

# A Smart Initiative for Automobiles and Road Safety

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**Abstract:** -- The project is to engender a progressive city by utilizing today's available premium technological resources by constructing our planet to be a better and safe place to live based on the idea of smart cities. In this proposed project, the Automobiles are equipped with RFID tags, audio instructor and roadside unit with RFID detector. When the vehicle enters those restricted zones, automatically speed will be controlled using the 89S52 microcontroller as well as an audio is heard in the vehicle. Whenever a red signal jump has been found by using sensors on the roadside automatically penalty amount from the prepaid smart card inside the vehicle will be deducted and credited to RTO account.

**Keywords:** - RF module (RFID tags, RFID readers), Smart card(RFID card), IR sensors, Audio Instructor, Microcontroller 89S52.

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## I. INTRODUCTION

As the world is becoming smarter there is much requirement of smart cities and India is also coming up with so many smart cities. We are making smart city with smart facilities. Recent studies reveal that one third of serious road accidents take place due to destructive driving and violating the traffic rules. The Automobile is equipped with RFID tags, audio instructor and road side unit with RFID detector. Restrictions are applied on specified zones, whenever the vehicle enters those restricted zones; automatically the audio is heard in the vehicle controlling the speed to the required restriction. For instance, when the vehicle approaches the School zone, it automatically reduces its speed to 20 to 30 Kmph automatically. Penalty system enforces the users to follow the traffic rules stringently by collecting the penalty on the spot. When the red signal turns on, the RFID reader installed on traffic signal automatically switches on. If the vehicles with RFID tags are found jumping the red signals, automatically the amount is deducted and credited into RTO account, from the smart card installed in the user's vehicle, with a message sent to the offender. Provided the Pre-paid Smart card should initially recharged with Rs 100 consistently, without which, the vehicle starter doesn't crank. Each time the motorist is found jumping the red signal, amount is deducted before the balance reaches zero, the system providing 3 warnings, to beware of the balance in the smart card. India being an exceedingly populated country does necessitate such smart vehicles with advanced

traffic management systems. There are so many target users involved in this system like common people, government and traffic department. To achieve the goal, we have prepared circuit diagram and also we have checked the working of all unit modules. So, we are expecting the overall architecture will work after integration

