

Synopsys

“DENSITY BASED TRAFFIC CONTROL SYSTEM”

ABSTARCT

Now a days congestion in traffic is a serious issue. The traffic congestion can also be caused by large Red light de-lays, etc. The delay of respective light is hard coded in the traffic light and it is not dependent on traffic. Therefore for simulating and optimizing traffic control to better accommodate this increasing demand is arises. In this paper we studied the optimization of traffic light controller in a City using microcontroller. Thus I propose multiple traffic light control and monitoring system. The system tries to reduce possibilities of traffic jams, caused by traffic lights, to an extent. The system is based on microcontroller. The micro-controller used in the system is 89V51RD2 which is MCS-51 family based. The system contains IR transmitter and IR receiver which are mounted on the either sides of roads respectively. The IR system gets activated whenever any vehicle passes on road between IR transmitter and IR receiver. Microcontroller controls the IR system and counts number of vehicles passing on road. Microcontroller also store vehicles count in its memory. Based on different vehicles count, the microcontroller takes decision and updates the traffic light delays as a result. The traffic light is situated at a certain distance from the IR system. Thus based on vehicle count, microcontroller defines different ranges for traffic light delays and updates those accordingly. The system records vehicle count in its memory at user predefined recording interval on real time basis. This recorded vehicle count data can be used in future to analyze traffic condition at respective traffic lights connected to the system. For appropriate analysis, the recorded data can be down-loaded to the computer through communication between microcontroller and the computer. Administrator sitting on computer can command system (microcontroller) to down-load recorded data, update light delays, erase memory, etc. Thus administrator on a central station computer can access traffic conditions on any approachable traffic lights and nearby roads to reduce traffic congestions to an extent. In future this system can be used to inform people about different places traffic condition.

INTRODUCTION

Normally, we will have the traffic signal lights programmed for a particular time intervals. But, here we will generate the traffic light signals based on the traffic, on the particular time. This type of traffic light signaling is now a day used in all the metropolitans.

In present days power conservation or saving is one of the main issues of this country, there are lot of techniques employed to reduce the power consumption, and here we take example of street light management system and a small solution for way to reduce power consumption using present technologies.

Traffic research has the goal to optimize traffic flow of people and goods. As the number of road users constantly increases, and resources provided by current infrastructures are limited, intelligent control of traffic will become a very important issue in the future. However, some limitations to the usage of intelligent traffic control exist. Avoiding traffic jams for example is thought to be beneficial to both environment and economy, but improved traffic-flow may also lead to an increase in demand. There are several models for traffic simulation. In our research we focus on optimization of traffic light controller in a city using IR sensor and developed visual monitoring using microcontroller 89V51RD2. Traffic light optimization is a complex problem. Even for single junctions there might be no obvious optimal solution. With multiple junctions, the problem becomes even more complex, as the state of one light influences the flow of traffic towards many other lights. Another complication is the fact that flow of traffic constantly changes, depending on the time of day, the day of the week, and the time of year. Roadwork and accidents further influence complexity and performance. In this paper, we propose two approaches, the first approach - to take data/input/image from object/subject/vehicle and in the second approach - to process the input data by Computer and Microcontroller and finally display it on the traffic light signal to control the Closed Loop System.

