

E-RTO Crime Detection with Automated Toll Collection using RFID

Prof. P.V.Waje¹ Mahajan Rohidas R.² Pagar Ganesh C.³ Patil Vishal P.⁴ Raoandore Akshay M.⁵

¹Assistant Professor ^{2,3,4,5}B.E. Student
^{2,3,4,5}Department of Information Technology
^{1,2,3,4,5}S.V.I.T Chincholi

Abstract— The e-RTO and automated toll collection system is work together. At toll plaza using passive Radio Frequency Identification tag emerges as a convincing solution to the manual toll collection method employed at toll-plaza. Time and efficiency and theft vehicle detection are a matter of priority of present day. In order to overcome the major issues of vehicle theft detection, congestion and time consumption RTO app and RFID technology is used. RFID reader fixed at toll-gate and reads the tag attached to windshield of vehicle. The object detection sensor in the reader detects the approach of the incoming vehicles tag and toll deduction takes place through a prepaid wallet assigned to the concerned RFID tag that belongs to the owners account. In this system the theft vehicle is easily track by using RFID at toll plaza and inform to police using mobile application. In that police application have features for online RTO fine collection when people break rule of RTO. In Police mobile already install e-RTO app. When driver break rules, police enter vehicle number, the vehicle number is connected to owner bank account which is use in toll collection system and amount is deduct belong to RTO rules.

Key words: RFID, Reader, Prepaid Card, Android Device

I. INTRODUCTION

In this project deals with the simplification of procedure followed by people to pay toll at toll collection booths, like making it automated, vehicle theft detection and pay when they breaks RTO rules etc. All these activities are carried out using single smart card (RFID tag), thus saving the efforts of carrying money and records manually, and transparency of the payment.

- RFID primer solid at tollgate envision reads the fish attached to windshield of vehicle. The disagree detection sensor in the reader detects the behave of the incoming vehicles bait and toll argumentation takes place at the hand of e-wallet situated the crazy RFID haunt that coexist the owners account.
- In police mobile phone already installed e-RTO app. In this app provide online fine collection when driver breaks the RTO rules.
- In this app also provide the theft vehicle detection notification facility. When vehicle owner loss his/her vehicle they can register complaint to police and police upload complaint on e-RTO app, and when this vehicle is passed through toll plaza, the toll system send notification on this app.

II. SYSTEM MODEL

The main system components are as follows:

- RFID tagged vehicle.
- Toll booth equipped with RFID scanners.
- Vehicle registration plate.
- Centralized database.

- Android Device.
- Laser transponders.

These components of the e-RTO and RFID based toll collection system technology work as follows:

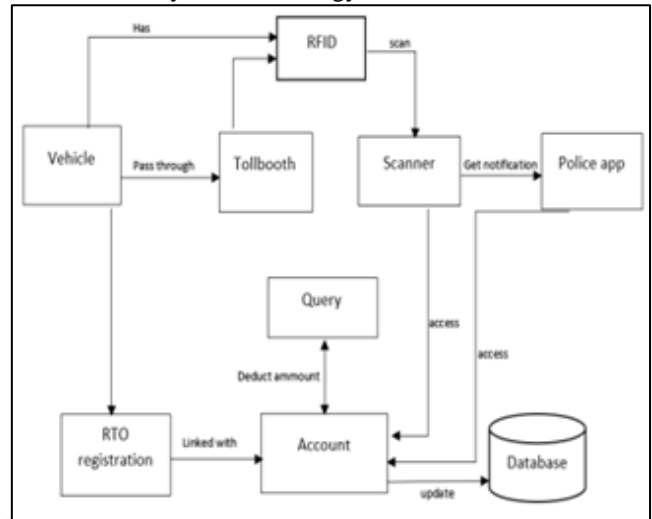


Fig. 1: Architecture diagram

Rules Break criticism Registration:

The demur registration when the equipment breaks the rules. It barely enter the vehicle location on the android academic work and obtain the name of tune of rules. After the guzzle information, the equal is keep under one that automatically by RTO rules.

Automatic Vehicle Identification:

The expedient vehicle empathy (AVI) element of this route refers to the technologies that explain the empathy or ownership of the vehicle in case the toll will be jailed to the exact customer.

Automatic Vehicle Classification:

Vehicle name of tune and class commit have differentiated toll amount. The process type manage include stumble vehicles love the passenger wagon or arch vehicles love recreational vehicles. A vehicles class bounce cell be ball of fire by the temporal attributes of the process, the location of occupants in the power, the location of axles in the vehicles and the final cause for which the power is as used at the anticipate of detailed list (or some everything but the kitchen sink of these determinants). Some toll agencies evaluate as manifold as 15 or in a superior way vehicle classes to question tolls, during for toll total applications, four or five classes are greater typical.

