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PLC-BASED INTELLIGENT TRAFFIC CONTROL SYSTEM

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ABSTRACT

The main object of this study was to design and implementintelligent traffic control system.. The system developed able to sense the presence or absence of vehicles within certain range no of vehicles countedfor the traffic signals to react accordingly green signal to illuminate, the system can help to solve the problem of traffic congestion. Hardware simulation tests were successfully performed on the algorithm implemented into a PLC (programmable logic controller).The PLC checks the status of the sensor. The system resolution is depend on the output provided by the sensors , Then PLC checks the density and then provide output signal to the traffic lights poles for ON or OFF the Red, yellow or Green lights .The road is opened for specific timing.

KEYWORD: Traffic Automation,Programmable Logic Controller (PLC).

INTRODUCTION

Traffic signal are the most timeconsumingof controlling traffic in a busy junction,. But we can see that these signals fail to control the traffic effectively when a particular lane has got more traffic but time is very less of green signal than the other lanes.Traffic load is highly dependent on parameters such as time, day, season, weather and unpredictable situations such as accidents, special events or construction activities. If these parameters are not taken into account, the traffic control system will create bottlenecks and delays. A traffic control system that solves these problems by continuously sensing and monitoring traffic conditions and adjusting the timing of traffic lights according to the actual traffic load is called an intelligent traffic control system.We need to understand the function of traffic signals so that we can improve driving habits by controlling the speed in order to reduce the number of associated traffic accidents.

MATERIALS

Hardware Components:

A. PLC
B. IR Sensors
C. Signal Poles
D. Lamps(green,yellow,red)

System Process

The system tries to reduce possibilities of traffic jams, caused by automated traffic lights. The system is based onPLC. The system contains IR transmitters and IR receivers which are mounted on the either sides of roads. This IR system gets activated when any vehicle passes on road between IR transmitter and IR receiver. The PLC controls the IR system and counts number of vehicles passing on road at that particular time. TheP LC also store vehicles count in its memory. Based on different densities of vehicles, thePLC decides the wait time and updates the traffic light delays. The IR system is situated at a certain distance from the traffic light. Thus based on the density of vehicles,PLC defines different ranges for traffic light time delays and updates them accordingly. The system records the vehicle density in its memory at predefined recording interval set by the user on real time basis. This recorded vehicle count data can be used in future to analyse traffic condition at respective traffic lights. For the analysis, the recorded data can

be downloaded to the computer through communicating with thePLC.Administrator sitting at the computer can command system (PLC) to download recorded data, update light delays, erase memory.

BLOCK DIGRAM

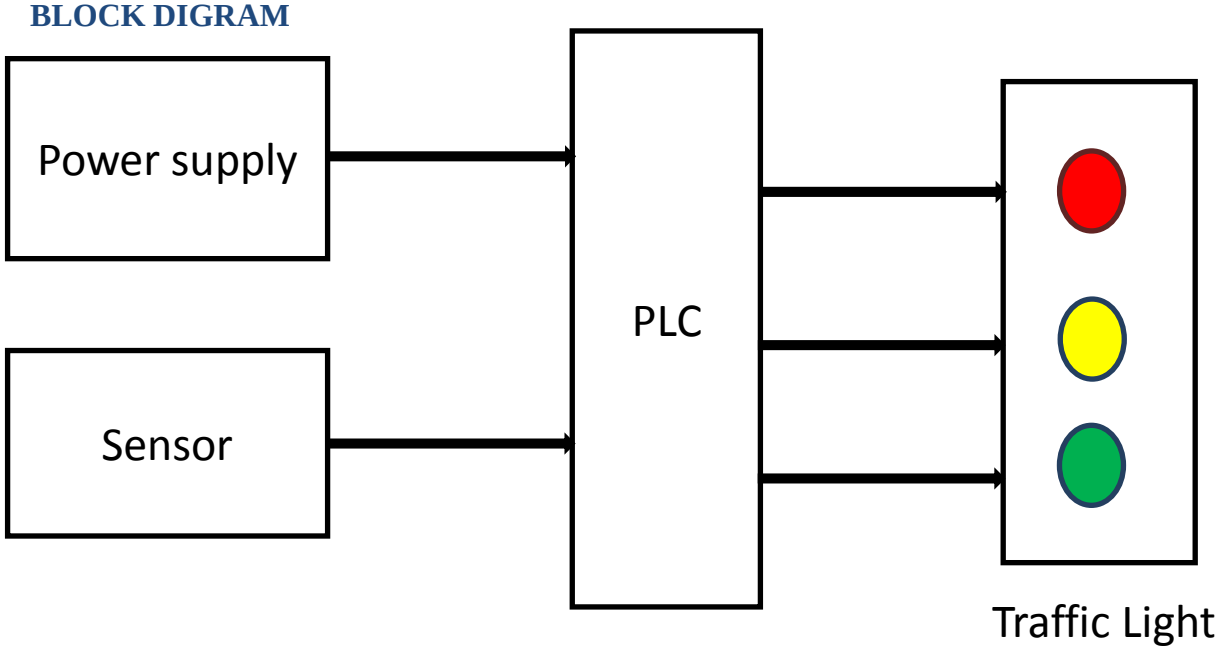

Fig a: schematic block diagram of traffic control system

RESULT

Result include the successful operation of the intelligent traffic light control and monitoring system

CONCLUSION

An automatic traffic control system had successfully been designed and developed. The sensors were interfaced with Lab PLC Module. Increasing the number of sensors to detect the presence of vehicles can further enhance the design of the traffic light system. Another room of improvement is to have the infrared sensors replaced with an imaging system/camera system so that it has a wide range of detection capabilities.

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