

Automatic Toll E Ticketing for Transportation System

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Abstract:

Nowadays all the toll gate have manual way of collecting the ticket. It will increase the traffic jam and also it need man power. In order to overcome this problem we are going for Automatic Toll E Ticket system. In this system we are using RFID modules which will read the vehicle and we will assume that the owner of the vehicle have one prepaid account if the vehicle enters toll it is identified by IR toll then it will be automatically read by using RFID and then the amount is deducted from the account. Then it will also send the message through GSM to the owner that he/she has paid the amount no need to stop on the toll gate. Incase if the owner didn't have the required amount or the owner didn't have prepaid account with RF means then the toll gate remains closed in that situation the owner should pay the toll tax and receive the receipt. How many times the vehicle passing through the toll gate all this data's are stored in the database.

Keywords: RFID module, IR sensors, GSM, database.I.

1. INTRODUCTION

Nowadays the toll tax plays a vital role in highways social and economic condition and the process of collecting the toll tax is manual way. Which will increase the traffic jam and also consume time and this way of collecting toll tax need the manpower. The survey took on Maharashtra Sep 2010 says that they have proposed to get the annual toll tax value is 1500 corers but they have collected on 1200 corers only means there is loss of 300 corers[1]. Though the combination of embedded system along with the transportation system will reduce the need of manpower and time consumption[2]. If the vehicle is stolen then the information about the vehicle is send to the police through the databases collected [3]. The RFID and GSM plays vital role in order in the transportation system in order to get information about the vehicle if it has RF module[4]. Electronic toll collection is the technology used in electronic collection of toll payment. This technology is used in various highways and bridges it is used to check whether the vehicle is registered or not [5]. Each time the vehicle enters into the toll is read by using RFID module and automatically amount is detected from the account. Once the amount is detected the control system of the toll gate will lift and the vehicle no need to stop[6].

2. BLOCK DIAGRAM

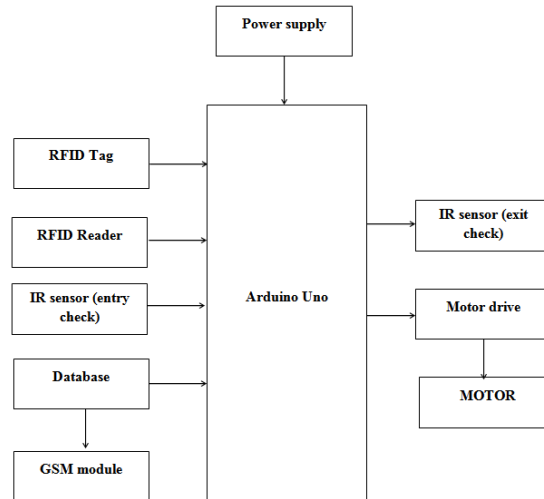


Figure.1.Block diagram of Automatic Toll E ticketing system

In the existing system normally the toll tax are collected manually whereas the vehicle enter the toll booth and the person will collect the amount for the toll tax. Every time whenever we pass the toll we need to pay the tax manually which will take more time and also makes the traffic jam. In this process of transportation system we need man power. In the Proposed system the whole process is in automatically. Whereas when the vehicle enter the toll gate it is read by the RFID and then information is send to the toll gate. We assume that each vehicle have separate prepaid account which can be a rechargeable one. When the vehicle is readed then it automatically detect the amount from the account. If the account doesn't have required amount means then the toll gate will remains closed. If the amount is deducted then it will send the message to the driver using GSM. Then the existence of the vehicle is noted by IR sensor.

3. MODULE DESCRIPTION

IR(entry & exist check)

The IR sensors are used to identify the presence of any things or object.

In order to check the entrance of the vehicle the IR sensor is used and the existence of the vehicle is also checked by using IR sensors. All the data's are stored in the database of the toll gate.

RFID TAG:

The purpose of RFID tag is to identify using radio waves. Each tag have some specific distance which reader can read.

Some tag can read from several meters away and also beyond the limit.

In each vehicle RFID tag and reader is installed. When the vehicle enters into the toll gate the RFID tag reads the vehicle and then the amount from prepaid account is automatically detected.

RFID READER:

The RFID reader is used to have contact with the RFID tag. The RFID reader as an antenna which will send the signal to which the tag will respond by sending its data.

GSM:

The GSM is an mobile communication system. In this concept the GSM plays vital role if the amount is deducted from the owners account means it sent the message that amount is deducted no need to stop on the toll gate.

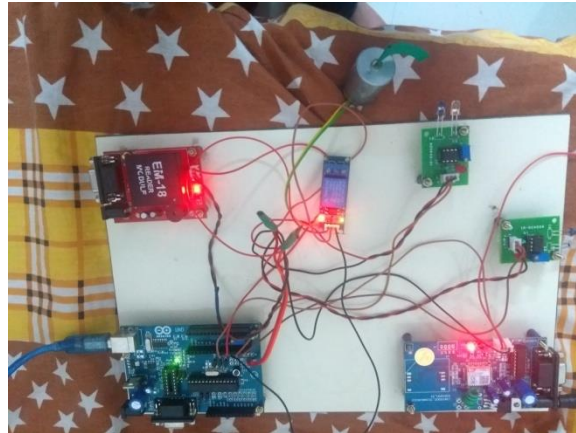


Figure.2 Hardware snapshot for Automatic Toll E Ticketing for Transportation System

Step1: Vehicle enter the toll gate. IR sensor detect the entry of vehicle

Step2: The RFID tag in the vehicle is read by RFID reader in the toll gate

Step3: The required amount id detected from the prepaid account. Then the gate will open.

Step4: If the required amount is not available then the gate remains closed. The person can pay manually.

Step5: If the amount is debited then through GSM it will send the message.

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Toll Vehicle
Vehicle Entered
Hi welcome Mr.XXXXXX XXXXXX
Wallet Amount : 1000
Amount debited : 75
Amount debited : 150850

Hi welcome Mr.XXXXXX XXXXXX
Wallet Amount : 1000
Amount debited : 75
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Figure.3 Hardware message output snap for Automatic Toll E Ticketing for Transportation System

CONCLUSION

The Automatic Toll E Ticketing system using RFID module has been done in order to reduce the time consumption and to reduce the traffic jam. The main advantage of this system is no man power is needed and no corruption will occur. This will also be used if the RF moduled vehicle is theft then the toll can send the information about the vehicle to the police through database..

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