Intelligent Road Signage and Traffic Monitoring System

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Traffic accidents are one of the leading causes of violent deaths in Costa Rica. Faulty road signaling and the country's weather conditions are factors that directly influence the incidence of traffic accidents; thus this work proposes the use of an intelligent system to help improve the information and signaling visibility on the road in order to decrease the number of traffic accidents in the country, creating a technological alternative to replace cat's eyes traditionally used on roads to separate the lanes. The proposal includes using sensors to enable the devices to change color depending on the status of the traffic lights or in case of traffic jams, as well as the capability of switching a reversible lane automatically whenever possible. A wireless device capable of receiving control signals from 100m away was developed, which is expected to be powered by solar energy and produce light in three different colors from both sides of the device that can be coded to transmit more information than traditional cat's eyes. Tests were conducted to verify that LED devices are visible from a distance of 900 m, a much greater distance than the visibility produced by the reflection of the headlights on conventional cat's eyes that is usually 50 m and in the best case scenario might be of about 100 m. Power usage of the current prototype is 0.67 watts, which could be lowered to build a more efficient and viable device requiring a smaller solar cell, since the current one measures 9.4 x 6.1 cm, and the goal is to use one measuring 5 x 5 cm to recharge a lithium ion battery with the power necessary for the device to remain lit night and day strengthening horizontal signaling and contributing to the reduction of violent road accidents.

Awards Won:

Fourth Award of $500