IBM PROJECT

IOT :

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Problem Statement :

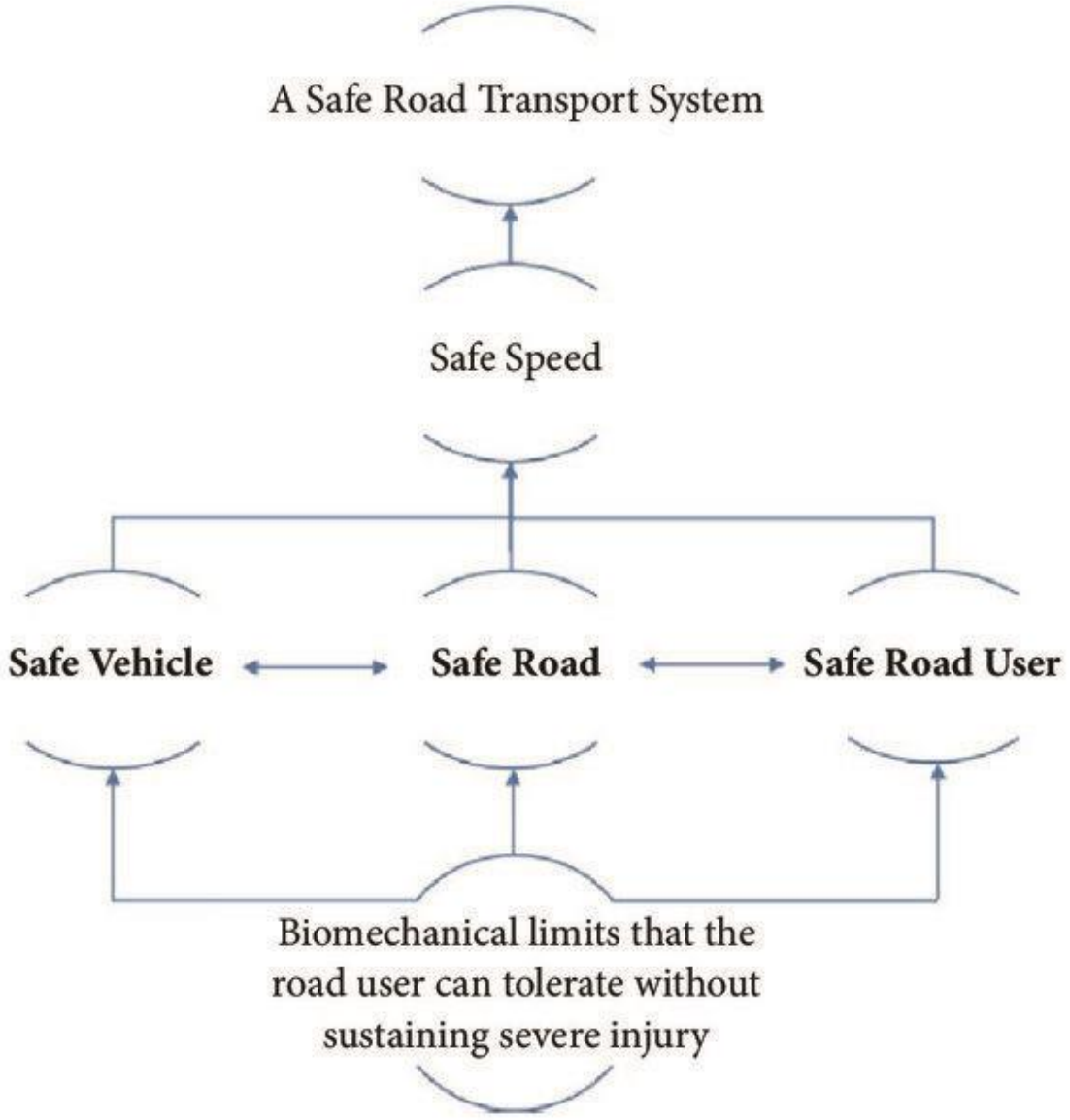
Signs with smart connectivity for better road safety.

SMART CONNECTED SIGNS FOR IMPROVED ROAD SAFETY

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.

