Signs with Smart Connectivity for Better Road Safety

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Abstract

The implementation of the smart road system in the road industry is relevant and significantly important in the whole world. This project pays off quickly, attracting the majority of investors. The constructed smart road works almost free of charge and performs all the assigned functions offline. The smart road is much cheaper and more efficiently shows itself from the practical side. The introduction of smart roads holds great promise as a solution to many environmental and social problems. Smart roads reduce congestion, improve road safety, and increase ride comfort for drivers.

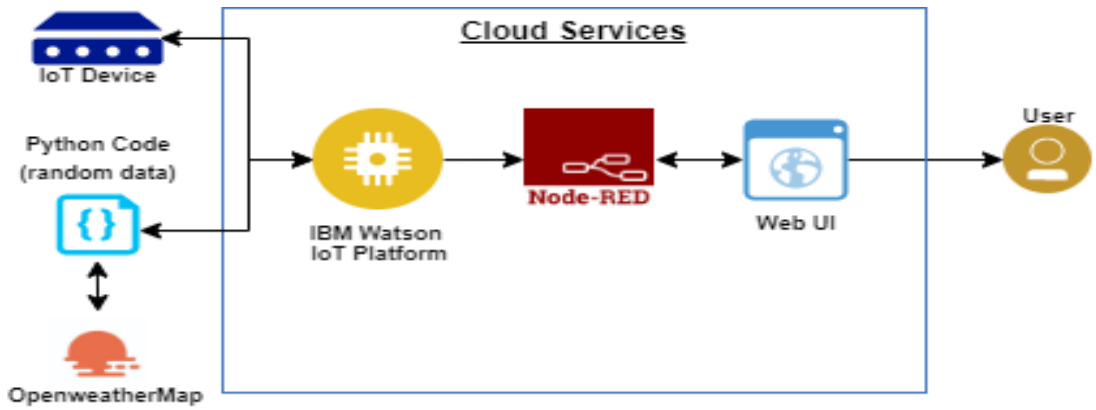
Introduction

In present Systems the road signs and the speed limits are Static. But the road signs can be changed in some cases. We can consider some cases when there are some road diversions due to heavy traffic or due to accidents then we can change the road signs accordingly if they are digitalized.This project proposes a system which has digital sign boards on which the signs can be changed dynamically.If there is rainfall then the roads will be slippery and the speed limit would be decreased.There is a web app through which you can enter the data of the road diversions, accident prone areas and the information sign boards can be entered through web app. This data is retrieved and displayed on the sign boards accordingly.

Related Work

Several studies on road safety have been conducted using a device onboard a vehicle to detect and recognize signs. García-Garrido et al. developed a traffic sign recognition system that uses a vision camera mounted on a vehicle. Based on the colours and shapes of the road signs, the system detected and recognized them [16]. The studies by Farhat et al. and Hechri et al. found a recognition of road signs with an average accuracy of about 95.53% and 92.8%, respectively.However, recognizing road signs based on colours and images presents numerous challenges. These include lighting conditions that vary naturally with the time of day and weather conditions; images that have been buffed by a moving vehicle's vibration; fading of paint on the sign; and occlusion of the sign by obstacles such as a tree, street lamp, or buildings.

Block Diagram



Literature Survey

Title	Author	Proposed System	Drawbacks
Vision-based traffic sign detection and analysis for intelligent driver assistance systems	A. Mogelmose, M. M. Trivedi, and T. B. Moeslund	The traffic sign detection literature, detailing detection systems for traffic sign recognition (TSR) for driver assistance	The main disadvantage of visual recognition of traffic signs is associated with difficult conditions of image acquisition and hence problems with noise, blurring, scale and orientation changes should be solved
Recognizing text-based traffic signs," IEEE Transactions on Intelligent Transportation Systems	J. Greenhalgh and M. Mirmehdi	The automatic detection and recognition of text in traffic signs.	During signals breakdown, there are serious and wide-spread traffic difficulties during peak hours and also delay by traffic and stopping the vehicles at the intersection during peak hour
Investigationof road network features and safety performance,	X. Wang, X. Wu, M. Abdel-Aty, and P. J. Tremon	The objectives isto compare and define the effective road network indices and to analyze the relationship between road network structure and traffic safety at the level of the Traffic Analysis Zone (TAZ)	Excessive delays, disobedience of signals and diversion of traffic to inadequate alternate routes.
Smart Road Safety and Vehicle Accident Prevention System for Mountain Roads	Mrs. Y. Lavanya, M. Monika Rani, M. Sai Swaroop, P. Raja, Y. Rajesh, Dr. L. Bharathi.	The number of accidents occurring in curves of hills have not only decrease but also providing signal information to vehicle driver which are coming from opposite side, hence it alerting us	It can direct the GSM to send messages from the user mobile to the authority as they will send immediate facilitate to the accident victims
Real-time traffic monitoring system for city governance	Mohammed Sarrab Supriya Pulparambil Medhat Awadall	The users require smart devices to access these applications and mostly the services are limited to urban roads.	These early-warning messages will help citizens to save their time, especially during peak hours. Better decision making and achieve urban growth.

Conclusion

A future trend in intelligent transportation systems is smart road signs equipped with smart codes. In addition to incorporating relatively larger amount of information, smart codes constructed via error-correction methods can provide robustness against small scale perturbations. We have introduced a game theoretical adversarial intervention detection mechanism for reliable smart road signs against threats that can perturb the smart codes at small or large scales intelligently.

References

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