

REVIEW PAPER ON E-TOLL SYSTEM WITH USER AND VEHICLE IDENTIFICATION

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ABSTRACT

Electronic Toll Collection is a system that helps in electronic payment on highway tolls. This project is implemented using Radio Frequency Identification (RFID) and Quick Response (QR) code. In the proposed system first of all user have to generate QR code by entering Aadhar details, Vehicle registration number and user have to link bank account with the app using UPI(Unified Payments Interface). As RFID tags has been used in this project so uniqueness of the vehicle is maintained. Using QR Code and RFID tag, vehicle owner can be verified very easily. At the unmanned toll plaza user will scan the generated QR code which was generated at the time of registration and the RFID tag of the vehicle will be automatically scanned. The System will then match the scanned data of QR code and RFID tag. If the data is matched then transaction will get completed.

Keyword: - Smartphone, Camera, Vehicle Detection, QR Code, RFID tag etc....

1. INTRODUCTION

Time is very important in today's era, everything has automated but still we have to wait in a queue at toll plazas to pay the fee. This is because of the complex architecture of the toll system and still in India manual toll collection payment system is used. Manual toll collection system is most widely used collection method in India. It requires a toll collector or attendant and depending on the type of vehicle, toll payment is collected by the collector. The collector not only have to dispense change, accept sell scrip, tickets, and coupons, but also have to make an entry of the vehicle in the system and issuing receipt to the driver. Due to manual intervention, the processing time is high and due to this pollution also increases.

The main idea behind implementing this project is to automate the toll fee collection in toll plazas of highways to overcome the traffic problems, pollution and to reduce the fuel consumption. System used here is QR which is quick

response code and RFID which is Radio Frequency Identification. User can generate QR code and he can show it via phone or print it on paper. In QR code all information about vehicle and owner of this vehicle is stored. Toll plaza is equipped with QR code reader and RFID readers. There will also be the facility of diversion for traditional payment if due to some technical issues automated toll collection system fails.

2. OBJECTIVES

2.1 Reduced vehicular congestion

Vehicles need not stop longer in toll plazas for paying the toll fees, the toll payment will be deduced from the vehicles account through UPI when the vehicles are moving. This makes the vehicles move faster in the toll area.

2.2 Time saving

Since there is no vehicular congestion or traffic due to the automated system, the vehicles need not wait in long queues to pay the toll fee and there will be no traffic. This saves the precious time of many people who drive the vehicles.

2.3 Reduced Fuel Consumption

Vehicles need not stop at the toll plazas for the longer period of time. So this will automatically save fuel of the vehicle as the payment processing will be done faster.

2.3 Reduced Pollution

As there will be less fuel consumption due to less vehicular congestion so this will automatically reduce pollution to some extent.

3. RELATED WORK

Mr. V. B. Dharmadhikari has proposed a system Computer Vision Based Vehicle Detection for Toll Collection System Using Embedded Linux. System is based on Computer Vision vehicle detection using Open CV library in Embedded Linux platform. The system is designed using Embedded Linux development kit (Raspberry pi). In this system, a camera captures images of vehicles passing through toll booth thus a vehicle is detected through camera. Depending on the area occupied by the vehicle classification of vehicles as light and heavy is done. Further this information is passed to the Raspberry pi which is having web server set up on it. When raspberry pi comes to know the vehicle then it access the web server information and according to the type of the vehicle appropriate toll is charged [1].

Linda John, Debyani Mitra has proposed a system automatic toll collection using QR code scanning, in this system capturing QR code by using web cam and recognize it. When web cam capturing QR code, and if the QR code is correct means that person's vehicle is authorized. Then the barrier is automatically opened and the car is allowed to pass [2].

P. Mane has proposed a system RFID Based Automatic Toll Collection System Radio Frequency Identification (RFID) is an auto identification technology used for collecting toll automatically. RFID tag will be attached to vehicle and the tags contain vehicle information related. RFID detector will be present at each toll plaza, which detects and scan the RFID tag [3].

Yudhi Kristanto, has proposed a system Application Design of Toll Payment using QR Code a Case Study of PT. JasaMarga This paper describe Electronic transaction aims to improve the time efficiency at the toll gates using Android and QR code platform as the automatic media access so that the transaction does not need to be served manually[4].

4. METHODOLOGY

4.1 QR Code Generation

User has to enter its Aadhar card details, Vehicle registration details and UPI details. From Aadhar card number user personal details will be fetched from the database and from vehicle registration number the RFID tag number linked to the vehicle will be fetched. Using all these details QR code will be generated, this will help in verification of the user.

4.2 Scanning RFID tag

RFID tags are already mounted on the windshield of vehicle by registration authorities of the state. Each RFID tag consists of a unique ID which will be scanned at the Toll plaza.

4.3 Scanning QR code

Generated QR codes can be shown at the toll plazas. They will be scanned by the QR code readers and their data will be used for processing user request.

4.4 Payment Processing

After scanning, if the data of RFID and QR code is matched, then the transaction of toll payment is carried out through UPI automatically. The toll charges according to the type of vehicle will be directly transferred to the government's bank account.

5. CONCLUSIONS

This Project concludes that by using Quick Response code and RFID tag scanning we can save more time. Using QR code we can easily store user details in small space and it is much secure if we add encryption techniques in it. Using RFID tags vehicle identification can be done properly. Automatic Toll Collection provide flexibility, reliability and easy use that control the traffic and make collection of toll easy.

6. REFERENCES

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