Software used

- **Arduino IDE**
- **Embedded C**



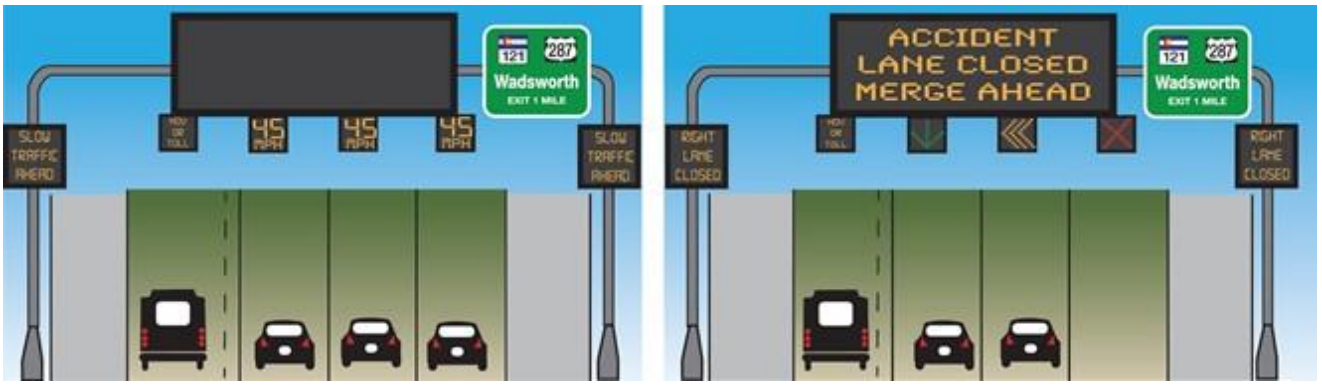
Our interest in this work is to complement the approach with a short-to-medium term dynamic assessment of road safety. Toward this end, we introduce a novel, cost-effective Internet of Things (IoT) architecture that facilitates the realization of a robust and dynamic computational core in assessing the safety of a road network and its elements. In doing so, we introduce a new, meaningful, and scalable metric for assessing road safety. We also showcase the use of machine learning in the design of the metric computation core through a novel application of Hidden Markov Models (HMMs). Finally, the impact of the proposed architecture is demonstrated through an application to safety-based route planning.

Are They Already in Use?

Smart roadway signage is not simply an objective for the future. Two UK companies have collaborated to produce these signs for use **on England's roads**.

The signs are technologically advanced, with graphics and text that drivers can see clearly. The messages are easy to comprehend quickly, keeping drivers informed of route conditions as they change.

In addition to enhancing the roadway experience for users, this new signage costs less to maintain than traditional indicators. The new signs require fewer materials and less cabling, resulting in less time, upkeep, and expense.