BLOCK DIAGRAM

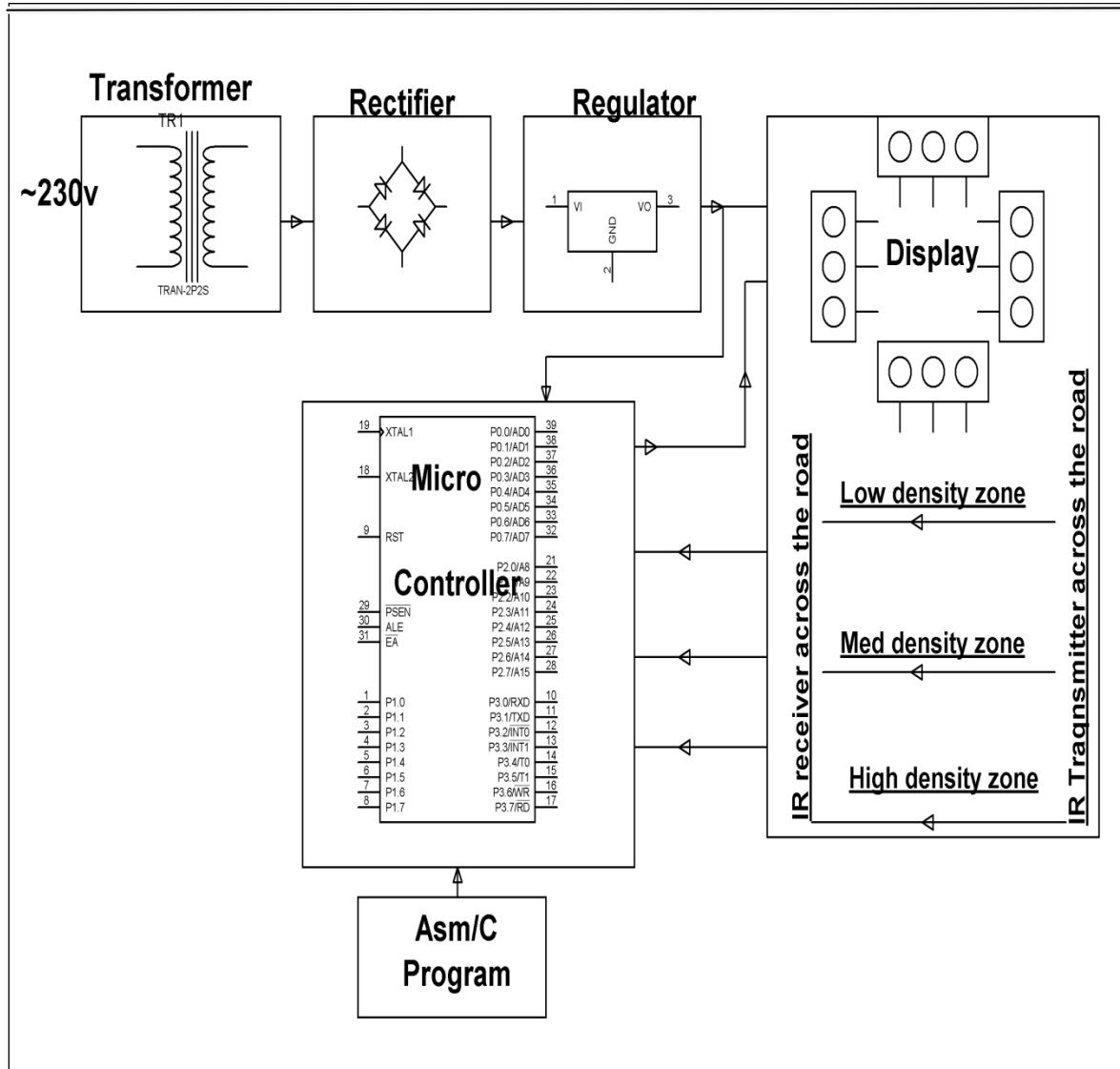


Fig1.block diagram of microcontroller board

Hardware components

- POWER SUPPLY BLOCK
- MICROCONTROLLER (AT89S52/AT89C51)

- IR LED
- PHOTODIODE
- LM 324 (4 OP-AMP)
- LED
- ULN 2803
- RESISTORS
- CAPACITORS

Advantages

- Alleviating serious congestion problems.
- Expediting traffic incident handling.
- Providing Traveler Information.
- Solving travelers' emergency difficulties.
- Developing traffic improvement solutions.
- System can be save the time of people.

Application

- It is used in traffic controlling.
- It is give beneficial for environment & economy.