Implementation Paper on National Tollplaza Collection Center

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ABSTRACT

In this paper, we are just going to develop the concept for online payment for tollgate, and using this same system we just detect the theft vehicle. Time and efficiency are a matter of priority of present day. In order to overcome the major issues of vehicle congestion and time consumption RFID technology is used. RFID reader fixed at tollgate frame reads the tag attached to number plate of vehicle0. The RFID sensor in the tollgate detects the approach of the incoming vehicle's tag and toll deduction takes place through a prepaid card assigned to the concerned RFID tag that belongs to the owners' account. The concept proposed is of automatic toll tax payment system and the amount transaction information sends to the cell phone of the motorists through the GSM modem technology. This makes tollgate transaction more convenient for the public use.In this same process, once the user registered with his vehicle number which was already in number plate, if the user was lost his vehicle means just he can request in the website to find the vehicle. And if the theft vehicle come across the tollgates the RFID sensor will send the signal to the tollgate booth, and then the vehicle will be hand over to the particular user who have left his/her vehicle.

Keywords : online payment for tolls, Theft vehicle identification, RFID sensor .

I. INTRODUCTION

The Automated Toll Gate System is implemented using RFID and GSM Technology is to automate the toll collection process their by reducing the long queues of vehicles at toll booths using the RFID tags installed on the vehicle, and also it can helps in vehicle theft detection and track vehicles crossing the signal and over speed limit vehicles. This system is used by vehicle owners, system administrator. Other general benefits for the motorists include fuel savings and reduced mobile emissions by reducing or eliminating deceleration, waiting time and acceleration.

Automated toll collection (ATC) is a technology enabling the electronic collection of toll payments. It has been studied by researchers and applied in various highways, bridges, and tunnels requiring such a process. If the car is registered or not , the system is capable to determine, and then informing the authorities of toll payment violations, debits, and participating accounts.

The most obvious advantage of this technology is the opportunity to eliminate congestion in tollbooths, especially during festive season when traffic tends to be heavier than normal. At the tollbooths, it is also a method by which to control complaints from motorists regarding the inconvenience involved in manually making payments. Other than this obvious advantage, applying ATC could also benefit the toll operators. Thus, the ATC system is a win-win situation for both the vehicle drivers and toll operators, therefore it is now being widely used throughout the world.

An ATC system commonly utilizes radio frequency identification (RFID) technology. Around the world, Radio Frequency Identification (RFID) is developing

as a major technology allows for identifying and tracking goods an assets.

RFID is a generic term used to identify technologies utilizing radio waves to automatically identify people or objects. RFID technology was firstly introduced by Harry Stockman in 1948 since then, such as in warehouse management, library system, attendance system, theft prevention, and so on. In general, RFID is used for tracking, tracing and identifying objects.

II. EXISTING SYSTEM

Road tolls were collect traditionally for a specific access (e.g. city) or for a specific infrastructure (e.g. roads, bridges). Tolls are a form of user tax that pays for the cost of road construction and maintenance without raising taxes on non- users. Tolls are paid by hand at a tollgate, payments are generally made in cash. User deposits a certain amount at a tollgate depending on his vehicle type and the authorities allow passage or entry.

In the current times of increasing traffic on the road, it is important to collect the toll tax in a managed and controlled process so that it doesn't result in a total unorganized jungle of traffic. It is very challenging to handle a vehicular flow by a manual system of revenue collection. Poor management at toll plaza may result into great chaos and revenue loss, which is not desired.

III. PROBLEM DEFINATION

In this project, the technique such as Radio Frequency Identification is introduced. The automation of toll plaza can have the best solution over loss of money at toll plaza by reducing the manpower required for collection of money and also to reduced the traffic indirectly resulting in reduction of time at the toll plaza. This technique will include the RFID tag and reader, which in coordination with each other can be used to detect the vehicle identity. There are three techniques which are effectively

utilizing at different stages of this project is able to represent the automation in toll plaza which will reduced the complete processing time by few seconds, which is very important as well as it helps to reduce money leakage in a very cost effective manner.

The main objectives of this system are as follows ;

- Avoid the fuel loss.
- Saving time in collecting toll.
- Reduce longer waiting time in a toll queue.
- Reduce illegal tollgate entry.

IV. PROPOSED SYSTEM

The proposed method is to provide a fast and safe environment for toll collection and to automatically control the vehicle movements at the toll stations. The RFID reader is used to read the tag value of the vehicles. The Vehicle information is stored in the tollgate database. Based on that number the Tax amount for that vehicle will automatically transfer to the toll gate system. And that cost information will be sent through GSM modem to a mobile phone of the owner. The main objective behind this proposal is to create a suitable Automatic Toll Gate System to be implemented. In this same process, once the user registered with his vehicle number which was already in number plate, if the user was lost his vehicle means just he can request in the website to find the vehicle.

And if the theft vehicle come across the tollgates the RFID sensor will send the signal to the tollgate booth, and then the vehicle will be hand over to the particular user who have left his/her vehicle.

V. OBJECTIVES

Here are some objectives about the ETC based on GPS system which tells us about purpose behind selecting this topic & the requirement of this type of project in our day to day life.

To avoid the fuel loss. To Save the time in collecting toll at toll plaza. To avoid financial loss. To control the traffic. According to the survey of Karnataka Government, in Sept.2012 they have proposed to get the annual toll collection about 2500 crores/year .But in the present situation they are able to collect only 900 corers of the toll value. Means there is loss of 600 cores due to human errors. So, in this situation we have to control this leakage.

