

ABSTRACT

Present Traffic Light Controllers (TLC) are based on microcontroller and microprocessor. These TLC have limitations because it uses the pre-defined hardware, which is functioning according to the program that does not have the flexibility of modification on real time basis. Due to the fixed time intervals of green, orange and red signals the waiting time is more and car uses more fuel. To make traffic light controlling more efficient, we exploit the emergence of new technique called as "Intelligent traffic light controller". This makes the use of Sensor Networks along with Embedded Technology. The timings of Red, Green lights at each crossing of road will be intelligently decided based on the total traffic on all adjacent roads. Thus, optimization of traffic light switching increases road capacity and traffic flow, and can prevent traffic congestions. GSM cell phone interface is also provided for users those who wish to obtain the latest position of traffic on congested roads. This is a unique feature of this project which is very useful to car drivers to take an alternate route in case of congestion. The various performance evaluation criteria are average waiting time, average distance traveled by vehicles, switching frequency of green light at a junction, efficient emergency mode operation and satisfactory operation of SMS using GSM Mobile. The performance of the Intelligent Traffic Light Controller is compared with the Fixed Mode Traffic Light Controller. It is observed that the proposed Intelligent Traffic Light Controller is more efficient than the conventional controller in respect of less waiting time, more distance traveled by average vehicles and efficient operation during emergency mode and GSM interface. Moreover, the designed system has simple architecture, fast response time, user friendliness and scope for further expansion.