EFFECTIVE MANLESS VEHICLE CHARGING SYSTEM WITH RFID

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ABSTRACT

Recent transportation conductors are collect money from passengers and provide tickets. Tickets are printed by papers and also it has date and time, starting and ending place. The RFID license is use to transportation without take tickets. Each person they give money and proof then collect RFID tag. It is unique id. That will be used passengers identification and reduce the travel distance payment. The system controls reduce human error. In this new ticketing system should reduce environmental pollution. Paper ticket throws by passenger. They are polluting the environment. A noteworthy course of action of RFID includes two basic sections: The reader circuit and card, purposes of enthusiasm which are inspected later. The use of RFID has an amazing good position as it is believed to be an essential bit of Internet of Things (IoT). IoT implies an overall framework establishment, associating physical and virtual challenges through mishandle of data catch and correspondence capacities. Identification of things is a huge task before IoT and utilization of Radio-frequency identification in People transportation can be seen as a phase towards realizing IoT.

Keywords: RFID, IOT, PTS


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1. INTRODUCTION

Almost 70% of the people travel by the bus, 50 lakes passengers per day. Travelling time peoples have to carry money with him. Peoples give money then only conductor provides ticket. This method take time and waste of human resource. RFID [Radio Frequency Identifier] consists of RFID reader & RFID tag. The tag already stored detail about person; it can be read from considerable distance away. Bus fare is calculated based on traveling point and bus type. Student pass allowed home to school and back all days in the month validating period is 45 days. Monthly season ticket card issued with the validity period of 25 days. Daily travel ticket price Rs50, Weekly ticket travel ticket price Rs300, monthly travel ticket price Rs1000. Free travel granted for physically disabilities & learning disability recommended by
District rehabilitation officer. Disability should be more than 40% and annual income should be less than 12000. Concession for blind ID card given

To begin with, there is a great deal of disarray between the travelers in regards to charges which prompt squabbles and debasement. What's more, these days there is an extreme security emergency in PTS [Passenger Transports] due standoffish components. The easy to use robotized ticketing framework recommended in this paper won't just naturally deduct the traveler's passage as indicated by the separation voyaged yet additionally recognize the traveler's ID. This is conceivable by utilization of Radio Frequency Identifier cards, GPS and can be utilized to build the exchange also voyaging extremely exact.

This paper fundamentally manages the identification and ticketing of the travelers going by the transport. Likewise examines conceivable future augmentations of this framework in regions, for example, Internet– of-Things. The thought of utilizing RFID in PTS was beforehand set forward by various identities. Be that as it may, the framework proposed here remains more like a future ticketing framework than whatever in addition. Use of Raspberry Pi is another vital component attributable to conceivable outcomes of expectations extensions along among variations. Through the appearance of original frameworks near supplant RPi [5], littler and more dependable frameworks be anticipated that would appear. RFID has been a rising innovation as of late. RFID innovation can be viably utilized in number of applications because of its affinity for good organization. Since designed for its purpose, it's been an across the board apparatus for both following the travel transports. The proposed framework essentially act to draw not inside the reliability among different transport offices that will close in uniform access of travelers in day by day ride from beginning to end a computerized server organism refreshed each and every moment in time the travelers go via conveying the RFID based tickets.

2. LITERATURE SURVEY

In this paper [1] conductor less and also monitoring accident using the global positioning system. Passenger count calculated using IR sensor. Passenger travelled distance automatically calculated using motor & sensor. GSM used to find the location of the vehicle& GPS is the most commonly use cell phone standard in the universe. It sends the Accident information to the nearby hospital.IR beneficiary an LED passenger crossed the rays that time rays interrupted. So that count value increased by one.

RFID Based usual bus ticketing advantages and trends [2] they propose two modules proposed first one GPS fetched the starting and ending location. Second one RF module, bus driver press a key its first transmission of details of the bus. Radio frequency signal decoded using decoder then detail given to visually impair people through a voice output.

GPS based automatic vehicle tracking system [3] using RFID. Electronic device is installed into a vehicle that was visible to owner and third party. Remote control vehicle has the capability of monitoring position through GPS track & recognition of thing to keep away on or after conflict. Easily know where our vehicle is, the route and advent flash of your swift flight of an arrow of vehicle, if someone is expressing offensive reproach your vehicle. Save our truck from thieves, a vehicle monitoring device can be of help.

Public relegate structure Ticketing scheme using RFID and strain mainframe belief Mumbai truck capability B.E.S.T [4] In the city-based city like Mumbai, Kolkata we have an extreme (not work properly/failure to work properly) of communal transportation and different protection problems . Initially, there is a batch of misunderstanding among the passenger (related to/looking at/thinking about) fare switch lead to (dishonest actions that ruin your trust), Secondly due to(running a business or organization very badly)of community
transportation the passenger face the trouble of transfer push thirdly now/recently we have extreme security problems in public transport due anti-social standoffish elements.

