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Design & Implementation of Traffic Violation Monitoring System

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Abstract—the main objective of this project is to design an "Automatic Intelligent system to identify culprit vehicle". Breaking traffic rules and accidents on road is a major issue now a days. Due to large population and traffic congestion it is difficult to identify which vehicle has broken traffic rules or by which vehicle the accident has happened.

To monitor culprit vehicle manually is very difficult. Therefore, there is need to monitor these vehicles automatically. Hence, I propose a smart monitoring system that will monitor the culprit vehicle. The proposed system will generate detailed data at the time of incident and that data will be send to the R.T.O office. With the help of these details the officer can take further action.

Keyword— Traffic Monitoring system, Accident control, Device to track culprit vehicle, automatic monitoring system, Identify every vehicle uniquely.

1. INTRODUCTION

Due to traffic congestion and increasing number of user on road it is difficult to identify every vehicle uniquely. To monitor the vehicle manually is very difficult task. The aim of this research is to automate the identification of the vehicle. In today's time there are so many people breaking traffic rules without any fear, one of them is jumping red light signals. Sometimes due to this the vehicle meets an accident with another vehicle. In today's world there are lots of junctions and crossings of road where traffic lights are fitted, but at only few places the duty of traffic police is assigned where they monitor traffic.

With the ever increasing vehicles on road and the number of users on road, limited resources are available to monitor the vehicle uniquely. Hence, an intelligent monitoring of vehicle uniquely is an important issue to be considered. The traffic monitoring authorities need to find new methods of overcoming this difficulty.

In our research, we are designing a system which will tell about the incident that will happen by culprit vehicle. It will help to find which vehicle has jumped the red light signal, **when and where**.

Our proposed system will help to find where accident has happened. It will ensure that either accident has happened or not. If happened, then it will also make sure that ambulance reaches at destination without any delay.

Our proposed system will help to identify the culprit vehicle uniquely either on **jumping red light signal or accident done by vehicle.**

Our system consists of mainly four units:-

- Vehicle unit
- Data base/Main server unit
- Control unit
- Ambulance unit

In the proposed system the device will be installed in the vehicle. If the vehicle jumps the red light, then system will sense the condition on light, if still red signal appears then it will immediately send the location, time and vehicle no. to the main server from where the officers will monitoring, according to available data they may take further action for the culprit vehicle(Shown in fig. 1). By this way traffic police don't have to run behind the culprit vehicle for doing challan.

