

Authenticated Toll Collection and Tracking of Vehicles using RFID

R.Kavitha, S.R.Srividhya

ABSTRACT-The computerized toll accumulation framework utilizing aloof Radio Frequency Identification (RFID) tag develops as a persuading answer for the manual toll gathering strategy utilized at tollgates. Time and productivity involve need of present day. So as to conquer the serious issues of vehicle clog and time utilization RFID innovation is utilized. RFID peruser fixed at tollgate outline (or even a hand held peruser at manual path, in the event that RFID[1,2]labeled vehicle enters manual toll paying path) peruses the label connected to windshield of vehicle. The item recognition sensor in the peruser distinguishes the methodology of the approaching vehicle's tag and toll derivation happens through a prepaid card doled out to the concerned RFID label that has a place with the proprietors' record. This makes tollgate exchange increasingly advantageous for the open use.

KEYWORDS: Automated toll collection (ATC), Radio Frequency Identification (RFID)

I. INTRODUCTION

Automated toll collection (ATC)[3,4] is an innovation empowering the electronic accumulation of toll Payments. It has been examined by analysts and connected in different expressways, scaffolds, and passages requiring such a procedure.

It is additionally a strategy by which to control objections from drivers with respect to the burdens engaged with physically making installments at the tollbooths. Other than this conspicuous favorable position, applying ATC[5,6] could likewise profit the toll administrators. In this way, the ATC framework is a success win circumstance for both the drivers and toll administrators, which is the reason it is presently being widely utilized all through the world. An ATC framework generally uses radiofrequency ID (RFID) innovation. RFID is a nonexclusive term used to distinguish advancements using radio waves to naturally recognize individuals or articles. RFID[7,8] innovation was first presented in 1948 when Harry Stockman from that point forward, and has been actualized in different applications, for example, in distribution center administration, library framework, participation framework, robbery counteractive action, etc. As a rule, RFID is utilized for following, following, and distinguishing objects.

II. LITERATURE REVIEW

A. Automatic Toll Gate System Using Advanced Rfid And Gsm Technology:

Most Electronic Toll Collection (ETC) frameworks around the globe are executed by DSRC[9,10] (Dedicated Short Range Communication) innovation.

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R.Kavitha, Computer Science & Engineering, Bharath Institute of Higher Education & Research /BIST/ Chennai,India

S.R.Srividhya, Computer Science & Engineering, Bharath Institute of Higher Education & Research /BIST/ Chennai,India

The idea proposed is of programmed toll charge installment framework and the sum exchange data sends to the mobile phone of the drivers through the GSM modem innovation. It is a creative innovation for interstate system programmed toll accumulation arrangement. In this paper, the edge making and working stream out of the framework is depicted and information data is likewise effectively traded between the drivers and toll specialists, accordingly empowering an increasingly productive toll accumulation by decreasing traffic and wiping out conceivable human blunders. After division of numbers and characters present on number plate, format coordinating methodology is utilized to acknowledgment of numbers and characters. The concentrate is given to find the number plate locale appropriately to fragment all the number and letters to distinguish each number independently.

B. Number Plate Detection With Application To Electronic Toll Collection System:

This Paper depicts another methodology of labeling of number plate for gathering of Toll with application to Automated Toll System[11,12]. In this framework we recognize the area of number plate of vehicles with the assistance of format coordinating and extricate number from number plate and procedure it for accumulation of toll. The number plate is labeled in the database with the client's close to home data, financial balance and vehicle subtleties. Toll is naturally deducted from client's financial balance or charge card and notice is given to the client by sending SMS or Mail. Clients need to pursue standard guidelines for number plate configuration recommended by the toll. Manual toll office will be accommodated unregistered vehicles and if there should arise an occurrence of framework disappointment. This framework can be executed in better places, for example, Clubs, Restaurants, Companies, Parking regions and so on. The fundamental objective is to make computerization in rush hour gridlock the executives absent much change in current framework and ought to be more affordable.

C. Research Trends In Number Plate Image Technology

Essentially video reconnaissance framework is utilized for security reason just as checking frameworks. Be that as it may, Detection of moving item is a difficult piece of video observation. Video reconnaissance framework is utilized for Home security, Military applications, [13,14]Banking/ATM security, Traffic checking and so forth.



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Presently multi day's because of diminishing expenses of superb video observation frameworks, human action location and following has progressed toward becoming progressively in down to earth. As needs be, mechanized frameworks have been intended for various identification errands, however the undertaking of identifying wrongfully left vehicles has been left to a great extent to the human administrators of observation frameworks.