VI. SYSTEM REQUIREMENT ANALYSIS

1. *Software requirement:*

- Operating System : Windows7
- Technology used : Eclipse, SQLite Browser
- Emulators   : AVD
- Plug-in   : ADT Plug-in
- Tools used   : Android SDK

2. *Hardware requirement:*

- Processor   : Core2Duo
- Motherboard   : Genuine Intel
- RAM   : Min 1 GB
- Hard Disk   : 80 GB

VII. ADVANTAGES AND APPLICATIONS

- Decreases the fuel consumption.
- Relieves the traveler of the burden of waiting in the queue.
- Manpower reduction.
- Easy in usage and simple to carry in mobile device.
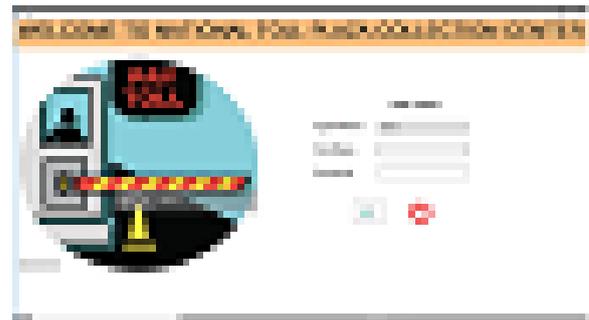- Highly secured and reliable.
- Save time.

VIII. SNAPSHOTS
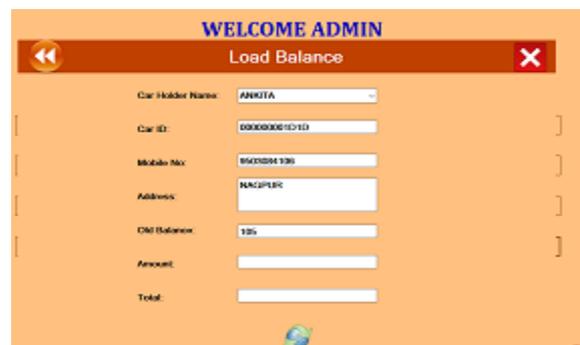

Figure 1: User login

Figure 2: Registration screen of employee

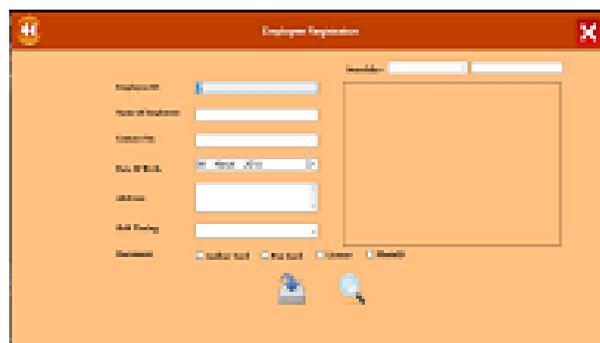*Figure 3: Screen showimg vehical rates*

Figure 4:Employee register

IX. CONCLUSION

One of the most important impacts of technology is the development of sustainable technologies. These technologies hepls in reducing the traffic conjunction and that need of future generation, save energy and time. This project mainly impact totally in these aspects, by saving the fuel on the toll, and also for to save time and by regulating the pollution and usage of vehicle at toll gates. This shows that it makes the toll collection payment easy by using automatic toll cash collection process.

RFID is a technology offering various features but we can say it is not replacement of Bar code. RFID offers highly reliable data collection in harsh environments. RFID technology not only eliminates manual data entry but also inspires new automation solutions. It can provide new capabilities as well as an efficient method to collect, manage, disseminate, store, and analyze information. As compare toRFID's existing technologies attributes provide greater automated tracking capability. This helps in creating the opportunity to reduce abhor, improve inventory management and generate better market intelligence, leading to lower operational costs and increased revenue generation.

X. FUTURE SCOPE

Designed a system to give complete solution for traffic and transport related problems such as Tollgate control, traffic signal control, traffic rules violation control, parking Management and special zone alert using the latest RFID technology. In this system we detect the location of number plate of vehicles with the help of template matching and extract number from number plate and process it for collection of toll. The number plate is tagged in the database with the user's personal information, bank account and vehicle details. It is proposed as a low cost optimized solution using RFID and GSM mobile technology. At the toll plaza, there will be a large LCD screen for displaying details of the transaction. At the same time, it will show:

1. Total cost of that road
2. The duration of toll plaza.
3. And the remaining balances after each transaction
4. Embedded System can design for easy to Pay Toll Fees Using RFID and Alcohol sensor to Prevent Accidents on the Highways.

XI. REFERENCES

[1]. Australian Computer Society, 2003, ASC Code of Ethics. Retrieved March 2007, from http://www.acs.org.au.htm

[2]. Elmira, R. and Nava the, S. 2004. Enhanced Entity Relationship and UML. InFundamentals of Database Systems, 3rd Edition

[3]. Out Source 2 India n.d. :Why Do Software Projects Fail fromhttp://www.outsource2india.com/software/ SoftwareProjectFailure.as

[4]. Six Sigma n.d. : Applying Six Sigma to Software Implementation Projects Retrieved from http://software.isixsigma.com/library/content/c0 40915b.asp

[5]. Somerville, Ian 2004. Object Oriented Design Software Engineering, 7thEdition

[6]. Ramakrishnan, R. and Gehrke, J. 2003. The Relational Model In Database Management Systems, 3rdEdition

[7]. Start your journey the easy way n.d : Retrieved 4th February 2007 fromhttp://www.liverpooljohnlennonairport.co m/TravelServices/CarParking.php

[8]. http://www.slideshare.net/jimmykhan/library-mangement-system-project-srs-documentationdoc