UNAUTHORIZED VEHICLE DETECTION IN BRT

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Abstract- We have proposed a unauthorized vehicle detection system. It is consists of a centralized database holding the information of authorized vehicles. The information is gathered with the help of RFID Vehicle tags, RFID tag Reader and RFID tag Writer. The RFID chip is placed in every vehicle that will be passing through the established point of entrance; with the help of RFID tag reader it is possible to communicate with RFID tags. The process of identifying the vehicle is performed by reading serial number available on the RFID tag. Also driver authentication can be done using the RFID tag. The main motive of the proposed system is to identify and detect the unauthorized vehicle passing through the respective establishment. The RFID keeps the basic information of the vehicle. All the information made available with the help of RFID tag is then read by the RFID tag reader and this information is then sent to the central database with the help of Ethernet for verification and detection.

Keywords- RFID, tags & reader,

I INTRODUCTION

Bus Rapid Transit (BRT) provides the way for developing cities to build a high-quality huge transit system at reasonable cost. This module provides an overview of the BRT concept and a brief description of the BRT planning public transit is central to development. For the huge demand of developing city residents, public transit is effective to access employment, education, and public services, especially when such services are beyond the viable distance of walking. Unfortunately, the current state of public transport services which is the actual mobility needs of the population. However, there is an alternative between public transport service and high municipal debt. Traditional approach is not efficient enough for finding the unauthorized entry of vehicles. We cannot rely on the traditional approach as it is very inefficient. Hence we are trying to present an automated system so that we could address the above mentioned issue with maximum efficiency and help BRT system to get back to the primary objective.

As considering traffic problems in Pune, the corporation has build the special road for the Public transport such as PMT,BRT Buses, but private vehicles uses this roads instead of the road assigned for them which causes in heavy traffic. With the proposed verification and automation project based on RFID technology we can overcome these incidents.

In the proposed project we can implement techniques using RFID Reader, ATmega 328 microcontroller and ARDUINO.

As the number of incidents relating to vehicle thefts are increasing day-by-day, by using proposed verification and automation project based on RFID technology we can overcome these incidents and will make proper disciplined service

II PROPOSED WORK

By using the RFID tag reader reads the vehicle data like Owner name, vehicle number, mobile number, owner licence number & etc. with the help of that it has been find out the unauthorised vehicle in the BRT route and stolen vehicles.

III PROBLEM STATEMENT

As per our observation we have seen that manual operations are performed to manage the vehicles entering the BRT route but the guard is not able to perform his

duty properly. Due to this private vehicles enters the BRT routes that create traffic problems.

We are using RFID system to implement this project.

IV. LITERATURE REVIEW

In India most of metro cities are finding their public transport system inadequate due to the fast improvement in socioeconomic condition in metro cities, which had resulted into increased demand for travel. It has been observed that with increase in the sizes of the city, lengths of average trips would increase naturally. The maximum length of trip in metro cities is higher compared to medium and small cities. It has been observed that the average trip length is 2.4 km with population 5 lakh and it is 10.7 km for cities with population greater than 80 lakh. Due to decrease in the public transport system and a high increase in the private mode such as cars, two wheelers etc. street congestion develops in the metro city.[7]

There are variety of modes of transportation such as cycling, two-wheelers, walking, public transport, cars, auto rickshaws etc. This systems are used for transportation purpose. All over the world the public transit systems are struggling to complete with private transit modes. Many developing countries are facing the same issue. The cars and two wheelers are already dominant modes. Most of the people uses the personalized vehicles they find it the best option for transit. There are public agencies which are operating on public transport systems are often failing to restructure the service types to meet with the changing demand. That is why the public transport are becoming less viable financial, reduced speeds, increase in congestion levels also the transportation becomes a one of the source of rising environmental problems. The agencies that are operating in the public transport often fails to respond to fulfilling the rising demands.

