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A Survey on Toll System Using E-Wallet and SMS Gateway

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ABSTRACT: In this system named a toll system with e-wallet and SMS gateway gives as an idea of the problems which are faced at the regular toll collection system and stolen vehicle rate. This is leads to reduce the time, fuel and pollution due to vehicle which are the issues of present day. To remove the issues of vehicle congestion and time consumption and toll charges collection, we used image processing technology. In this system of toll center videos or images will be passed as an input. Using videos the number plate of vehicle is detected and further process for identifying the stolen vehicle .The proposed with e-wallet system's having module like RTO admin module, Toll admin module, Police admin module, Super admin module and the general people. The role played by the Super admin is to register toll centers as well as to maintain the collection record at various locations using User name Password any many details. These testimonial are sent to the toll admin module, by using this he has to log into account. Toll admin module is specifically used for the calculation of all toll tax deduction based on type of vehicle. The RTO admin work is to register the vehicle details and compare it with the vehicles number plate. If the stolen vehicle is passes through the toll center, the number plate is capture by camera and further algorithm is applied for detected purpose and the notification of stolen vehicle is send to the Police admin module. Toll tax is deduction takes place through e-wallet system assigned to the particular number plate of the vehicle type that belongs to the vehicles owners' account. The whole days toll tax collection information details can be saved in record and send to the Government for verification to check whether it is properly calculated or not.

KEYWORDS*:* E-wallet, Number plate detection, Toll collection, Vehicle number recognition, RTO admin, Government, Prerecorded Video.

I. INTRODUCTION

The proposed system is defined the toll system with e-wallet and SMS gateway is an automatic toll collection phenomena where collection of toll amount can be done automatically using the system e-wallet and the identification of stolen vehicle is done through the image processing domain and the message of stolen vehicle detected through the SMS gateway

The live video of passing vehicle from the toll center is maintained in the database, by using those images those images the image processing technique will be applied to detect the number plate of vehicle with the help of this extraction of number plate the details record of the vehicles owner will be taken from the database of RTO admin and correct amount will be deducted according to the vehicles type, if the vehicle user having its own e-wallet system, even that detailed information will be taken from the database of RTO admin because that if the person has already paid the toll amount charges in advance for a corresponding duration and the toll amount won't be collected properly from the user. To remove the vehicle congestion or traffic congestion problem and time consumption also, the e-wallet system concept is used.

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In the proposed system video will be used as an input purpose. Using this prerecorded video the number plate of vehicle is analyze and the matching process of number plate gets started. The toll system having modules like are RTO admin module, Toll admin module, Police admin module, Super admin module and the general users (public). The work assigned to the Super admin is to make registration of all the toll booths under in it using User id and password and by filling many important details.
The Toll tax deduction is done by using e-wallet given to the said number plate of the vehicle that belongs to the users account.
The main aimed behind to build this system is to making the toll collection process automatic and the number plate detection using image processing technic at toll plazas. This proposed system will help to save users time as well as help to reduce traffic congestion of vehicles at toll center.
The proposed system toll system will also help in reducing any corruption done at the toll centers. The proposed system will maintained the database of number plate images and will further perform matching process of images with RTO admin database to detect the number plate of a vehicle. Using the video the number plate is detected and the amount deduction process and stolen vehicle identification process continues.

II. LITERATURE REVIEW

A. AUTOMATED TOLL COLLECTION SYSTEM USING RFID:

Author name: Pranoti salunke, Poonam Malle, kirti datir.
In this research paper of automated toll collection system uses the RFID based technique for collection purpose.

B. ELECTRONIC TOLL COLLECTION SYSTEM USING WIFI BASED TECHNOLOGY.

Author name: Adesh Mahestre, Shilpesh Agre.
In this research paper the wifi based technology is used for toll tax collection and proper maintainance of toll amount.

