Automated Toll Collection System using RFID

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ABSTRACT:ATCS is an Automated Toll Collection System using RFID used for collecting toll automatically. This paper focuses on an Electronic Toll Collection system using Radio Frequency Identification technology. This will identify the vehicle using radio frequency. Every vehicle will hold a unique card i.e RFID card or RFID tag.RTO or traffic governing authority will assigned it. According to this number all the basic information as well as amount he has paid in advance for the toll plaza will be stored. The amount will be deducted from his prepaid balance. Due to this vehicle doesn't have to stop in the queue.As a result it saves the time, fuel is conserved and also contributes in saving money.

KEYWORDS: ATCS,RFID Reader, RFID card,TOLL PLAZA

I.INTRODUCTION

Indian National highways these days get to be one of the busiest roadways in India. Considering the presence toll collection system where each vehicle has to stop pay the amount .The central point incorporates the expanding number of vehicles along government courses and the expanding populace in significant urban areas and towns of India. There are also various police checkpoints that we face during our journey to find the stolen vehicle. This is the motivation behind implementing propose system, is that the major factor that is time. To save time and make the system more smooth. Where, RFID card is used to store the information. These RFID card is used to collect toll and identification of vehicle. Toll will collect by simply scanning RFID card by toll collector. At the scanning time the toll collector as well the police will know about the stolen vehicle. This will reduce the time required for toll collection at toll plaza. We are going to develop fast and effective system for toll collection. In propose system we are going to use RFID card to store all the details of vehicle owner as well as vehicle. . User can pay the toll for one way routes or two way routes. To collect toll, toll collector will simply scan user RFID card. System will automatically collect the toll and verify vehicle is stolen or not. If any vehicle found as stole then system will notify to police station.

II.LITERATURE SURVEY

1. Driver has to stop and pay a toll collector sitting in a tollbooth. The toll collector determines the amount to be paid by each vehicle based upon its characteristics or classification. Enforcement was mainly addressed by the use of gates that were raised after the toll was paid. Manual lanes can accept an extensive variety of payment means, such as cash, credit/debit cards, and smart cards.
2. The paper is concerned with automated toll collection system using the active RFIDtags; vehicles are made to pass through a sensor system that is embedded on the highway just before the tollgate. The system will electronically classify the vehicle and calculate the exact amount to be paid by the vehicle owner, ensuring no pilferage of the toll amount. Vehicle owners, who frequently pass through tollgates, are required to have a prepaid smartcard, which will deduce the appropriate amount, by using an automated smart card reader
3. Electronic Toll Collection facilities offer travelers the ability to pay toll electronically,most commonly via Radio Frequency Identification (RFID) transponders placed within the vehicle. ETCs are complex systems comprising of a multitude of sensing and electronics equipment. To prevent violation, photo enforcement cameras are used to capture license plate images of the violating vehicle. To ensure adequate image quality and integrity of these cameras, it is standard maintenance practice to manually review camera images on a periodic basis.
4. Automated toll fee collection in Indian road has been widely anticipated. This hasbeen a challenge because of cost and efficiency of these systems. This paper presents automated toll fee collection system in more efficient, faster, low cost and in very secure manner. Normal cameras are used to capture vehicle number plates and vehicle numbers are retrieved. Using the retrieved vehicular id the details of the owner and linked bank accounts are collected from database. The toll fee is deduced from bank account if amount is available else manually paid. If more than one vehicle belonging to a particular organization is present nearby toll then these vehicles are clustered to reduce the number of transactions made.

III.PROPOSED SYSTEM

1. The most common approach for collecting tolls was to have the driver stop and pay a toll collector sitting in a tollbooth. A manual lane can process approximately 100 vehicles per hour. So there are multiple lane on toll booth. These increase the labor cost, fuel consumption, required time, financial loss. To find the stolen vehicle police need to search separately

2. If you're driving a long distance and are trying to get there as quickly as possible, you will probably travel along highways and interstates that allow you to travel faster and have fewer, if any stops. Of course, certain types of roads have occasional stops where you have to pay money to travel on the road. These types of roads are called toll roads. Sometimes they also go by other names, such as toll-way. To travel on a toll road, you have to pay a fee — called a toll. Sometimes you have to stop every so often to pay additional tolls to keep traveling on the toll road.