This paper [6] suggests an accessible mechanized ticketing structure which resolve routinely take the passenger’s cost through the distance travelled further detect the passenger’s identification. This conceivable only possible by use of RFID tickets and GPS perhaps use to construct the deal plus travelling awfully perfect. These manuscripts essentially deal through the detection as well as ticketing of the passenger investigate the bus. In recent transportation conductor provide a tickets. The buses have more peoples that times they stop the bus (stage). All are take a ticket them only start. It will take more time, more malpractices also occurred. Then checking inspector came and checks the tickets. That time also more time taken.

3. PROPOSED SYSTEM

All people has RFID card. The RFID reader fixed in the bus. If someone enters and exit time reader observes the statistics. The information displayed at the liquid crystal show in addition to monitoring display. In vehicle attach GPS that discover the location of the car. Computerized bus ticketing machine domestic page design is delivering below; Person has to insert a RFID tag after, display name, the beginning region and finishing vicinity displayed in figure 1.

![Figure 1 Home page design](image1.png)

![Figure 2 Implemented System](image2.png)

4. HARDWARE REQUIREMENTS

The primary segments of the framework incorporate RFID labels, RFID reader, Raspberry Pi, GPS module, LCD, servomotor and so on.
RFID tag
RFID labels are the part which is used with the end goal of recognizable proof. The tag has a microchip and an incorporated receiving wire. Comparing to each tag, the microchip contains one of kind advanced information. The most noteworthy element of RFID tag is the individuality displayed through hall of them. At the point when the tag is perused, advanced information in the chip is launch throughout broadcasting repetition impedance strategy. These cards might be of various sizes and collection. Latent labels without any battery contain lengthy living as well as shorter peruse range and are perfect for group distinguishing proof procedure generous the preferred standpoint of ease. Cards formed S50 RFID cards are perfect for the utilization now.

RFID Reader
Advanced information of label is decoded during the consumption of RFID reader. The Radio frequency ID reader transmits an electromagnetic indicator which is contribution to the label. RFID label is invigorated because of these electromagnetic waves consequently bringing about the generation of a limited attractive field, which have an obstruction design. This obstruction design which as perused by a RFID reader would deliver the one of a kind number allotted to the RFID tag and in this manner the address of the tag is gotten. It ought to be noticed that the address concedes beginning every RFID tag as they are specified through EPC global what's more; consequently it offers finish imperviousness to duplication. Barcode scanned the information, FID scan and recover the identifying data. RFID work surrounded by a 300 feet (bar code will work 15 feet) of the scanner.

Raspberry Pi
The R-Pi is a progression of master tag estimated one-board PCs. It is a minimal effort, fundamental PC that was initially expected to enable goad to enthusiasm for registering among school-matured youngsters. It is a minimal effort, essential PC that was initially expected to enable goad to enthusiasm for processing among school-matured youngsters. The Raspberry Pi is controlled on top of a retiring route timber and highlights port for HDMI, USB 2.0, complex video, analog sound, control, Internet, storage disk card. ARM base microcomputers have 40 GPIO sticks along with be able to be customized in projects.

GPS Module
Global Positioning System is the most recent innovation utilized as a part of fluctuates fields, for example, route, following and in addition inside a few of observation purpose. Now utilized GPS to ascertain the separation went by the traveler. GPS module 01 utilized be able to arranged to create the scope and longitude of the present spot of the transport. The location of the transport is able to be checked constantly utilizing this GPS module [11]. Joining GPS technology and keen cards we can plan a finish transport ticketing framework. It bolsters 66 channel and outer radio wire key similarity for most extreme affectability. USB link is incorporated to associate with PC USB port. The Global Positioning System is a direction-finding system. It works any time any weather conditions, anywhere, 2D, 3D position it calculate the location. GPS receiver can track 9 or more satellite. site can designed then after it get other details that are all speed, attitude, direction, outing distance, expanse to target, daylight and the end of the day time.

Modem
Every 3G USB modem is capable of be utilized for in receipt of web association. System suppliers with more administration territory are favored. However, this does not influence the
execution of the framework as it is conceivable to store information and utilize it as indicated by web association. Because GPS does not require web association, functioning of different parts stay unchanged.

**Servomotor**
A servomotor is a turning actuator to takes into account exact control of rakish position, speed and increasing speed. It comprises of a reasonable engine joined on the system to an antenna for location input. It additionally requires a generally complex organizer, regularly a devoted module planned particularly for utilize through servomotors. Entry way taking care of framework is restricted through servomotor. For overwhelming burdens, stepper engines can be utilized. Determination of engine depends on the heaviness of entryway, its working component and so forth.

**Show unit**
Cheapest show unit accessible is LCD. Be that as it may, Pi has leeway that other show units can be associated with it straightforwardly through show port.