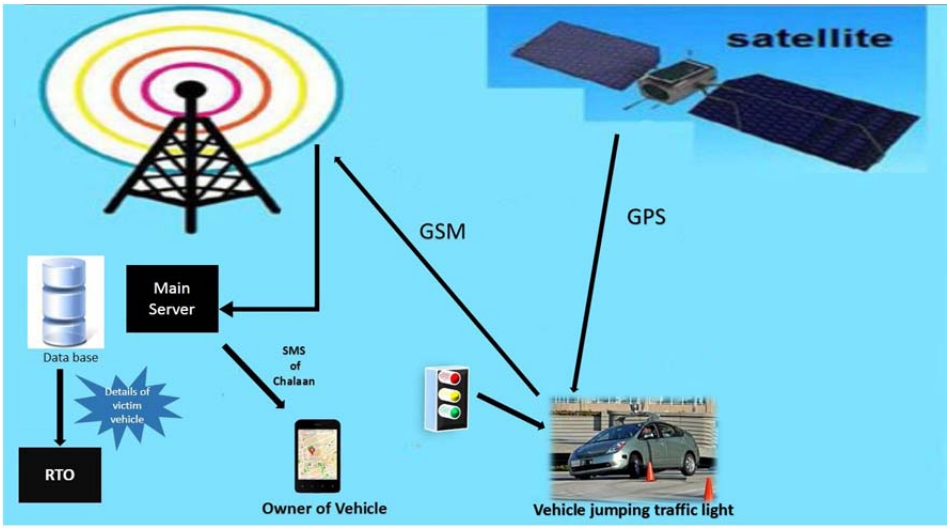

Fig. 1

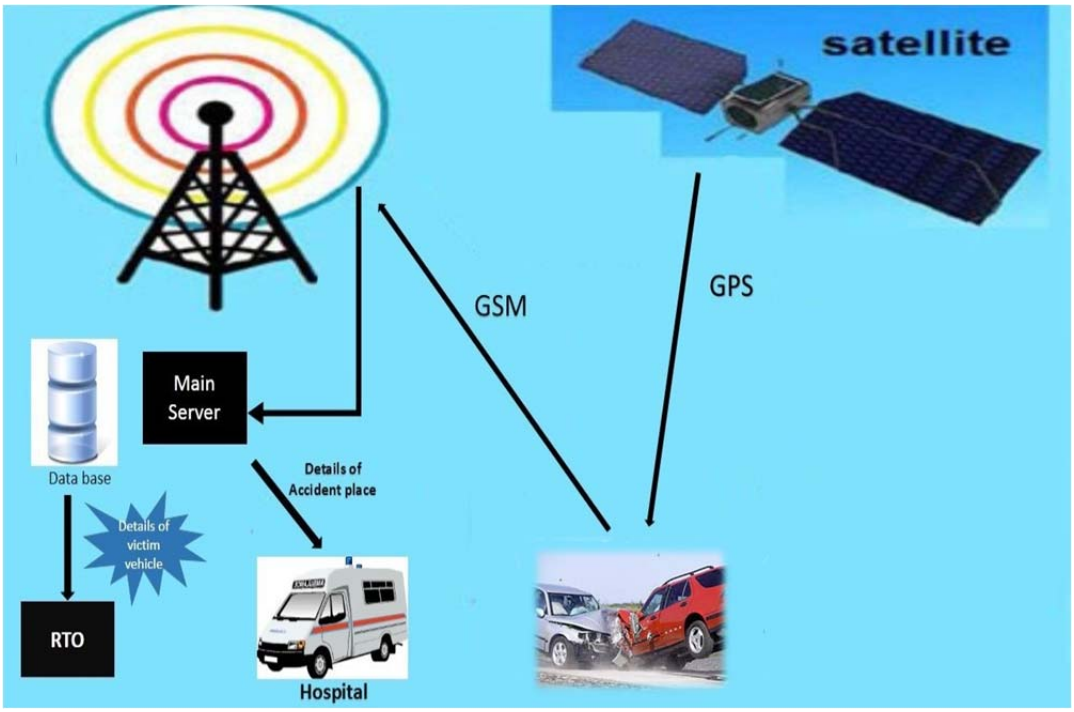

Fig. 2

If vehicle meets with an accident, then the device immediately sends the location of the accident to the main server. From the control Unit a message is sent to the nearby ambulance. Then ambulance unit find the shortest routes to reach the destination (Shown in fig. 2).

2. Existing Devices/System

- In Kolkata city red-light and speed detecting cameras are install at major junction. This technology capture the registration no. of vehicle that would jump the signals.
- **Automated Traffic Signal Enforcement Program**, that program is running in Denton city U.S.A. Red light cameras help communities enforce traffic laws by automatically photographing vehicles whose drivers run red lights. A red light camera system is connected to the traffic signal and to sensors that monitor traffic flow at the crosswalk or stop line. The system continuously monitors the traffic signal 24/7, and the camera itself is triggered by any vehicle entering the intersection above a pre-established minimum speed and following a specified time after the signal has turned red. A second photograph typically shows the red light violator in the intersection. Cameras record the date, time of day, time elapsed since the beginning of the red signal and vehicle speed. Tickets are sent by mail to owners of the violating vehicles.
- **Intelligent accident identification system using GPS, GSM modem**
  This system works in case of accident, when accident happened somewhere by any vehicle the crash sensor sense the activity and send the message containing details of location to control unit which verifies either accident happened or not. If accident happened then it will send location and shortest routes to ambulance so that the ambulance can reach destination as soon as possible.

