

A SMART MICROPROCESSOR-BASED FOUR WAY STOP ROAD TRAFFIC CONTROLLER

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ABSTRACT

Four-way stops are very common in African countries such as Botswana, South Africa, and many others. With the four-way stop concept, the first car to reach the intersection is supposed to proceed. There have been cases where this has proved to be inefficient and has also led to accidents due to the confusion of whose turn it is to proceed. During busy times with high traffic density, the system becomes inefficient and causes traffic congestion. This paper proposes a smart microcontroller based four-way stops traffic controller system that reduces confusion of whose turn it is to proceed, as well as reduces traffic congestion at four-way stops. In this work, the smart microcontroller-based road traffic controller system is designed using the Arduino microcontroller for the logic operation of the system, infrared (IR) sensors for detecting the presence and absence of the vehicles and also to sense if the traffic density is high or low by sensing the traffic approaching the intersection and light emitting diodes (LEDs) for displaying purposes. A prototype of the system was built and tested. The system was designed in the way that it uses the first come first served method whenever the traffic density is low, and when the traffic density is high, the lanes open for longer durations. The sensors are placed on the sides of the road to detect traffic, two sensors in each lane, one at the intersection and one away from the intersection.

KEYWORDS: *Arduino, Traffic Controller, Traffic Density, Microcontroller*

Article History

Received: 07 Jun 2018 | Revised: 13 Jun 2018 | Accepted: 20 Jun 2018