C. AUTOMATIC TOLLBOOTH REDUCTION AND THEFT VEHICLE SYSTEM DETECTION SYSTEM USING HC2D BARCODE.

Author name: Jyoti Jadhav, Pooja Kamble, Jayashri Kharpe.
This paper shows the hc2d technique to reduce crowd from the toll and uses barcode decoding process for identification process base system to collect the toll tax automatically.

D. AUTOMATED TOLL SYSTEM FOR NUMBER PLATE DETECTION AND COLLECTION:

Author name: Ankita Bhore, Bhawana Nimbhorkar, Punam Pure, Priya Thombre, Volume 5, Issue 9, October 2016
The journal is to overcome the drawback of vehicle congestion, money corruption, time consumption and stolen vehicle. It uses the technique called image processing to detect the number plate and input the video and having the collection of number plates in the video.

III. PROBLEMS IN EXISTING SYSTEM

A. INCREASING CORRUPTION OF MONEY AT TOLL BOOTHS:-

The correct amount of collection of money is not reach at government it leads to increase the corruption, the toll handler collect the correct amount of money but some issue not give the collected correct amount of money to the government admin at this time chances of corruption at toll booth is more.

B. INCREASING RATE OF STOLEN THEFT VEHICLE:-

In existing system there is no mechanism available for identification of stolen vehicle which is passes through the toll booths this leads to the growth rate of stolen vehicle.

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C. MORE VEHICLE CONGESTION AT TOLL BOOTHS:-
In current scenario, the owner of vehicle passes the vehicle through the toll booth then the toll charges handler is gives the receipt to every owner of payment manually and due to this the system throughput is get slow and by this there is a long queue of vehicles is in waiting for paying charges so it ultimately leads to traffic congestion.

D. THE TOLL DEDUCTION PROCESS IS TIME CONSUMING:-
In the existing system, the toll collection process is manual by cash, the toll payment deduction is done by hand, giving cash due to the manual process the system is time wasting and required more human efforts.

E. HANDLING MORE CASH AND CARRYING CREDIT CARDS DAILY:-
The previous system by hand collection system at toll booths and the payment deduction of toll tax was done through the person individually this process hence a person always had to bring the cash with him or the credit cards debit card for the payment deduction of the toll tax.

F. FUEL CONSUMPTION AND POLLUTION:-
In the previous system vehicle gets stand ideal at toll booths by making queue and wait for the toll tax payment charges submission in this case many users not stop the vehicle engine and takes more petrol, diesel consumption so the fuel gets waste.

IV. OBJECTIVES

A. COLLECTION OF TOLL TAX AT TOLL CENTERS:-
The biggest objective of the system proposed is to collect the toll tax automatically and give the correct count amount of money to the super admin module without any money corruption at toll by e-wallet system.

B. DECREASES THE RATE OF STOLEN VEHICLE AT TOLL CENTERS:-
The rate of stolen vehicle from the tollbooth is increases more rapidly now a days because no any prevention policy is available, for that by using the algorithm of image processing template matching algorithm to match the stolen vehicle number plate with the police admin modules database the stolen vehicle will get find and reduces the stolen rate.

C. RATE OF VEHICLE CONGESTION IS DECREASES MORE FAST:-
The vehicles of any type at the toll center pay the toll tax manually and take the receipt of payment this is the long process for each and every individual user of vehicle and by this the vehicles are get congested and a crowd of vehicle at the toll centers for that problem the e-wallet system is build to make automatic money transaction process.

D. TIME SAVING SYSTEM:-
The existing system is using the “by hand” cash process manually and due to that the time it will take more for that uses the e-wallet system to save the transaction time which is more efficient.

E. THE AUTOMATIVE SYSTEM:-
The system in the existing world is the manual process system with the sequence flow and for that automatic system is implemented to deduct the amount.

V. METHODOLOGY

A. THE AUTOMATED TOLL BOOTH SYSTEM WITH TEMPLATE MATCHING ALGORITHM:-
In the rep paper The toll system uses an algorithm i.e. Template matching algorithm (OCR) by using this The simple number plates follows the new format off lengths can be 8,or 9 or 10. Format of the simple number plate is as shown below.

