

RFID BASED AUTOMATED TOLL COLLECTION SYSTEM

Supriya Jagtap¹, Shweta Ghatage², Supriya Koli³, Neelam Yadav⁴

^{1,2,3,4} Department of Computer Science and Engineering,

Bharti Vidyapeeth's College of Engineering Kolhapur, Maharashtra, (India)

ABSTRACT

This paper is based on RFID technology; the RFID system uses RFID tag and RFID reader which collects information of vehicle passing through the toll plaza and automatically debits the toll amount from prepaid account of vehicle owner, which in return reduces the traffic congestion and human errors. There are three portions in toll collection system. They are RFID system, balance deduction system in host computer and toll gate control system. The purpose of this paper is to reduce the time caused by manual toll system.

Keywords– Android, RFID, GSM, Automated toll collection.

I. INTRODUCTION

RFID based automated toll collection system is used to solve the problem raised by increase in the number of vehicles on road and due to the task of traffic control at toll plaza becomes more complex. The manual toll based system will completely reduce by using this method of tolling system. The RFID tag is used to identify account of registered user. When a vehicle drives through the toll plaza, its user is prompted to scan his RFID tag. If the user ID is matched with the one already stored in the system, the toll amount is deducted from his account. After this, the vehicle gets immediate access to pass through toll plaza. A new user have to register himself after which his ID is verified with RFID tag. The new user record is then stored by the microcontroller to grant future access to him.

Vehicle Security System with features enhancing the security of the vehicle and ensuring the safety of the rider. In our proposed security system various new features can be included in addition to the engine immobilizer. Few of the important features supported by our system are tracking the location of vehicle using GPS technology, servo motor operated locking system. Redundancy is maintained to make the system reliable even in the worst case scenario.

II. LITERATURE REVIEW

In paper [1], author introduced Toll gate Automation designed to record the details like Owner's name, date of registration, vehicle model etc. This system is useful for tracking vehicle automatically, time management and also for Toll gate automation. This paper explains the implementation of Toll Gate Automation which is a step towards improving the Tracking & monitoring of vehicles, traveling in predetermined routes. This system automatically identifies vehicle and records the vehicle number & Time. If the vehicle belongs to the authorized

person/group, it automatically opens the Toll Gate and a predetermined amount is automatically deducted from its account.

In research paper [2] we examine RFID based toll deduction system and how to make more efficient and perfect. The vehicle will be equipped with a radio frequency (RF) tag which will detect RF Reader located in on toll plaza. Then the particular amount will deduct from the user's account. This research paper can be considered scalable to implement in motor vehicles used today.

In paper [3], following recent experiments in Hong Kong on road-use pricing, and in Berlin and London on route-guidance, it is clear the technological advance in the fields of data-communications and road traffic 'informatics' (RTI) will reopen the longstanding debate as to how use of the road system should be charged for. In particular, if vehicles can be charged for road-use automatically, without stopping them to do so, then policy towards road-use pricing could be significantly changed, although the strong social and political objections may still remain to be overcome. The paper is not just centered on the technical issues posed by automatic toll-collection but clearly set within the social/political context surrounding any widespread implementation of such a policy.

III. DATABASE

MySQL:

MySQL is the Open Source SQL database management system. MySQL is one of the best RDBMS being used for developing applications. MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is released under an open-source license. So you have nothing to pay to use it. MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc. It handles a large subset of the functionality of powerful database packages. MySQL uses a standard form of the well-known SQL data language. MySQL works faster and works well even with large data sets. MySQL is very friendly to PHP, the most appreciated language for web development. MySQL supports large databases, up to 50 million rows or more in a table. The default file size limit for a table is 4GB, but you can increase this (if your operating system can handle it) to a theoretical limit of 8 million terabytes (TB). MySQL is customizable. The open-source GPL license allows programmers to modify the MySQL software to fit their own specific environments.

IV. DESIGN AND IMPLEMENTATION

A RFID reader is a device which is used to interrogate an RFID tag. It reads the unique number from the RFID cards and sends it to the microcontroller.

Microcontroller reads the RFID ID from the RFID reader, sends this data to the LCD so that the person should read informative messages, and sends the data to the motor depending upon the RFID ID and balance in user's account.

LCD will display all the system generated messages coming from the controller. Motor is used to open the gate.

