicle can be flashed to all stake holders at all bus stations. While deciding the logic and coding, focus is laid on user friendly approach. Since the days are not far off for remote operated vehicle this can be the first step to prepare the citizen to adopt for a sea change in futuristic passenger travel. The additional part of the same project work is presented here. Use of paper tickets in public transport is a prevalent practice. However, this system has its own drawbacks; the exact amount has to be tendered, keep the small ticket safely till the journey end. It is said that the job of a town bus conductor is the most difficult job to perform. The conductors' plight cannot be surmounted with words, his brain is a live CPU doing all the multitasking and still stay cool, (even computers get hot and has a fan) towards all kinds of passenger behavior and comments. Should ask for the destination, ticketing, collecting and tendering changes in rupee notes and coins, announcing the place of arrival, directing the passengers to get packed properly, answering unruly passengers, ensuring the door step people on safety thereby ensuring escape from penalties, self recording the transactions while jolting, rocked to face the inspectors, and the list goes on. This project work seeks out a visible technical solution using modern technologies to come out of these chaos. It is proposed to use smart cards to avoid ticketing and money collection and tendering of changes. The destination is to be entered and all relevant details of the journey are displayed in the handheld device which is available with the conductor. The passenger upon swiping his ticketing smart card will immediately get a message on his registered mobile detailing the journey particulars, the balance amount in his travel card and its validity.

INTRODUCTION

A significant proportion of the population depends on public transport for their daily commute. The use of paper tickets has its own drawbacks. Firstly, there is a lot of confusion between the passengers regarding fares which lead to corruption; secondly due to mismanagement of public transport the passengers face a lot of problems; thirdly the entire responsibility of distributing tickets, maintaining the record of the sold tickets and handling money transactions is that of the ticket distributor. Further, paper tickets manufacturing uses wood pulp. This motivates the design of an eco-friendly electronic ticketing system. This project describes the implementation of a system, which enables the use of mobile phones for acquiring public transport ticket and information will be stored in server. Automated accounting of public transport can be used to provide useful estimates of the cost of travelling from one

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bus stop to another as well as the crowd density can be measured. Using GPS technology current location of the buses which is around the bus stop has to be identified by server and this information will be displayed in the bus stop unit. This eliminates the need of man power to verify the bus timings and reduces the waiting time of passengers in all the bus stops.

WORKING PRINCIPLE

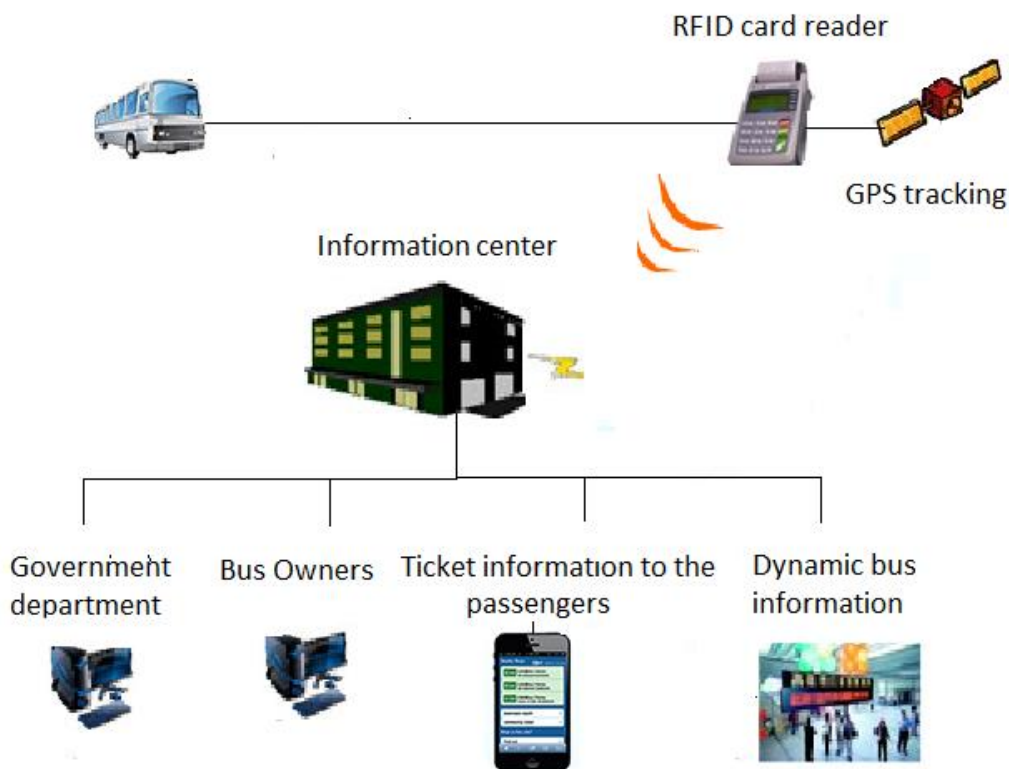
The Intelligent Ticketing Mechanism consists of a GPS module with swipe function. The passengers are given a travel card just like a debit card which can be issued after verification of proof of identity/Ration card. The passengers can recharge this card online or through mobile recharge retailer. The passenger swipes the card with the module available with the conductor. The conductor enters the destination and amount will be automatically deducted from the travel card. This information gets stored in the server and the passenger receives a message which can be used as ticket. This helps the transport corporation to track the bus timings. It even checks whether fare is collected or not, if fare is not collected a fine can be imposed on the conductor. This intelligent system can help the transport corporation to analyses the passenger rush and buses can be allocated efficiently. The head of the family can track even the members especially his/her children through the online unique ID and get information about their boarding on bus. This ticketing system can also be implanted in trains and cabs.

