Intelligent Traffic Systems

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Abstract

The aim of this research is to provide a design of an integrated intelligent system for management and controlling traffic lights based on distributed long range Photoelectric Sensors in distances prior to and after the traffic lights. The appropriate distances for sensors are chosen by the traffic management department so that they can monitor cars that are moving towards a specific traffic and then transfer this data to the intelligent software that are installed in the traffic control cabinet, which can control the traffic lights according to the measures that the sensors have read, and applying a proposed algorithm based on the total calculated relative weight of each road. Accordingly, the system will open the traffic that are overcrowded and give it a longer time larger than the given time for other traffics that their measures proved that their traffic density is less. This system can be programmed with very important criteria that enable it to take decisions for intelligent automatic control of traffic lights. Also the proposed system is designed to accept information about any emergency case through an active RFID based technology. Emergency cases such as the passing of presidents, ministries and ambulances vehicles that require immediate opening for the traffic automatically. The system has the ability to open a complete path for such emergency cases from the next traffic until reaching the target destination. (end of the path). As a result the system will guarantee the fluency of traffic for such emergency cases or for the main vital streets and paths that require the fluent traffic all the time, without affecting the fluency of traffic generally at normal streets according to the time of the day and the traffic density. Also the proposed system can be tuned to run automatically without any human intervention or can be tuned to allow human intervention at certain circumstances.

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