



Challenges Faced by Automated E-Toll Collection System

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ABSTRACT:

Electronic Toll Collection is a generally mature technology that allows for electronic payment of highway tolls. Nowadays almost all highways toll plazas are manually operated, where an operator collects cash from the driver and provides a receipt. Since this procedure can be slow, we often encounter traffic jams at the toll plazas on busy highways. In order to implement this concept, uses RFID which is a technology that uses communication via electromagnetic waves to exchange the data between a terminal and an electronic tag attached to an object, for the purpose of identification and tracking. Each vehicle will be provided with an RFID tag. This tag stores the unique ID of the vehicle and related information. strain gauge load cell will be used to determine the vehicles weight and accordingly defining the vehicles type, and webcam used to capture the image of vehicle's license plate which will pass through the toll booth. These images of license plates are processed through Optical Character Recognition (OCR) engine such that image of license plate will be converted into equivalent ASCII characters.

I. Introduction

In this century, people live a life which is solely dependent on technology. New innovations are made to make out life less demanding, calm and more agreeable. The primary goal of advancement has been to extend capability and diminishing effort. In the present scenario, the world is straightly moving towards automation. Automation is the use of various management systems for running instruments such as machinery processes in factories, boilers, and heat treating ovens, change on telephone networks, steering and stabilization of ships, craft and different applications and vehicles with possibly reduced human interventions and better accuracy. Highways or Toll Roads are provided to enhance the traffic, improve the distribution of goods and services, and increase mobility and accessibility of people. The problem starts when there is long queue. This queue occurs because the arriving rate of vehicles to toll gates is much higher than the servicing rate.

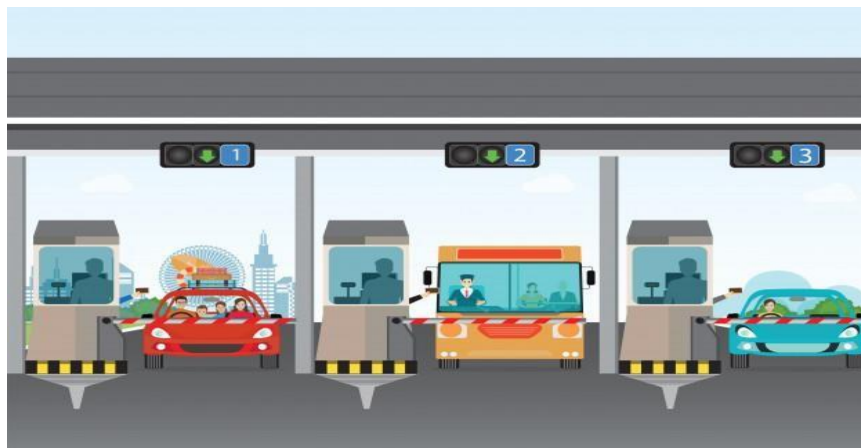
II. Methodology

The Mobile Train Radio Communication (MTRC) system seems to be the right answer to these concerns. MTRC uses the "Global System for Mobile Communications-Railway (GSM-R)" technology to facilitate an instant and constant interaction with the train crew with the Control Centre and Station Master. It ensures safety of passengers by providing effective communication between Driver and Control Room. The MTRC system can be used to warn the drivers beforehand of the running trains as well as the concerned officials. In case of any security problem, concerned staff can immediately intimate the concerned security establishment. If any accident takes place, the MTRC system will facilitate better post-disaster management. In the present day, Railways need not just effective voice transmission,

III. Loss of FASTag

The first and the most common concern that came up was the distress expressed by the drivers about loss of their FASTag. The worry stems from the fact that since this card is affixed as a tag on the windscreen, it can be subject to theft or loss.

In this scenario, you can immediately notify the issuing agency or bank about the theft/loss. They can then process blocking the account and can help you with obtaining another tag.



Technical Glitch

There may be times when the toll charge may be deducted twice from your account, in the wake of a technical error. Other than that, you may face the issue of your FASTag not working. What this essentially means is that your vehicle may go through the RFID scanner, and it is not able to detect your FASTag.



The bank your tag account is registered with can help you with this. By going on your FASTag customer portal you can register a claim regarding double deduction of toll amount, and can put in a request for a recompensation.

Unauthorized Cars in the FASTag Lanes

It is not uncommon for drivers to wait for their turns longer than expected in FASTag lanes due to vehicles without FASTag falling in the queue. This increases their wait time significantly, which is one of the major FASTag problems faced by many. Moreover, drivers feel that this defeats the entire purpose of ETC and designated lanes.



There need to be stringent measures to ensure that the entry way into the designated FASTag lanes also has a scanner. This scanner will be the means to detect the card securely attached on the windscreen of vehicles. This will ensure that entry is allowed only to automobiles that have FASTag. And when these measures are in place, the user satisfaction and time saving opportunities will grow manifold.

Blacklisted FASTag

This issue is a fairly common prevalence for RFID users. A FASTag gets blacklisted in the event the user fails to maintain adequate balance in their FASTag wallet. Thus if the user tries to pass through the toll gates with insufficient balance in their FASTag account, they would not be able to avail the National Electronic Toll Collection (NETC) services, forcing them to pay via cash.



For FASTag problems of this nature, the solution is absolutely simple. As a user of FASTag, one must be aware of the current balance in their account, such that they do not end up facing this challenge. Regular top-ups of the wallet is a must to ensure seamless passage through toll plazas.

Objectives

- encountered in manual toll collections system like time spent at the toll plaza, cashless transactions, over collection of toll charges, corruption on toll plaza.
- Elimination of human interaction in the entire toll collection process.
- A possible solution to tackle the problems
- Improve the efficiency of toll stations and the traffic abilities of the toll road.
- Increase data quality, reduce traffic congestion, air

Applications

- Payments in means of Transport: Public Transport and tol.
- Asset management: Location, identification and transport place.
- Logistics.
- Inventories and warehouses.
- Identification of animals.
- Surgeries.
- Passports.
- Supermarket.

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