Optimizing Traffic Flow with Magnetic Sensors

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***Abstract*— The present article contrived the new technique for saving the power consumed by the traffic signals during off vehicle times. In addition to this, to control traffic flow, magnetic sensors are installed beneath roads to count number of vehicles on particular lane, resulting the high-density traffic lane to open first. In order to avoid signal jumping and accidents we installed barriers (like railway gates) which are interconnected with magnetic sensors and fully automated in its functionality. For smooth clearance of emergency vehicles, single vehicle narrow road is provided beside roads, and barriers installed 200m away from signal, where barriers and emergency vehicles are installed with sensor to detect each other resulting in automatic barrier allowance on narrow road to avoid traffic. During this time, all other barriers remains closed.**

***Keywords*— Magnetic sensor, distance measuring sensors, barriers like railway gates, emergency lane, fully automated, no human control.**

I. INTRODUCTION

In present cities we can see that traffic control has become a major issue. Every small and metropolitan city has this problem. Many accidents occur due to violation of traffic rules. Many people had died due to this traffic. Till date traffic control is a burning hot topic to resolve. Here, we have an optimizing design for the traffic signals to maintain and control traffic flow and to reduce the consumption of power by the traffic signals by an automated system without any human control or a traffic police.

II. TRAFFIC DENSITY CONTROLLING

Two magnetic sensors are installed beneath every road lane of signal. These magnetic sensors count the number of vehicles passed above it and send that count to the control box. Similarly, every sensor on the lane do the same thing. In fraction of time control box calculate heavy density line and allow the lane barrier to open on priority wise. Once all the signal lane road loop is completed then another same loop starts.

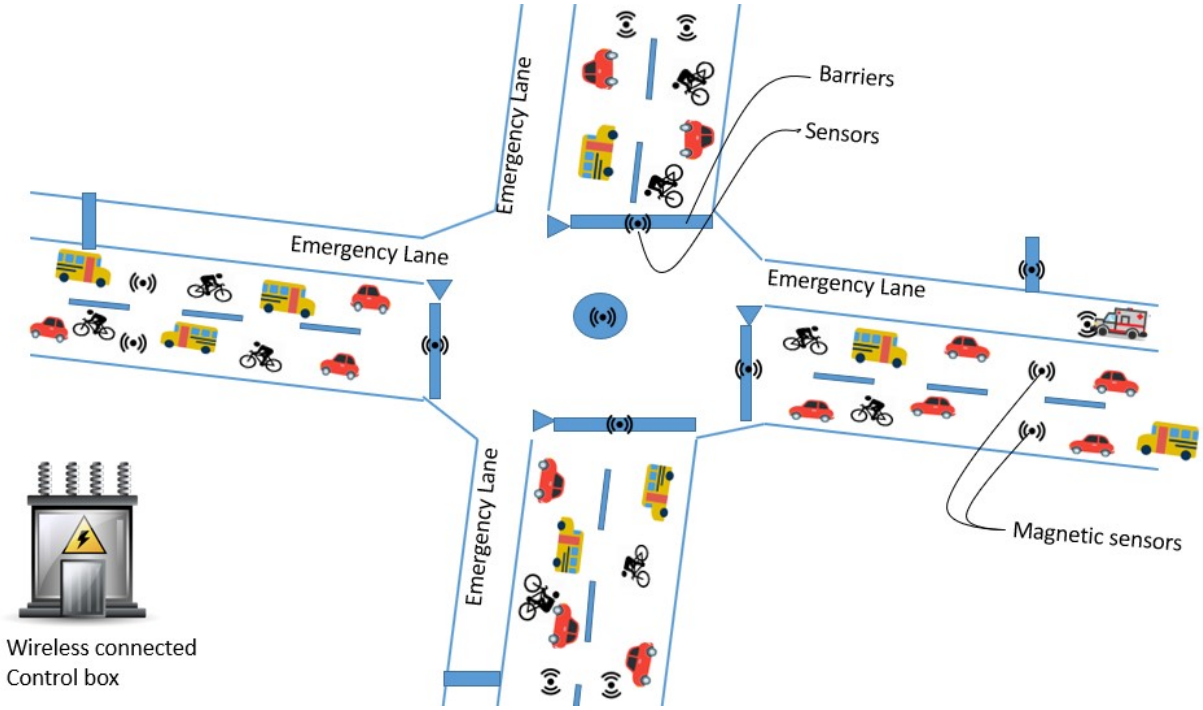
III. SMOOTH CLEARANCE FOR EMERGENCY VEHICLES

A separate narrow road is made beside every line having provision of passing a single vehicle. For this road barriers are installed little far away from the signal. Here, barrier and ambulance sensors are activated when they both meet to certain distance (let us say 500m). When an ambulance reaches the signal, emergency lane barrier sensor detects the vehicle and open the barrier to allow the ambulance to pass through the signal. During this time all other main lane will be closed for crossing of ambulance. Thus, making smooth and fast clearance for the ambulance to pass through. In addition to this a manual gear is provided on emergency lane in order open the barrier during any malfunction of sensor. And, no signal lights are required.

IV. MINIMAL POWER CONSUMPTION

Some cities don't have that much traffic to control and in some traffic signals there will be no movement of vehicles. For this, we install a laser distance sensor beneath the road. When there is no movement of vehicles on road a timer will minimize the consumption of power by the traffic signal. If it detects any vehicle from certain distance (say 150 m) all the devices will come online for fully functional operation. Thus, saving some electricity consumed.

V. SCHEMATIC REPRESENTATION



VI. CONCLUSIONS

Implementation of this design may reduce the violation of traffic rules such as signal jumping and all. Accidents can be completely bought to minimal since we use barriers to control vehicle. Idea of separate emergency lane will help emergency vehicles to pass through the signals easily. Since it is all automated no traffic police is required in order to control traffic flow. Minimal consumption of power concept is very effective in reducing the power consumed by this design.