The discovery of Indian vehicles by their number plates is the most intriguing and testing research subject from recent years. It is seen that the number plates of vehicles are fit as a fiddle and measure and furthermore have distinctive shading[15,16] in different nations. This work proposes a strategy for the location and distinguishing proof of vehicle number plate that will help in the recognition of number plates of approved and unapproved vehicles. This paper displays a methodology dependent on basic however proficient morphological activity and Sobel edge identification technique. This methodology is rearranged to portioned every one of the letters and numbers utilized in the number plate by utilizing bouncing box strategy.

D.Advanced Vehicle Tax Collection

The serious issue being substantial traffic at each Toll Booths in the city can be essentially decreased by the presentation of the Radio Frequency Identification Based Toll Tax Automation System[17,18] which makes the Toll Deduction at the Toll Plaza's increasingly proficient and impeccable. Its essential necessity is to clear out the requirement for automobilist and toll experts to physically perform toll entryway installments and toll charge accumulations, separately so as to go past the toll stall. The proposed RFID framework transmits a specific ID code when it comes to close to the toll station. On accepting the code, processor checks the got code and contrasts it and the put away code, if the code coordinates the entryways open else they stay shut refusing the vehicle to pass. This paper centers around utilization of radio recurrence distinguishing proof (RFID)[19,20] innovation for electronic toll gathering framework. Because of which the issue of traffic clog and human mistakes in the framework is adequately redressed and gives effective toll charge accumulation office for the purchasers at each Toll Station by Fig:1.

III. ARCHITECTURE DIAGRAM

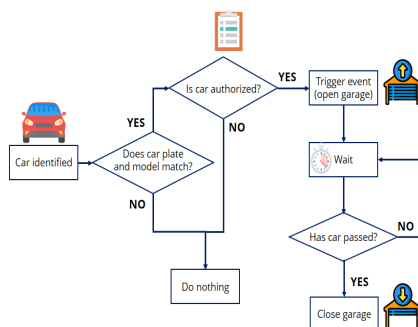


Fig:1 Toll Collection

1. User registration and payment process

- By Fig:2, User have to give input details like user name, vehicle number, RFID[21,22]value, Source and destination.
- In the next stage if their registration is accepted, they have to make the payment depending upon number of tollgates between source and destination.

2. Toll validation

- By Fig:3, In the tollgate, their RFID [23,24]value is read and if it matches with the stored value in the tollgate, then their vehicle is allowed otherwise not allowed.

IV. RESULT & IMPLEMENTATION



Fig:2 Payment Login

- By Fig:2, User has to give input details like user name, vehicle number, RFID value, Source and destination[25,26].

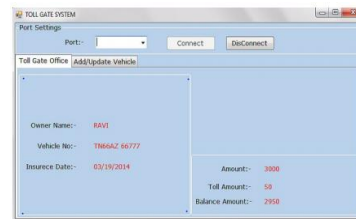


Fig:3 Toll Validation

- In the next stage using Fig:3 if their registration is accepted, they have to make the payment depending upon number of tollgates between source and destination.

V. CONCLUSION

By doing mechanization of toll court we can have the best arrangement over cash misfortune at toll square by decreasing the labor required for gathering of cash and furthermore can lessen the traffic in a roundabout way bringing about decrease of time at toll court. In our undertaking we have presented the methods, for example, Radio Frequency Identification. This procedure will incorporate the RFID tag and peruser[27,28] which as a team with one another can be utilized to recognize the vehicle personality. The heap cell plate which is presented for gauging the vehicles to group them in various classifications as light and substantial vehicles. The IR Trans beneficiary is utilized for recognizing the nearness of vehicle at various areas which will go about as the door go to the toll court.



By viably using these three methods at various phases of our undertaking we can speak to the computerization in toll square which will lessen the total handling time by a couple of moments seconds which is vital just as diminishes cash spillage in a very practical way.

FUTURE ENHANCEMENT

In our present idea we are just utilizing the RFID framework for vehicle location. So we can expand the extent of this idea in other manner for concentrate information recording. For that reason we can utilize the IR courten at the passage door which is trailed by the Camera which will be continuesly catching the pictures of the vehicles going into the toll square. Also, the third step the RFID is gathering the vehicle number. Presently when the vehicle goes through the IR courten [29]it tresses the blueprint of the vehicle, in the subsequent stage the camera will take the picture of the vehicle and pursued by the RFID to record the information identified with the vehicle. The heap cell gauges the vehicle and groups it into two classifications as light and overwhelming vehicle individually. The entire information gathered together and sent to the incorporate server which will store it for stipulated time. This application will help in identifying the vehicles in the wrongdoing cases like terrirism& pirating of merchandise and it will likewise lessen the heap on check posts.

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