Efficient Public Transport System Using Artificial Intelligence

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Abstract: Traffic signal control is an effective way to regulate traffic flow to avoid conflict and reduce congestion. Nowadays in urban transportation as well as in state transportation there are many problems related to Traffic control, bus transportation enquiry also corruption in system and many more. This particular project gives brief information about the problems faced by the Maharashtra State Road Transport Corporation (M.S.R.T.C). Entire part of Maharashtra State is covered by Maharashtra State Road Transport Corporation buses. It has been serving more than 70 lakhs passengers daily. There is a very wide network of M.S.R.T.C across Maharashtra. There are some additional problems faced by M.S.R.T.C like load factor, high bus staff ratio, passengers satisfaction etc.

As the context is related to M.S.R.T.C so this particular paper mainly focuses on State transportation. The main motto of the project is to overcome the related problems by preparing an efficient system so that intelligent monitoring of buses can be done in traffic, at Bus Depots, on highways and in such different aspects. By designing such a system it be helpful for passenger’s satisfaction, management prospect and it will prove most important factor for economic growth.

Keywords: ATmega 16, ZigBee, GPS and GSM module, IR Sensor

1. Introduction

Transport is a crucial component of infrastructure. A well-developed transport network facilities the integration and interdependence of the different sectors by aiding quick and adequate movement of men and material. Therefore, if agriculture and industry make up the “body” of the Indian economy, transport and communications constitute its “nerves”. The demand for transport is likely to go up with population increase and economics growth, coupled with rapid urbanization. Transport development helps to open up remote regions and resources for production.

In the past few years due to increase in the population, enhancement of standard of living of people, developing economy and rising level of vehicles public expectations have increased enormously. In the present condition of the public transport travelers don not have information to choose their bus for their respective destination. The travelers are unaware with the routes that the particular bus will follow. Travelers even don’t know the time required by the bus to reach the bus stop. Travelers face many problems in choosing the right and appropriate bus that will lead them to desired destination.

The objective of the study is to advocate enhanced competition and institutional reforms to engender greater competition within the passenger road transport sector across the states of Maharashtra. The study also aims to increase the efficiency in using the economy’s productive capacities to attain the desired economic and social ends. The study would depend on secondary information as well as primary survey data.

The Maharashtra State Road Transport Corporation abbreviated as (MSRTC, or simply ST), is the state run bus service of Maharashtra, India with 16,500 buses which ferry 7 million passengers daily on 18,700 routes. It serves routes to towns and cities within Maharashtra and adjoining states. Apart from locations within the state of Maharashtra, the
MSRTC service also covers destinations in neighboring states. It also offers a facility for online booking of tickets for all 18,700 routes. This also proved to be beneficial for travelers as some sort of schedule set in, with a time table, pick-up points, conductors, and fixed ticket prices.

2. Problem Statement

Problems in front of the M.S.R.T.C:
M.S.R.T.C. has been providing services to more than 70 lacks passengers daily across Maharashtra. But M.S.R.T.C. has been facing various problems in its services to survive i.e. low load factor, high staff ratio, and high rate of accident and break down. Besides these problems few other problems like that high tax burden, increasing prices of spear parts, competition of private sector and lower satisfaction of passenger. Here we only consider problems related to the passengers. There are various problems like late arrival and departure of the buses, poor management for passengers and many more.

3. Block Diagram

3.1 Bus Unit

3.2 Depot Unit

3.3 Bus Stop

3.4 Police Station Unit

4. Working Description

Bus Unit- This is the main unit of the project. From this unit the further system comes into action. The main function of this unit is to sense the traffic which will be done by IR sensors and accordingly communicating with the other units with the help of GPS and GSM module.

Depot Unit- This unit is dependent on the bus unit. It informs about the traffic condition that will be displayed on the display screen at depot Unit.

Bus Stop unit- This unit will display the information about the buses on that route on the bus stop.

Police station unit- In cases of emergency this unit comes into action. It collaborates with the depot unit.

5. Our Approach
In our approach we are developing a system which will use IR sensors for monitoring the traffic condition around M.S.R.T.C (Maharashtra State Road Transport Corporation) buses. IR Sensor will sense the traffic and accordingly it will send a message to the depot unit and Police Station unit respectively.

We are also providing the live tracking facility of M.S.R.T.C buses and the messaging facility for the passengers with the help of GPS and GSM so that they can check the timings as well as the related information about the buses.

Our approach is to prepare the system so that the working of the current system becomes more efficient and upgraded.

6. Benefits

The current system consists more of manual work like maintaining the sheets of daily schedule therefore more man power is required. But due to this system the requirement of man power is reduce, system becomes secure and the cost of the maintenance is also reduce. If the system comes into existence then eventually economic growth will increase.

7. Conclusion

This paper gives a brief idea about the problems faced by M.S.R.T.C such as late arrival and departure of the buses, failure of the buses and other related issues and some description about the units that our system consist. This paper also represents an approach to solve the problem mention above.

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