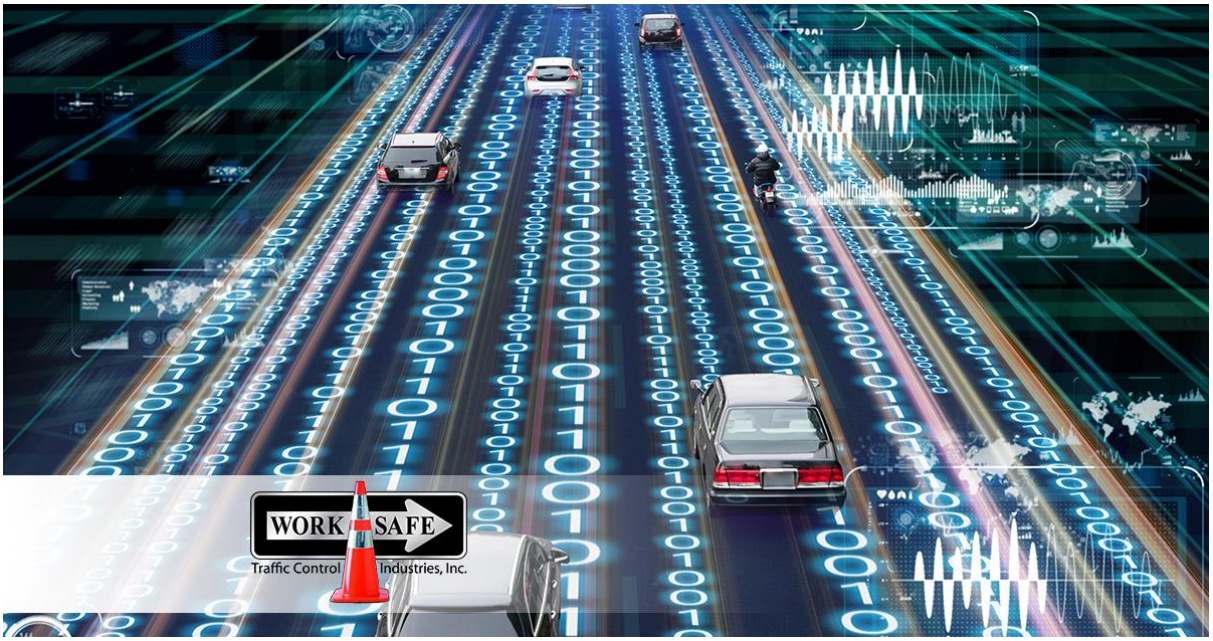


Improving Our Lives with Smart Road Signs

Clearly, intelligent roadway placards can be a vital part of our driving experience. They enable a better way for drivers to access the information they need in real time on the roads. These signs can increase awareness of upcoming issues, which people might otherwise discover too late.

They may also augment the functionality of driverless vehicles.
The value of implementing this technology should not be underestimated. Smart roadway indicators have the potential to increase cost-efficiency, which eases the burden on governments and taxpayers. They facilitate a smoother driving process for both human drivers and autonomous vehicles.

The placards can be more user-friendly than the analog route signs we currently employ. Above all, they may ultimately lead to a safer network of roads for everyone.

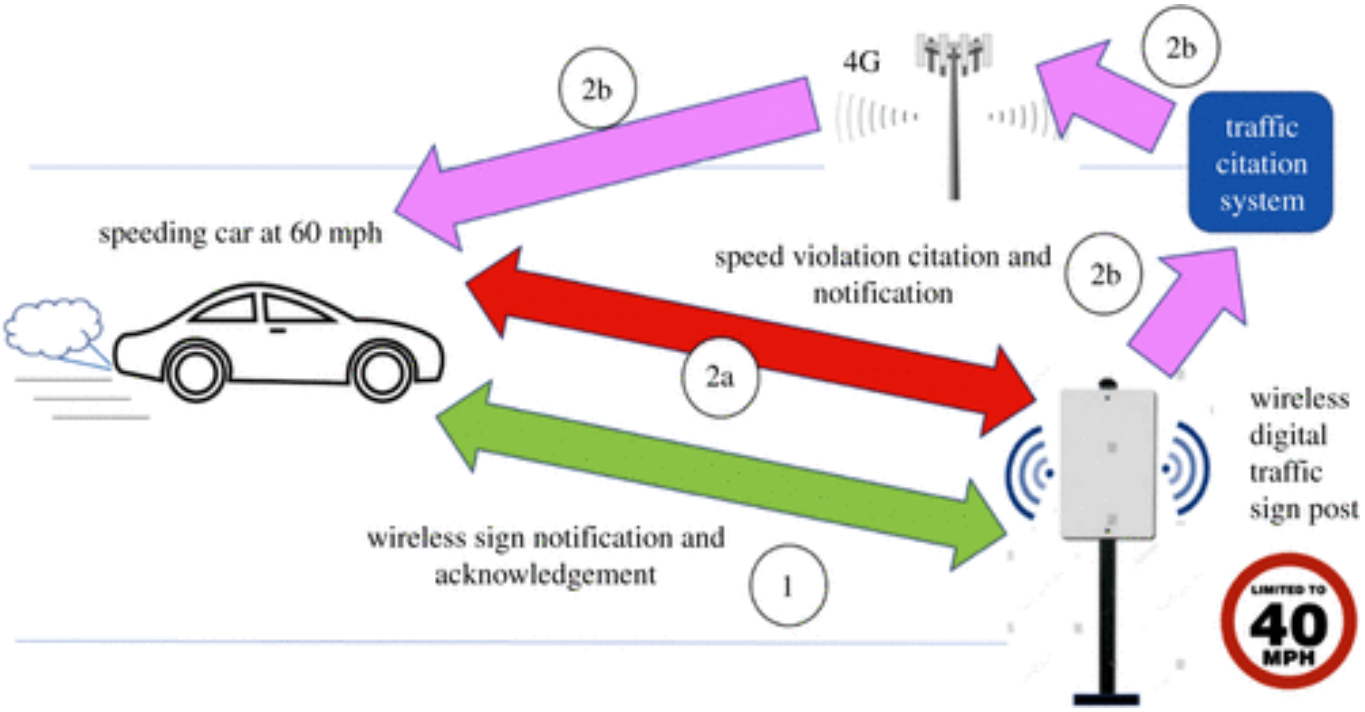


Literature survey on Signs with Smart Connectivity For better road safety.