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AA 11 BB 1111
Where AA is shows a two letter state code; 11 is displays the two digit district code in length; 1111 is the unique only simple license plate number and BB are shows the optional alphabets if the 9999 numbers are used mostly up.

B. THE NUMBER PLATE DETECTION WITH FUNCTION TO ELECTRONIC TOLL COMBINATION SYSTEM (RFID):-
The above research paper describes the use of template matching algorithm using segmentation and gray scale conversion and the RFID system for scratching card in electronic toll booth.

C. THE TEMPLATE MATCHING (ORC) ALGORITHM:-
The templates is the combination of all characters which is used to decide to match with available image template(number plate). The character present in number plate will compare to that templates in algorithm. The template which is having the more number of match point considered as an image. The proposed system is capable of observing vehicle number plate as an automatic manner. After reorganization of the plate number will be further compared with the pool of respective number plate in database. If the number of number plate in system is available then performed matching.

1) The Gray scale conversion Method:-
The p pixel and q pixel image can be organize in such a form it forms matrix. The Value (p, q) presents the gray scale efficiency in the form of it may be 0 or 1 with when 0=black and when 1=white.

2) The True colour of RGB:-
This method is used to represent the image as an three dimensional matrix. Each pixel in this matrix is having a red, green and blue colour element along with the value of third dimension values (0, 1).

3) The Segmentation Method:-
In segmentation method the number plates templates is divided into number of segment to identify and match with available template

D. THE MOVABLE STOLEN VEHICLE DETECTOR:-
To compare the similarity between two number plates, the Chamfer distance map calculation method is used as well as to define the worth of the operations. The fast Chamfer distance map computation method it uses Chamfer mask as an input in forward and backward passes of comparison.

E. THE OPTIMAL CHARACTER RECOGNITION (OCR):-
OCR is the optimal character reorganization algorithm used to match the one image with another by automatic transformation of images of several types with pixels density function, and a picture of a document type. It is mostly applied vehicles number plate images to identify each character on number plate and further process for matching not applicable on fancy number plate.

F. SMS GATEWAY:-
It is a technology mainly used for the simple mail transfer system(SMS).it is having separate functionality to send the message into web applications and provide easy access mechanism to users.