3. Shortcomings Of Previous Devices/Program

- In previous system camera is used, if vehicle has fitted fake registration no. plate in that case it will be difficult to identify culprit vehicle which jumps the red light signal.
- In **Intelligent accident identification system**, only control unit tracks where the accident has happened and can send details to ambulance, we can't track culprit vehicle by which accident has happened.

S1 – Light Detecting Sensor Port
S2 – Speedo Meter Port
S3 – GPS Port
In our proposed system we will use these components.
In the proposed system, S1 sensor is used for checking the status of light whether it is red or green. S2 is used to monitor the speed of vehicle.
And S3 is used to detect the location of vehicle.
If S1 detects that the light is red then it will compare with defined speed limit in program. If the speed is greater than the specified speed limit, then it will automatically take the location and timing of vehicle with the help of S3 and will send to control unit with the help of GSM.

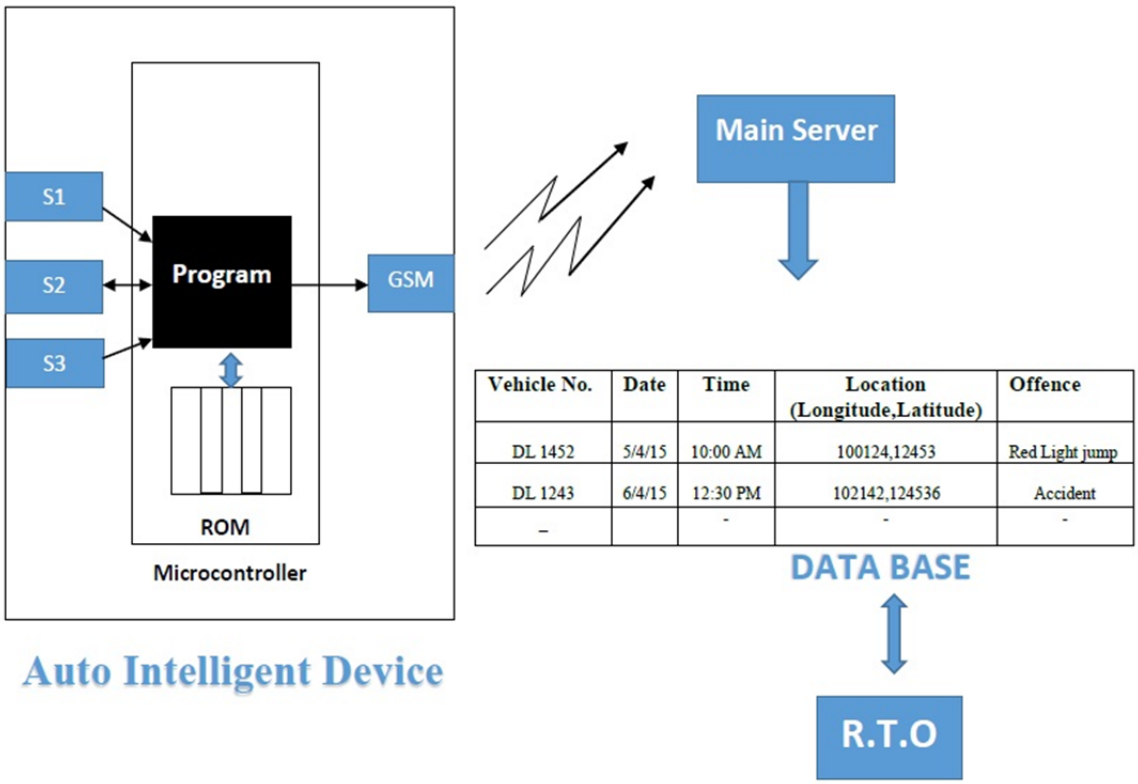

Fig. 3

4. CONCLUSION

- By our system we can track culprit vehicle which breaks the traffic rules even if it is fitted with a fake registration no. plate.
- By our system we can track culprit vehicle by which accident has happened.
- We can reduce fake calls for ambulance.
- Our system is cost effective system as compared to installing cameras at every junction of road.