***Cyberabad Traffic Police (2017) Data from the official website about Nehru Outer Ring Road*:**

It reveals some guidelines like, the maximum speed on Lane 1 and Lane 2 of theORR will be 120 KM per hour and minimum speed will be 80 KM per hour. (Lane1 is the one closest to the central median) The maximum speed on Lane 3 and Lane 4 of the ORR will be 80 KM per hour and minimum speed will be 40 KM per hour. The minimum speedon ORR will be 40 KM per hour. No vehicle is permitted to travel on ORR below this speed. Faster moving vehicles should move in Right Lanes (Lane 1 and 2) and
slow-moving vehicles should move in Left lanes (Lane 3 and 4) within the above speed ranges. Heavy vehicles should move in Lane 3 or Lane 4 only. All vehicles which change their speed

shall have to go to the lane having the concerned speed range and No Zig – Zagmovement between the lanes is permitted. All vehicles wanting to change lanes as per the above speeds should do so only after using indicator lights and all precautions shall be taken while changing lanes. No Vehicle shall stop on any of the 4 lanes of ORR.Zarul azham Eusofe et al. Assessment of Road Safety Management at Institutional Level in Malaysia, IATSS Research This paper had examined the current institutional arrangements for the management of road safety in Malaysia in a systematic manner. It focused on road safety funding and seemed to provide an insight into how funding factors may affect both the effectiveness and the efficiency or road safety management. The study followed an exploratory approach based on semi-structured interviews targeting key stakeholders in road safety management such as policy makers from various government agencies, private sector representatives and academia. The analysis revealed that the efficiency and effectiveness of the road safety management system in Malaysia may be sustainably improved by addressing the current dependence of funding solely on government sources, the fragmentation of the decision-making process of this de facto multi-disciplinary area, the road safety legislative framework, public awareness, local needs and institutional capacity. An institutional model based on 2nd generation road funds is tentative suggested to this effect. The paper presented a systematic analysis for the assessment of road safety management applicable in countries where financial resources are limited or reduced, focusing on road safety funding and seeking to provide an insight into how appropriately designed funding mechanisms may affect both the effectiveness and the efficiency of road safety management



Francis John Gichaga etal. Road Safety and Road Safety Audit in India:

A Review. ISSN: 2347 - 4718 This paper had reviewed the concept of the road safety audit and its stages. Objective of the RSA is to evaluate ventures for potential mishaps end/lessening on the premise of road client learning, characteristics and aptitudes, day/night, wet/dry road conditions. It suggested on outline and before planning of agreement archives, to evaluate itemized intersection design, markings, signs, signals, lighting points of interest, Detail Design of junctions, Design of geometrics, Cross-fall Marking and Signs, Side drains, Embankment slopes, Presence of clear zone, Traffic Signals Lighting.

***Shalini Kanugantietal. Road Safety Analysis Using Multi Criteria Approach, A Case Study in Indi*a:**

World Conference on Transport Research - WCTR 2016 Shanghai. 10-15 July 2016 In this paper a study was carried out to determine the priority of safety requirements of a certain category of rural roads, viz., Pradhan Mantri Gram Sadak Yojana (PMGSY) roads in the Jhunjhunu district of Rajasthan, India. Multi-criteria techniques were used to quantify the safety levels. Further analysis was done on the road having the worst safety features to rank various stretches. The parameters vital for safety have been selected and quantified using three multi- criteria decision making analysis tools: Simple Additive Weightage (SAW), Analytical Hierarchy Process (AHP) and Fuzzy AHP methods and results are compared. Analysis has been done in two phases. In the first phase the prioritization of roads for safety provision was carried out considering the total length of each road as an alternative and the most critical road was identified. The parameters in the road were measured and rated (on a scale of 1-5). In the second phase, the road found critical from the first phase was considered for detail analysis. The entire stretch of the road was divided into stretches of 1 km and the stretch-wise prioritization of roads for safety provision was determined. The average values per km for the severity score of the parameters were obtained like the first phase. The methodology suggested can be used to determine the level of contribution of parameters towards safety hazard.

REFERENCE:

[1]. Cyberabad Traffic Police (2017)

[2]. Francis John Gichaga, The Impact of Road Improvements on Road Safety and Related Characteristics. IATSS Research (2016), University of Nairobi, Kenya

[3]. Shalini Kanugantietal. Road Safety Analysis Using Multi Criteria Approach: A Case Study in India. World Conference on Transport Research - WCTR 2016 Shanghai. 10-15 July 2016