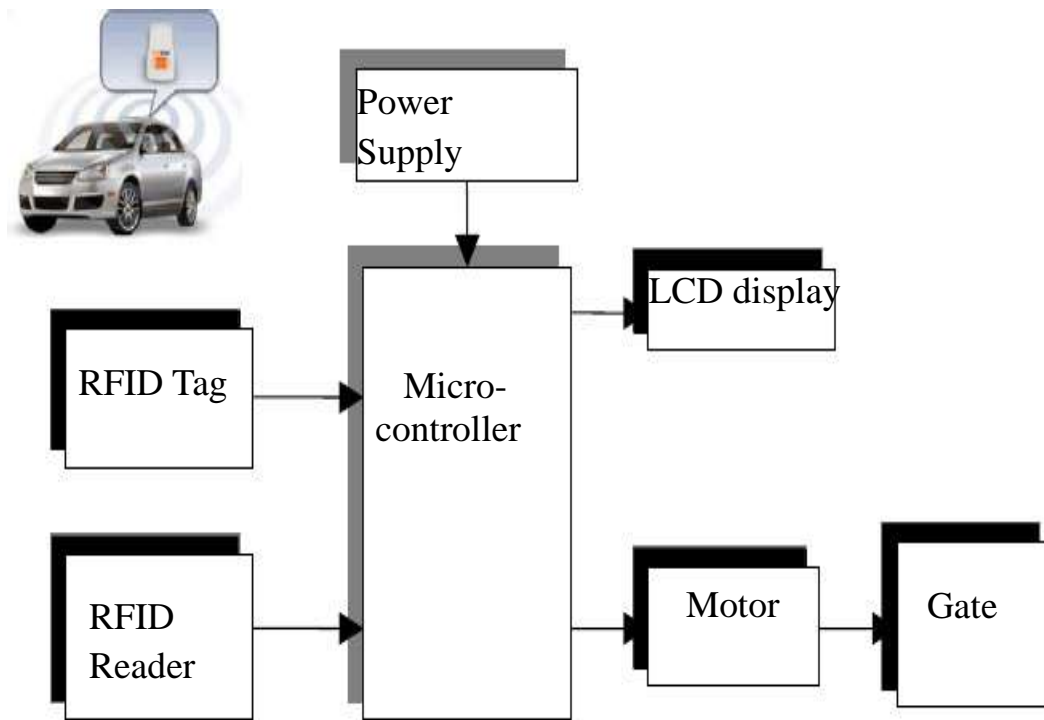


Figure1.System Arcitecture

V. SCOPE OF PROJECT

Whenever the matter of Integration of systems comes to mind, we think of a system having the following important features viz.

- Accuracy: All the functionally bonded logical dependencies must be integrated.
- Efficiency: The whole system should work under all circumstances and it should work efficiently irrespective of their proprietary format.
- Any Prerequisite for the use: As the existing systems are not altered, and integration is done at the background hence there is no need for any training.

VI. CONCLUSION

In order to implement contemporary system of “RFID based automated toll collection system” the embedded systems plat form has utilized. For this purpose, a new RFID technology based on micro-controller was implemented and tested in this study. The verification system presented has the following advantages: The verification system consists of data base about the user of RFID multipurpose card.

The state of art of microcontroller AT89S52 used as a mediator in between PC and RFID; it act as user interface whenever user shows RFID card it will read out by RFID card reader then it transfer those thing to PC

interfacing/ front end software. The RFID security system is major role of this project. A kind of radio frequency chip was adopted to design electronic toll collection system of expressway.

REFERENCES

- [1] Automation of Toll Gate and Vehicle Tracking, Janani Krishnamurthy, Nitin Mohan, Rajeshwari Hegde.
- [2] RFID Based Toll Deduction System, Asif Ali Laghari, M. Sulleman Memonand Agha Sheraz Pathan.
- [3] The automation of toll-collection and road-use pricing systems, P. Hills, P. T. Blythe.
- [4] Automatic Toll Gate System Using Advanced RFID and GSM Technology, S. Nandhini, P. Premkumar
- [5] Jerry. L and Barbara. C Smart Card Based Toll Gate Automated System
- [6] Unified electronic toll collection technology for national highways in India, The Ministry of Road Transport Highway Vide Order.