V. SYSTEM REQUIREMENTS

I) Software Requirements:-

a. ARDUINO IDE

b. PROTEUS 8.0

II) Hardware Requirements:-

a. ARDUINO UNO

b. ATmega 328 microcontroller

c. RFID Reader (EM – 18)

d. RFID tags

e. LCD (16 * 2) display

f. Buzzer

g. Power Supply

VI. METHODOLOGY

This system is consist of BRT office with a personal computer connected to the receiver and the corresponding software that will run the "unauthorized vehicle Detection". When a vehicle enters the BRT route , the RFID reader fitted on either side of the road the RFID in vehicle ,check whether it is authorized or not and it will send the signal to the Admin control unit if the vehicle is unauthorized.[4][5]
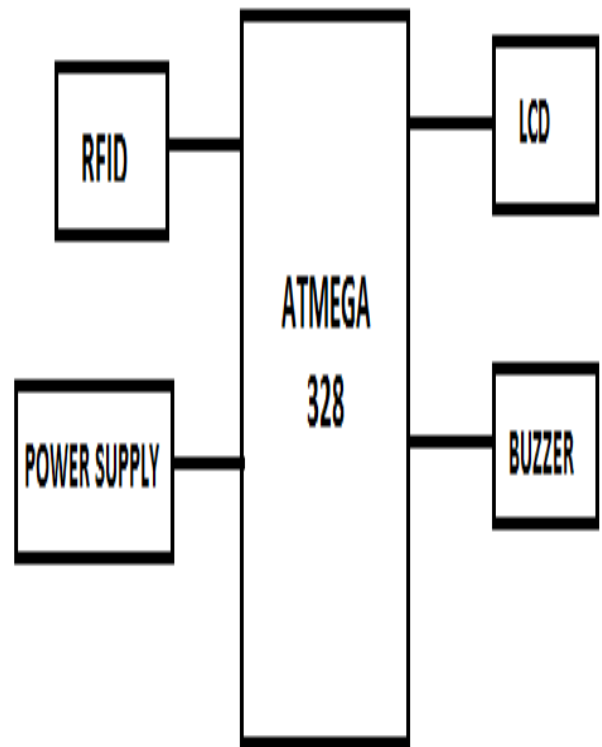

Figure 1. System Architecture

The RFID can have details like vehicle number, the name of the vehicle owner and their specified RFID number, Mobile number. If RFID detects vehicle as unauthorized, it will send SMS to the owner of the vehicle with fine charged for entering into BRT lane. Simultaneously gives input to the Buzzer and LCD to display message for Unauthorized Vehicle Found.