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VI. FLOWCHART

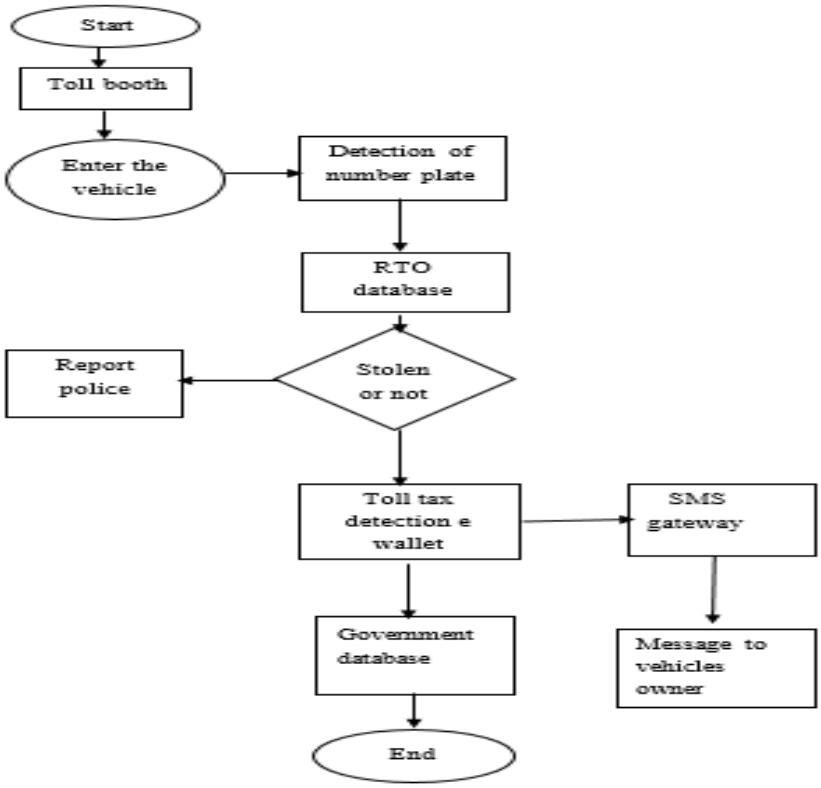

Fig.1The above flowchart of A Survey onToll System using E-wallet and SMS Gateway.

In the above flow-chart of toll booths initially the flow of the system is start at time when the vehicle is get come at toll booth, then number plate of vehicle is detected it can be the pre-recorded video and the images assembled it of the images that video or the image of the vehicle is compared to the stolen vehicle record in database. If the system toll booths will find that the classified vehicle is stolen vehicle then the toll admin work will send the notification to the police admin that the regarding detected vehicle is stolen vehicle founds. If the vehicle of any kind is not match with the record (images) of RTO admin then the toll admin work will cut the toll charges according to the classification of vehicle type by e-wallet system which leads to the less time consuming process and the correct amount collected count of money or toll tax will gives to the super admin module that is nothing but the Government and then the process is end.

VII. APPLICATIONS

A. APPLICABLE AT TOLL ROADS OR HIGHWAYS:-

The proposed system a toll booth system is advantageous mostly on road areas for making toll collection automatic and for time saving media.

B. IT SUPPORTS PAPERLESS ENVIRONMENT:-

E-wallet system used to reduce the paperless environment by making the toll tax collection process automatic and less time consuming.

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C. THE SMS GATEWAY TECHNOLOGY IS USED FOR STOLEN VEHICLE IDENTIFICATION: -
To remove the rate of stolen vehicle SMS gateway mechanism is applicable for police as well as vehicles owner.

D. THE E-WALLET SYSTEM IS APPLICABLE ON ONLINE PAYMENT WHEN THERE IS NO CASH AVAILABLE:-
Peoples always prefers to go at malls and shopping area which goes regularly for those peoples the system e-wallet will be more applicable for online payment of shopping.

VIII. CONCLUSION

The proposed system a toll system with e-wallet and SMS gateway uses less cost for implementation and requires fewer changes to the current system. It also provides the tracking and identification for theft vehicle which is more secured and highly reliable. E-wallet system can help to achieve proper traffic management activity, appropriate toll collection charges and improves security and efficiency. Thus a system an Automated Toll booth, based on image processing technology saves the time as well as paper at toll booth, minimizes the waste fuel consumption during the free condition of the vehicle. In order to save the environment from pollution of emission of extra carbon monoxide (co2) this system is more appropriate. Hence we can save our nation and save human life from the cause of pollution decease. It also providing the detecting system for reducing the stolen vehicle rate in nation which is very securely can be achieved. It can be help to overcome all drawbacks and disadvantages with the existing system such as time and papered environment and human efforts. It supports paperless environment.

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BIOGRAPHY

Punam B. Pure, pursuing B.E. final year in Computer Science and Engineering from Nagpur Institute of Technology, Nagpur, Maharashtra, India. She had completed her diploma in Computer Engineering in the year 2014 from Government Polytechnic, Gondia, Maharashtra, India. She had published international journal in IJARCCE in the year 2016 on "Automated Toll System for Number Plate Detection and Collection".

Prof. Gunjan Agre, Assistant Professor in M.Tech(CSE) had completed M.Tech in Computer Science and Engineering in the year 2015. Nagpur, Maharashtra, India. She had completed her Engineering in Computer Science and Engineering in the year 2013,Nagpur, Maharashtra, India.She had published international journal in IJARCCE in the year 2016 on "Automated Toll System for Number Plate Detection and Collection". Area of specialization of Prof. Agre are Data Mining, Web Crawling, Networking.