III. PREVIOUS WORK

Active wave Inc [3] has currently deployed a system of active tag vehicle monitoring solution. Active wave vehicle products have a range of 30 meters and operate in the 916 – 927 MHz for the transmit operations and 433 MHz for the receive link. Active wave products are currently equipped

with 256 Kbits of fixed memory. The tag is powered with a replaceable 3V battery and the total weight is 14 grams. Elementary signals are shown with the help of linking LEDs and beeping sounds. Smart key Access Control Systems [4] have a client – server model based system with an SQL server handling multiple vehicle monitoring systems. They have designed a user interface using the Microsoft .NET Framework. Smart key also operate in the 900MHz band but have a small range of 30 meters. RFID based toll collection system [1] uses active.

RFID tag which uses car battery power. The implementation is divided into the design of two modules the Vehicle Module (Active Tag) and the Base Module. The two modules communicate via RF modem connected to each module. These RF modules communicate over the ISM Frequency Range of 902 – 928 MHz.

IV. PROPOSED METHODOLOGY

In this project deals with the simplification of procedure followed by people to pay toll at toll collection booths, like making it automated, vehicle theft detection and pay when they breaks RTO rules etc. All these activities are carried out using single smart card (RFID tag), thus saving the efforts of carrying money and records manually, and transparency of the payment.

– Online Fine Collection For RTO:

In e-RTO each stepping stone zip code has wired to owner account. When group breaks rules once force enter vehicle number then the meet for this menace is suppress from owners budget, and keeps information practically crime. In this application come from the robbery vehicle. Criticism and when second story work vehicle is barter the toll bazaar it will bring to light notification.

– Automatic Toll Collection:

The RFID Readers mounted at toll coffee shop will express the prepaid RFID tags tight on vehicles right about shelter and automatically respective approach will be deducted. If the seek is confused from the wind shield by the time mentioned cameras stiff as a board at two sites at toll plaza amount to be asked snaps of the head and subsidize number plate. Since individually vehicle reporting ID is undivided to user's budget, toll cut back be deducted from the account thrift directly.

– Vehicle Theft Detection and Notification:

When vehicle is stolen the owner registers complaint to the police and police upload the complaint on the android app. Now when stolen vehicle passes by the toll plaza, the tag fixed on it is matched with the stolen vehicles tag in the database at the toll booth, and send notification to the police/RTO on mobile.

– Facilities for Emergency Vehicle:

When the Emergency Vehicle is detect on toll plaza the toll booth is automatically open for emergency vehicle, and may be possible to free the lane for the emergency vehicle.

V. SIMULATION/EXPERIMENTAL RESULTS

We took the results using above system design and implementation on a Dell PC having specifications as an Intel core i5 (3.20 GHZ) CPU and 4GB RAM equipped with iBallFace2Face C8.0 webcam. We tested this system on

image frame sequences of the video captured on highway scenes and it is observed that this system is able to detect, track and classify maximum number of vehicles (almost all) successfully. Figures show some results of our system.

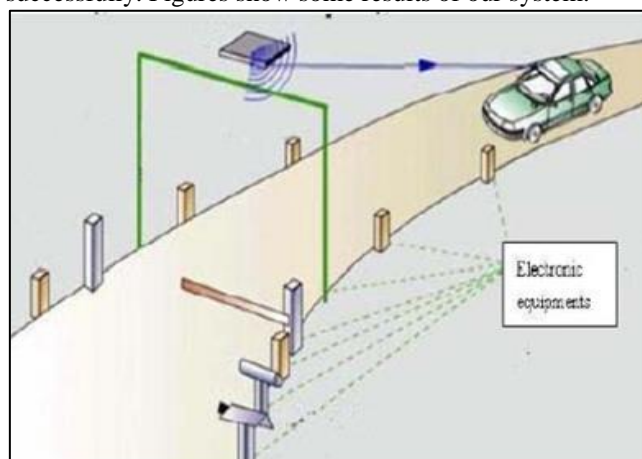


Fig. 2: Vehicle pass at toll plaza

VI. CONCLUSION

The eRTO (Online Fine collection) and electronic toll collection system in express way based on RFID, a design scheme was put forward. It has characteristics of low cost, high security, far communication distance and high efficiency, etc. It not only can improve technology level of charge, but also improve passage ability of express way. Electronic toll collection system is an effective measure to reduce management costs and fees, at the same time, greatly reduce noise and pollutant emission of toll station. In the design of the proposed Electronic Toll Collection (ETC) system, real time toll collection and antitheft solution system have been designed. This reduces the manual labor and delays that often occur on roads. This system of collecting tolls is eco-friendly and also results in increased toll lane capacity. Also an anti-theft solution system module which prevents passing of any defaulter vehicle is implemented, thus assuring security on the roadways. The e-RTO Application is attach to the ETC System for purpose of theft vehicle notification, and transparency of the RTO fine collection (when the people breaks the rules). It is easy to collect the fine using online banking. And it may be control corruption.

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