

Amercement for Traffic Violation and Instinctive Traffic Control for Ambulance

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Abstract— Road traffic accidents are a major cause of disability and death throughout the world. The control of vehicles in order to reduce human error and boost ease congestion is not accomplished solely by the aid of human resources. In this project, intelligent control system is capable of tracking all vehicles, crisis management and control, traffic guidance and recording driving offences along the highway. This automated system is designed to charge penalty for violating traffic rules using barcodes and web application, to radiate the ambulance symbol and make the signal green until the ambulance passes the signal using tracking system.

Keywords— Accidents, intelligent control system, tracking, driving offence, penalty, web application, ambulance symbol.

I. INTRODUCTION

Violations in traffic law are very common in a highly populated country like India. The accidents associated with these violations cause a huge loss to life and property. Being a metro city and a highly populated one also, has a lot of road accidents every year. Despite this the violations in traffic laws do not reduce. A lot of people disobey the rules every day sometimes willingly and sometimes because they are forced to do appropriate so because of others. Not obeying the traffic signals is observed mainly during the peak hours of traffic as everyone is in a rush to reach early.

The accidents associated with these violations cause a huge loss to life and property. In this project, automation is employed to capture the vehicles' number plates, which violate traffic rules (zebracrossing) during red signal then it deducts the money from vehicle's owner account using barcode alike fast tags in highway tolls. The motor vehicles are recognized thereby message concerning the penalty intended to that person in case the vehicle doesn't have

proper documentation. It manages the ambulance arrival and departure at respective traffic signals.

II. METHODOLOGY

1. As the cameras are in every signal, it is easy for monitoring the movement of vehicles. If any vehicle violates protocol near traffic signal, then alike fast tags in highway tolls it scans the barcode and deducts the money from vehicle owner's account.
2. As there will be tracking system for every ambulance, it is convenient for tracking. At first, one extra ambulance symbol to a traffic signal is added. As the ambulance approaches the signal, the ambulance symbol will radiate and make the signal green until the Ambulance passes the signal. That gives a sign to other vehicles to provide space for the ambulance.
3. When any vehicle passes the signal, then the camera will capture the image of vehicle return detect the number plate.
4. It then sends that data to a real-time database. It fetches the information about the registered vehicle's owner.
5. Ultimately the data accumulated is sent to the web application handled by the police department.
6. Eventually, the message concerning the penalty intended to the respective owner from the web application.

III. BLOCK DIAGRAM

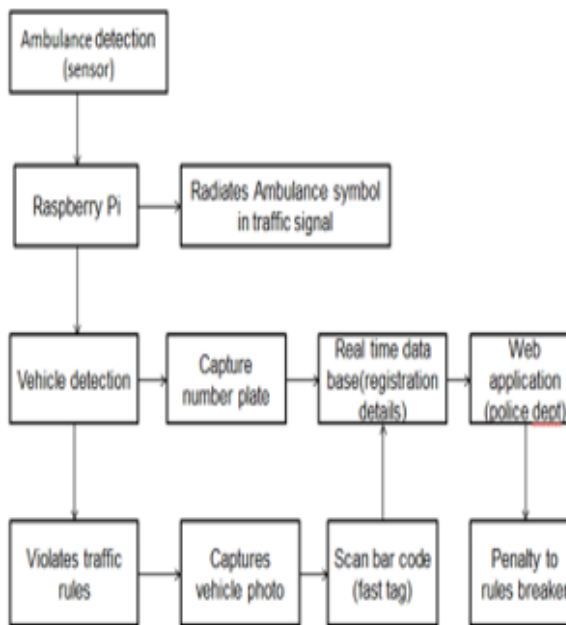


Fig 1: Block diagram

At first, the Ambulance location is detected using the sensor. If it is detected in the range set in the project, then it sends that data to the raspberry pi. From raspberry pi, it radiates the Ambulance symbol and makes the signal green until the ambulance crosses that signal. It gives the sign to other vehicles about ambulance arrival.