3. In our project we are going to use RFID card to store all information of vehicle as well as vehicle owner. RFID card will contain vehicle owner name, address, mobile number, email id, owner driving licenses number, vehicle number, vehicle type, user type like pass holder/ non pass holder, etc. Toll collector will scan the RFID card to vehicle authentication and toll collection
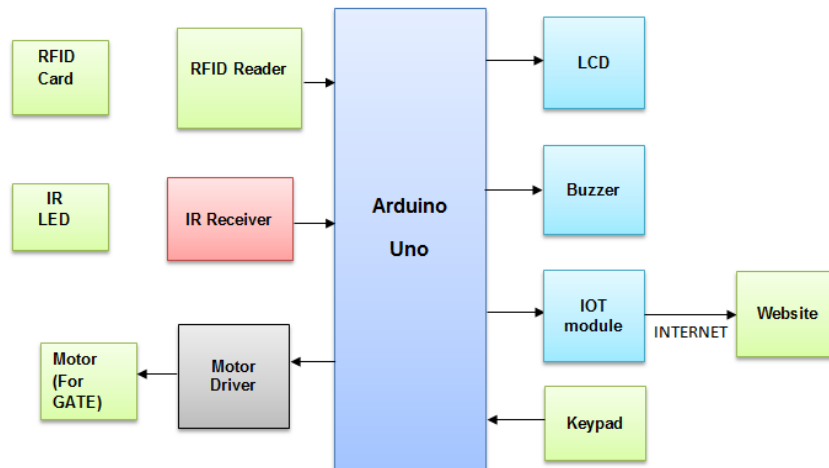
Fig 1: System architecture
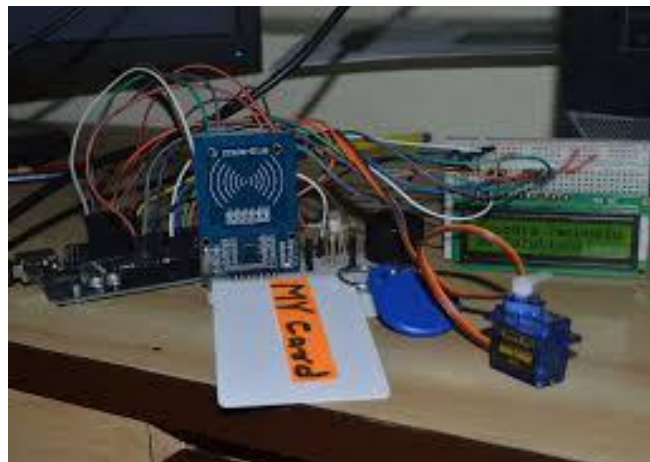
Fig 2: System using RFID

In above architecture diagram user register him/her into the system .With hi/her personal details as well as vehicle details.Toll collector scans RFID card to collecttoll..After scanning RFID card system check card is valid or not.If card is valid then the amount will be deducted and after the buzzer the vehicle can pass the gate.

IV. CONCLUSION

RFID card is effective way to store information also effective way to handle stored data. We propose effective and transparent toll collection system. Toll collector just need to scan RFID card; all other operations are done automatically. Automation toll collection reduces the time required for toll collection. Also propose system is capable of identify vehicle is stolen or not. This feature will track stolen vehicle.

REFERENCES

[1] The Time's of India paper April 20, 2012 "Now Road toll can be paid without stopping at Toll Plazas".

[2] Klaus Finkenzeller, "RFID Handbook: Radio-Frequency Identification Fundamentals and Applications". John Wiley & Sons, 2000.

[3] H. Vogt. Efficient Object identification with passive RFID tags. In F.Mattern and M. Naghsinesh, editors, International Conference on Pervasive Computing. Volume 2414 of Lecture Notes in Computer Science, pages 98-113, Zurich, August 2002. Springer-Verleg.

[4] Electronic toll collection system using barcodelaser technology. 1. Sanchit Agarwal, 2. Shachi Gupta, 3. NidheeshSharma.International Journalof Emerging Trends & Technology in Computer ScienceTom Pettruzzelis,"TELEPHONE PROJECTS FOR THE EVIL GENIUS",BPB PUBLICATIONS

[5] Automated Toll Collection Using SatelliteNavigation. 1.Ms.KirtiA.Lonkar, 2. Ms.Pratibha P.Kulkarni, 3. Ms Monalisha Dash, 4. Mr.AbhishekDhawan, 5. Mr.HemantR.Kumbhar, 6. Mr.MonikaP.Gagtap.

[6] http://www.ijcsmc.com/docs/papers/February2015/V4I2201515.pdf

[7] http://www.iosrjournals.org/iosr-jce/papers/Vol9-Issue2/L0926166.pdf