COMPONENTS USED

The following components are used for this project,

- PIC 16F877A
- GSM Modem
- GPS
- RF Transmitter and Receiver
- RFID card
- RFID Reader
- LCD Display

BLOCK DIAGRAM:



BLOCK DIAGRAM DESCRIPTION

RFID card reader is used for swiping function. With the help of keypad the details of travel can be entered manually by the conductor. Automatic fare collection algorithm is used, so extra amount detection is not at all possible in this system. The processed information will be displayed in the LCD. The information will be encoded and transmitted by the RF transmitter. Here the GSM is used to send the text message and the GPS is used to track the exact coordinates of the bus. In server unit the information is received using the RF

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receiver and then decoded for further processing. This information will be used by the transport corporation to manage the bus in an efficient manner. Automatic fare calculation algorithm is used to verify the fare collection and also ensure that correct amount is collected from the passenger. The details of the travel are sent to the passenger's mobile number which is registered with the card. Using GPS, the current location of the buses has to be identified and the arrival of buses will be displayed in the bus stops. The dynamic bus display reduces the waiting time of the passengers in bus stand to catch the next bus.

The card ensures the safety of the passenger. Nowadays children and ladies were travelling alone in taxis, autos and trains; the major issue is their safety. This system provides the solution for the above problem by the way of obtaining the last transaction of their travel card. Using the GPS module bus timings has been monitored. The same travel card can be implemented in all autos, taxis and trains. In case of card missing, the user is allowed to block the card by simply sending a request to the server from his registered mobile.

7. CONCLUSION

Thus the project provides a new portable ticketing system that will improve transactions and sales documentation and reduce paper wastages. Traditional systems have a number of drawbacks. The current trend is moving away from traditional ticketing systems and towards smart and intelligent ticketing systems. The entire process involves the use of technology in a smart way. This system, if implemented, avoids the use of paper tickets and reduces the confusion between the passengers regarding the fares. Upon implementation, it was found that the system is scalable. The proposed system is simple, efficient and foolproof. It is also eco-friendly since there is no wastage of paper. The system is automated so it reduces the conductor burden. The cards being reusable, this methodology is much more convenient compared to the paper based ticketing system. This system will improve on the current system's deficiencies by ensuring accurate money transactions, making sales data readily available, reducing the amount of paperwork, the margin for error and effectively running the buses in needed routes.

FEATUTRES OF THE PROJECT

1. Huge amount of paper can be saved by implementing this system.
2. Eliminates usage of coins and the need for carrying the exact amount of fares.
3. Conductor cannot cheat the passenger by collecting money and not issuing the ticket.
4. Bus location and timings can be obtained when the passenger swipes the travel card.
5. Using the details, buses can be allocated efficiently by sorting regular and irregular passengers.
6. Recharging can be done online or through any mobile recharge retailer.
7. The details of unreserved passengers can be collected when this card is implemented in train ticketing system and also it can be useful in case of any accident.
8. In cabs also this system can be implemented, if so the details of fare and locations of the cabs can be sent to the owner.
9. Eliminates the long waiting time of the passengers in bus stand.

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