As there will be camera in every signal, it is easy for monitoring the movement of vehicles. If any vehicle violates the traffic rule (crosses zebra crossing) then alike fast tags in toll, it deducts the amount from the vehicle owner's account.

It also captures the image of number plate of a vehicle and sends that to real time data base which then fetches the information regarding vehicle's registration. It then sends that data to the web application handled by police department to intend the message regarding penalty to the vehicle owner, if it doesn't have proper registration details.

IV. RESULTS

1. If anyone violates traffic protocol, then camera should capture the photo of a vehicle. Thereby it should scan barcode and deduct the money from vehicle owner's account.

To start with RFID, it scans the card/token attached to the vehicles. The NodeMCU reads the signal and displays it on Arduino IDE serial monitor. Subsequently data get transfer to the real-time database as shown in the fig 2.

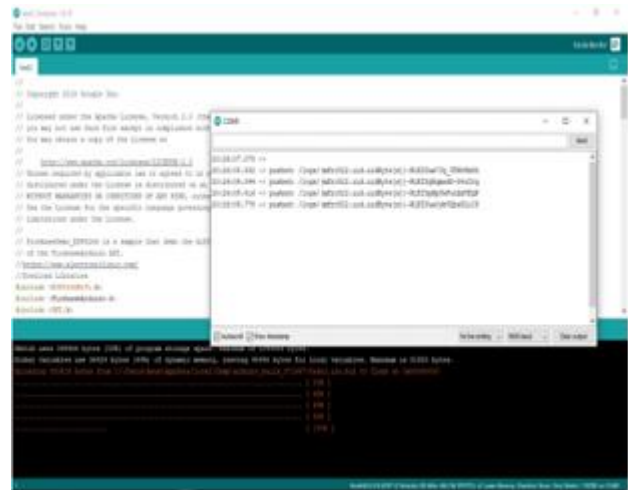


Fig 2: Arduino IDE

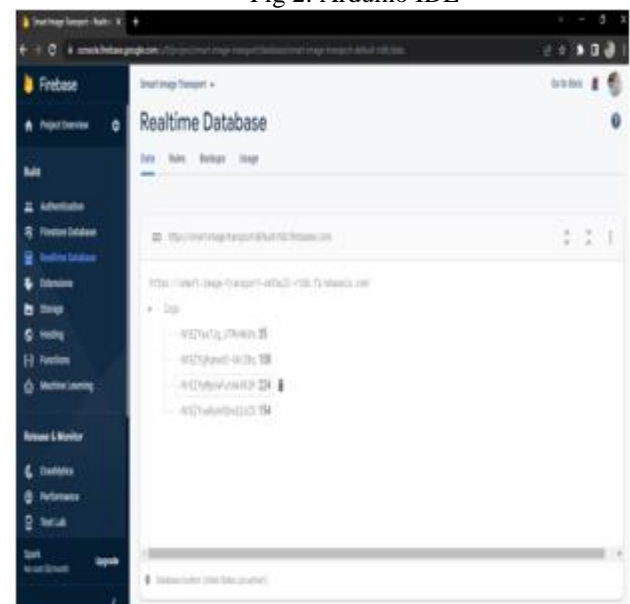


Fig 3: Real-time database

The data transferred from NodeMCU to real-time database (Google firebase) is shown in the fig 3. It then deducts the money using barcode.

2. When any vehicle passes the signal, then the photo of that motor vehicle is captured and should be sent to a real-time database. It then detects information regarding registration and about the vehicle's owner and the message concerning the penalty intended to the vehicle owner through the web application managed by the police department, if the vehicle is not registered.

