ADVANCE TRAFFIC CONTROL WITH DENSITY OF VEHICLES

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ABSTRACT

There has been a need to automatically control things from a distance depending on a certain timing logic. In recent past there had been many instances of accidents on the roads, at the crossing near the colonies for the fact that there were no streetlights ON in the night when the visibility of the driver is poor. Even at the junctions such as T-junction, Y-junctions or circle we should be able to distribute the traffic in such way that the traffic management should be balanced. To overcome this problem we are designing a system, which can control the traffic according to the density of vehicles. A Micro- Controller and a Personal Computer in which all timing related details are fed to the PC and then the control signal are passed to an 89C51 based board which in-turn control the various lights.This project ours features Bi-Directional flow of information and to the base station. Sensors are connected to the Micro Controller, which sends the information as to which path should be open. According to the vehicles density information corresponding signal lights should glow to pass the traffic. Thus Advance Traffic Control with Density of Vehicles is indispensable for accurate services. Standing at the signal for long duration consumes more petrol and tome. The aim of this project is to save time, save money and petrol and make the traffic control accurate.

Keywords: Microcontroller, Traffic control.

I. INTRODUCTION

The aim of the paper is to solve traffic congestion which is a severe problem in many modern cities all over the world. To solve the problem, we have designed a framework for a dynamic and automatic traffic light control system and developed a simulation model with codes in to help build the system on hardware. Generally, each traffic light on an intersection is assigned a constant green signal time. It is possible to propose dynamic time-based coordination schemes where the green signal time of the traffic lights is assigned based on the present conditions of traffic. The intelligent work which is done by traffic inspector will be perfectly done by the micro controller in the circuit with the help of sensors and the program which is coded to the microcontroller. Traffic lights, also known as traffic signals, stop lights, stop light, traffic lamps, stop-and-go lights, robots or semaphore, are signaling devices positioned at road intersections, pedestrian crossings and other locations to control competing flows of traffic.

Traffic lights have been installed in most cities around the world to control the flow of traffic. They assign the right of way to road users by the use of lights in standard colors (Red - Amber -Green), using a universal color code (and a precise sequence, for those who are color blind). They are used at busy intersections to more evenly apportion delay to the various users. The most common traffic lights consist of a set of three lights: red, yellow (officially amber), and green. When illuminated, the red light indicates for vehicles facing the light to stop; the amber indicates caution, either because lights are about to turn green or because lights are about to turn red; and the green light to proceed, if it is safe to do so. There are many variations in the use and legislation of traffic lights, depending on the customs of a country and the special needs of a particular intersection. There may, for example, be special lights for pedestrians, bicycles, buses, trams, etc; light sequences may differ; and there may be special rules, or sets of lights, for traffic turning in a particular direction. Complex intersections may use any combination of these. Traffic light technology is constantly evolving with the aims of improving reliability, visibility, and efficiency of traffic flow.

II. OPERATION AND DIAGRAM

Also we have a junction where three lights (green and red) are arranged on all four sides. We have three pairs of sensors across the roads marking as low, medium and high density zones respectively. There will be a infrared transmitter and infrared receiver opposite to each other. We will place sensors at some distance apart from another pair. When vehicles are filled and cross the first pair of sensors, then there will be an obstacle between transmitter and receiver and this leads to a digital signal (low or high) and the microcontroller assumes that there is low density traffic. When the vehicle crosses second sensor then it assumes medium density and for third sensor pair high density traffic respectively. Depending on the above process a digital data is sent to microcontroller whether it's low or high and the microcontroller will allot the time for the traffic to pass on. For high density traffic there will be more allotment of time and for low density low time respectively. Program written to the microcontroller will make it to do the operation. So the microcontroller will send its timing signal output by comparing with the adjacent road's traffic.