VII FLOW CHART
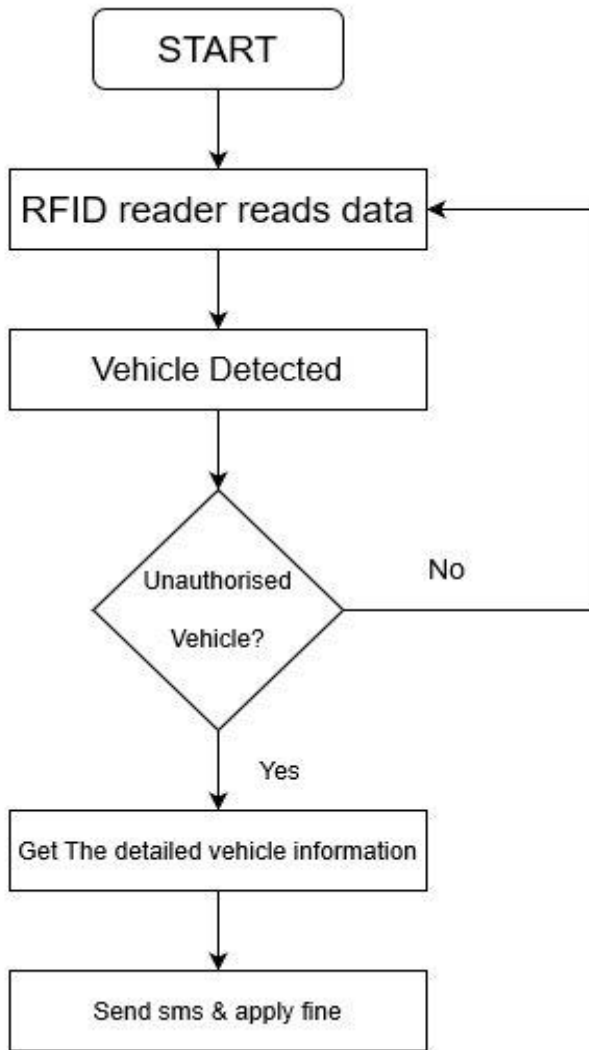
VIII FUTURE SCOPE

Implementing RFID technique in toll booth system: E-toll collection system. This will allow the vehicle drivers to pass through the toll booths without stopping at the corresponding toll booths for verification and payment. The fixed toll amount can be easily deducted from the RFID card of that corresponding driver or the vehicle owner.

IX CONCLUSION

In Proposed system will be developed in order to track and report the unauthorized entries into the BRT. The system will successfully detect all the unauthorized vehicles and to take proper action. The system will further capture images and send those captured pictures to the respective authority for further legal actions.

REFERENCES

[1] X. Cui, J. Gao and Y. Y. Wang, "Research of Bus Rapid Transportation based on 'Public transportation first'", International Conference on Future Information Technology and Management Engineering, vol. 1, pp. 174-177, 2010.

[2] A. E. Diez, A. Bohorquez, E. Velandia, L. F. Roa and M. Restrepo, "Modem trolleybuses on Bus Rapid Transit: Key for electrification of public transportation", IEEE ANDESCON, pp. 1-7, 2010

[3] J. An, J. Teng and L. Y. Meng, "A BRT Network Route Design Model", 11th IEEE International Conference on Intelligent Transportation Systems, pp.734-741, 2008

[4] Y Luo., Y. Yao and H. H. Gao, "The Design of the BRT Signal Priority Control at the Intersection", International Conference on Intelligent Computation Technology and Automation, vol. 1, pp. 507-511, 2008

[5] Kurt Konolige, Joseph Augenbraun, Nick Donaldson, Charles Fiebig and Pankaj Shah. A Low-Cost Laser Distance Sensor IEEE International Conference on Robotics and automation, Pasadena, CA, USA, May, 2018.

[6] Hidalgo-Guerrero D (2008) "Bus Rapid Transit Around the World" International Seminar-cum-Workshop on "BRT Systems in India and Abroad" 24 to 26 September 2018, Visakhapatnam, India

[7] Hook W (2005) "Institutional and Regulatory Options for Bus Rapid Transit in Developing Countries: Lessons from International Experience Transportation Research Record 2014, 184-191

[8] W. L. Huang, S. M. Tang, Z. J. Li, F. H. Zhu and Y. F. Ai, "A Hierarchical Bus Rapid Transit System Based on Wireless Sensor Networks", 11th International IEEE Conference on Intelligent Transportation Systems, pp. 1027-1031, 2008

[9] C. H. Zhou and Z. G. Gao., "A Real-Time Information System for BRT Based on GPS/Signpost Compound Navigation Technology", International Conference on Logistics Engineering and Intelligent Transportation Systems, pp. 1-4, 2010

[10] P. K. Mzee and Y. Chen, "Implementation of Bus Rapid Transit System as an Alternative for Public

Transportation in Developing Countries Case of Dart System in Dar Es Salaam", International Conference on Intelligent ComSSSputation Technology and Automation, vol. 2, pp.489-493, 2010

[11] S. Panwai, H. Dia, " Real-Time BRT System ", IEEE Transactions on Intelligent Transportation Systems, vol. 6, no. 3, pp. 314-325, 2005.

[12] H. S. Levinson, S. Zimmerman, J. Clinger, J. Gast, "Bus rapid transit: synthesis of case studies", Transportation Research Record: Journal of the Transportation Research Board, vol. 1841, pp. 1-11, 2003.

[13] China National Energy Development Strategy and Policy Analysis, Technical Report on Xi'an BRT System. Development, 2005

[14] W. J. Ma and X. G. Yang, "A Passive Transit Signal Priority Approach for Bus Rapid Transit System", IEEE Intelligent Transportation Systems Conference, pp.413-418, 2007