**PIC micro controller**
PIC16F877A applications are security devices, safety devices, remote sensor, home computerization and in many industrial instruments. Electrically Erasable Programmable Read Only Memory (EEPROM) called as “double E prom “is like a ROM but data can be erased from it electrically without removing it from the computer. ROM chip programmed only once . EEPROM programmed again and again. Low cost. Microcontroller will not use that place it will be used. It contains 35 single word instructions. Flash program memory contain 8 x 14 word.368 x8 bytes of RAM.256 x 8 bytes EPROM.10 bit analog to digital converter. 3 timers that are timer 0, timer 1 and timer 2 shown in figure 3

![Figure 3 PIC 16F877A microcontroller](image)

**UART**
Universal Asynchronous Receiver/Transmitter is a computer H/W device for asynchronous sequential statement. A UART is an incorporated route. UART takes bytes of data and broadcast the entity bits in a sequential approach. Communication may be simplex, full duplex, half duplex. A UART contains the following components: A clock generator, input and output registers, transmit control, receiver control, data bus buffer, FIFO memory buffer. The distance between bus stops in the route calculated by this way.

![Figure 4 Bus stop route calculation](image)
In table 1, figure 4 represent the distance between the bus stop. The distance $r$ mean the normal class b bus price is 1, class a bus fare is 2. GPS used to calculate the passenger travelled distance. The bus position continuously monitored smart card used to identify the passenger details. Every passenger has a smart card. Smart card easily rechargeable [7]

The distance between bus stops in the route is given below

<table>
<thead>
<tr>
<th>Start location</th>
<th>End location</th>
<th>Distance</th>
<th>Ticket fare (class a bus)</th>
<th>Ticket fare (class b bus)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>$r$</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>C</td>
<td>$2r$</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>D</td>
<td>$3r$</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

It contain user ID no, current balance, status, balance. RFID reader have exit and entry gate. The traveled time easily stored in database shown in the figure 5.

**Figure 5** Database storage

The public transportation used to many people [10]. Ticket low prices. The ticket change is varied children, pupils, older people, and pensioners. Disables, police and army peoples. Multiple RF Cards are scanned in the RFID Reader then stored in to the PIC Microcontroller.

**Figure 6** System functioning

This framework shown in the figure 6, comprises of a RFID reader which is utilized toward recognize the traveler, a organize part which utilizes the record to screen factor like record adjust, label accuse and so on. The framework likewise incorporates a separation measure part which utilizes the GPS to discover departure place and incoming spot to figure remove, and a web right to use for refreshing list. A RFID framework comprises of a tag, fundamentally a microchip with a reception apparatus and a cross examiner or reader with a radio wire. Most RFID labels contain no less than two sections, one is a coordinated circuit for putting away and preparing data, tweaking and demodulating a radio-recurrence (RF) flag, in addition to extra particular capacities.

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The second is a radio wire pro-receiving and transmitting the flag. The traveler incoming the coveted transport must show/put the RFID label in face of the reader. At the point when the tag is set by the reader route, the tag gets stimulated also the reader peruses the exceptional computerized information behind it. Henceforth the tag uncovers significant data to the reader circuit. The reader route stores this data in its inner recall briefly and further more connections to the basic list framework which have every the point of interest of the specific traveler.

It confirms the personality individual. Have connected by the normal list framework, it additionally checks if the traveler has adequate adjust in his record for the travel. Just a man with least account adjusts and confirmed personality will have the capacity to go into the transport which guarantees safe and dependable transport framework. Last all tour, the person transport unit update database by exchanging acclaim to the comparing account [8] and furthermore the data can be create in the fundamental database. Irritated glance of each one of those data will permit improved monitor, clearness and so lessening debasement.

![Figure 7 Flow chart](image)

5. CONCLUSION

This paper has exhibited a completely mechanized, solid, straightforward and advantageous framework used for ticketing in Public Transports. RFID cards being reusable are much more helpful contrast with the paper base ticketing framework. These are utilized as widespread travel go by tag that will permit one transport lying on any course. GPS benefit alongside web was utilized for the separation estimation and admission count. GPS does not require web so is dependable regardless of the possibility that there's no network at all spots of travel. Since passage figuring is done through web, toll is perfectly clear and gives no space for confusion. Database for voyagers were made and gotten to by means of net utilize a USB modem. Actualizing this framework is able to be viewed as a stage towards IoT. Effective program calculation can make framework to distribute constant area information in web, guaranteeing time keeping of administrations.
6. FUTURE ENHANCEMENT

The whole system used in the transportation, the card based ticketing system is more usable comparing paper based ticketing system. Those cards are reusable. The cards are used any transportation on anywhere. All are having RFID card it is useful for monitoring all passengers in travel time. In future work him RFID card is linked with bank, and then check the balance for our reference. Each card has a separate number given. It is easier way to recharge that RFID tag.

REFERENCES


[6] Prasun Chowdhury; Poulami Bala; Diptadeep Addy; Sumit Giri; Aritra Ray Chaudhuri RFID and Android based smart ticketing and destination announcement system, International Conference on Advances in Computing, Communications and Informatics (ICACCI), 2016