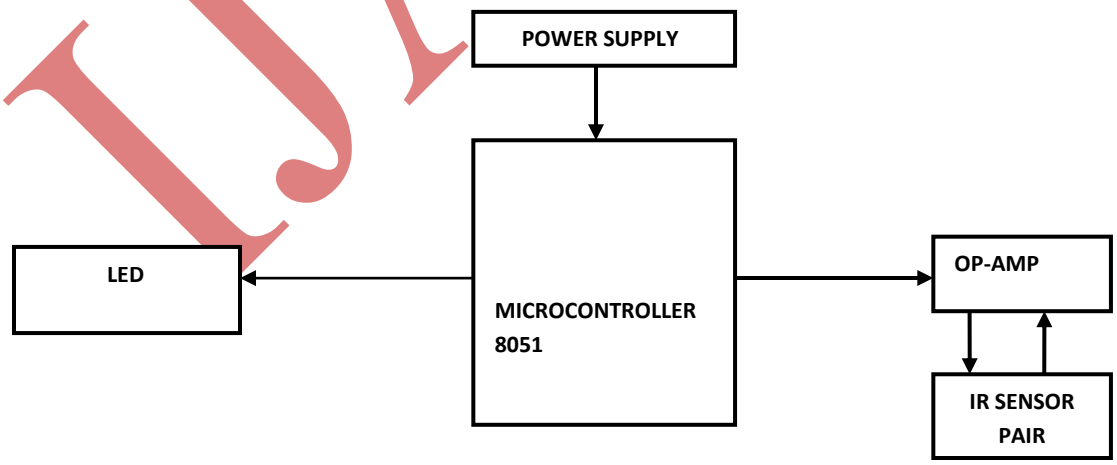

Figure1: Block diagram

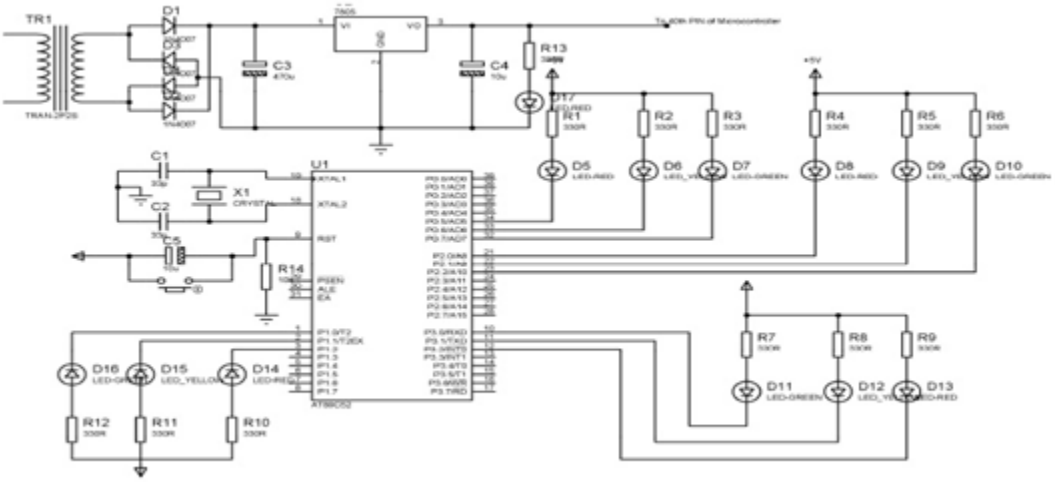

Figure2: Circuit Diagram

III. APPLICATIONS

- There is no need of traffic inspector at the junctions for supervising the traffic to run smoothly.
- The intelligent work which is done by traffic inspector will be perfectly done by the microcontroller in the circuit with the help of sensors and the program which is coded to the microcontroller.

IV. ADVANTAGES

- Density based traffic light control have many advantages compared to time based traffic control.
- We can save considerable amount of time.
- We can avoid unnecessary occurrence of traffic jams which causes public inconvenience.

V. CONCLUSION

Thus from above theory we can conclude that using the method of density based control of traffic lights we can save a considerable amount of time and also we can prevent excessive traffic jams thus leading to smooth traffic flow . In practice presently in India we are following time based control of traffic signals and we are experiencing a heavy traffic jams all over which in turn consumes lot of time and fuel. We hope these methods will be adopted as soon as possible so that the limitations we are experiencing with present method can be overcome.

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