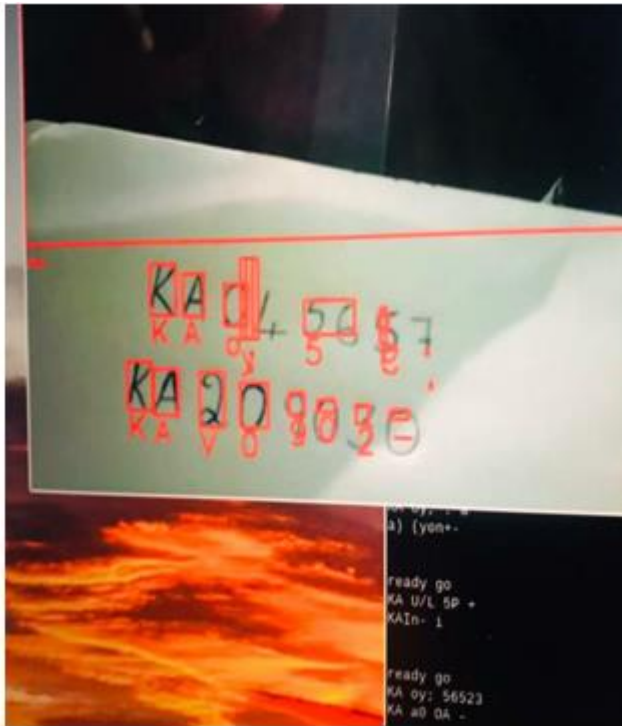


Fig 4: Number plate detection

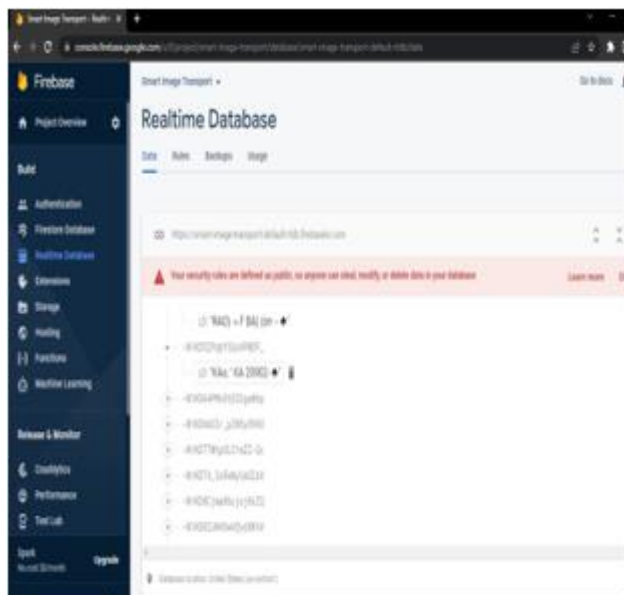


Fig 5: Real-time database

Number plate deduction is shown in figure 4. It then transfers that data to real-time database which is shown in figure 5. Thereafter it verifies the vehicle's registration details in database. If the data is not available, then that message is sent to the web application handled by the police department for further procedure.

3. If the ambulance is in the range of 500m, then the ambulance symbol in the traffic signal should radiate and signal should be green until the Ambulance passes the signal.

V. ADVANTAGES

1. Cost effective: It reduces expenditure on cameras and GPS tracker system.
2. Easy to implement and efficient
3. It provides 24/7 monitoring
4. Provides Safety and protects from road accidents
5. It improves journey time.
6. Improved air quality from reducing air pollution generated by slow-moving traffic.
7. Reduced delays to Ambulance and public transport.
8. Traffic speed control.
9. Automated alerts and controls for facilities
10. It provides evidence on tactical police
11. It decreases traffic violation

VI. APPLICATIONS

1. Traffic signals: It gives sign to the other vehicles about arrival of ambulance.
2. Hospitals: It gives information to the hospital that an ambulance is nearby the hospital, and they have to be ready with emergency requirements.
3. Police department: It reduces the stress for the police who proctor the vehicles manually.
4. Airport: It can be used to know the details of cab's arrival and departure.
5. Shopping malls, Tourist places: It reduces the work of collecting bill.

VII. CONCLUSION:

Violations in traffic laws are very common in a highly populated country like India. The accidents associated with these violations cause a huge loss to life and property. This project reduces the violation of traffic rules as it charges penalty instantly either through barcode or web application depending on the kind of traffic rule violation. It reduces the stress for the police who proctor the vehicles manually. It saves the lives as it reduces the delays to Ambulance to reach the hospital.

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