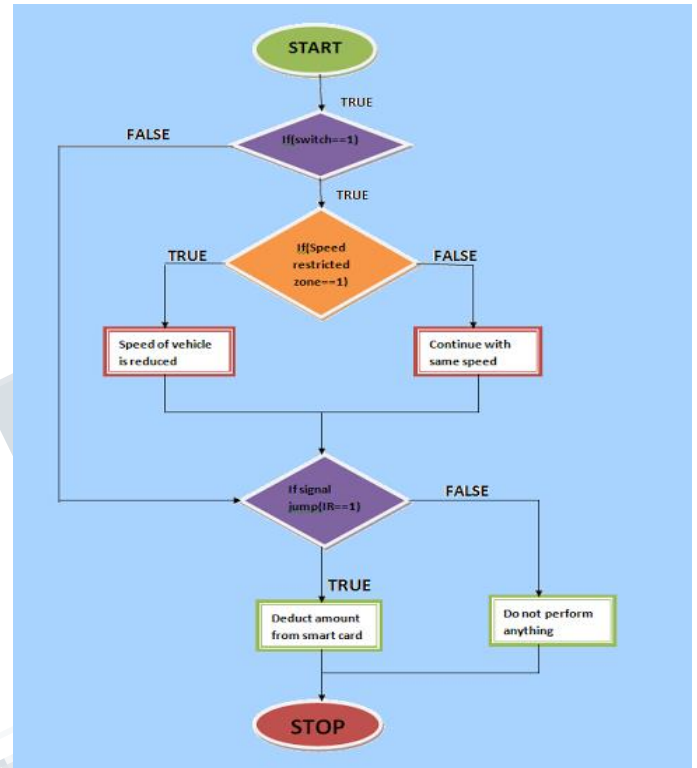
## II. LITERACY SURVEY

Earlier years many technologies has been used to provide road safety to reduce accidents occurring due to speed violation for example Radar technology, cameras etc. After doing literature review in the field of accident detection and violation, various applications provided a solution like RF transceiver, Automatic braking systems; Camera based detection, RFID technology. One project presented system comprising two major design units i.e. Drivers are warned by sending traffic messages to them as loud speaker messages. One more paper discussed a kind of vehicle accident detection system. RF transceiver is also used to send the traffic rule broken information. The RF transmitter module interfaced with the microcontroller will transmit the traffic rule broken information to the nearby RTO controller room. The limitation of this method is that the installation of N number of RFID tags on the road to transmit general area information. So, we are introducing smart city with sign management system and Traffic Rules penalty management system with the help of RFID reader and RFID reader. Through this project we are aiming to provide a system, which will continuously monitor the vehicles actions and

misbehaves using RFID reader and RFID tags and automatically traffic penalty for violation of any of the traffic rules. If a driver violates any of the traffic rules, the driver will be charged according to the RTO rules. The charging amount will be automatically deducted from smart card which will be fixed in the vehicle. Thus in this project, we are to some extent compelling people to follow the traffic rules and zone sign followed by the vehicle. This will definitely reduce the problems to some extent

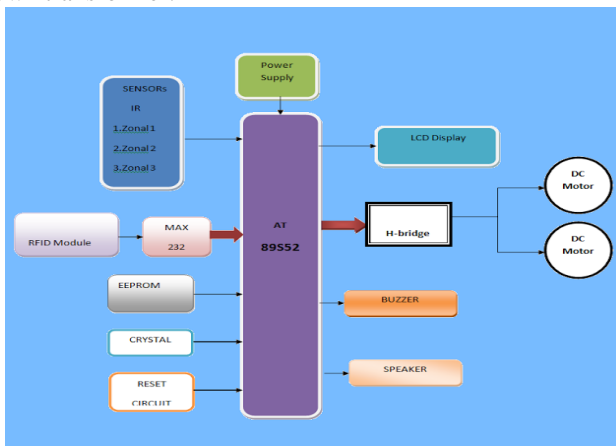
**III. DESIGN**

The project is built around AT89S52 MCU. Here in this project we are using a pair of IR transmitter, receiver pair to track the particular school zone and automatically reduce the vehicle speeds. The information will be displayed to the user using 16X2 LCD. At each and every speed limiting zone it is placed with IR transmitter and vehicle consists of a receiver to track and automatically reduce the speed limit in vehicles. Voice announcement will also be given using voice module near the school zone when a vehicle approaches. Once it crosses the particular area automatically it gains normal speed. We are using a DC motor for symbolic representation of vehicle. Here we are implementing penalty to the vehicles which have crossed/skipped the Red signal light near the traffic zone. This is being implemented using RFID cards which can be placed in a vehicle. So, when the fault is found by RFID module connected to the controller then the amount will be deducted and the information will be displayed on LCD. If there is no balance in the card then the vehicle stops. This project uses regulated 5V, 500mA power supply. 7805 three terminal voltage regulator. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

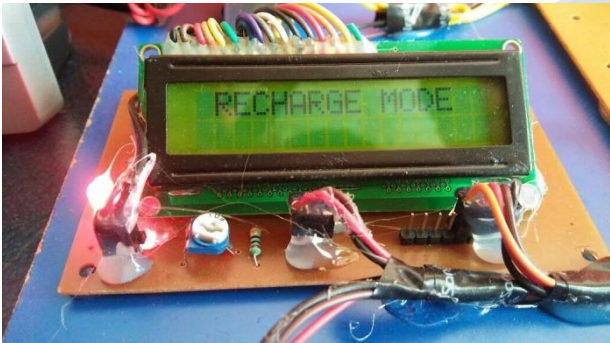


**IV. WORKING PRINCIPLE**

This project is to engender a progressive city utilizing today's premium technological resources constructing the planet to be a better and safe place to live based on the idea of smart cities. Through this project we are aiming to provide Penalty and zone sign management system, where penalty system which will continuously monitor the vehicles using RFID reader and tags. When the red signal turns on, the RFID reader installed on traffic signal automatically switches on. If the vehicles with RFID tags are found jumping the red signals, automatically the amount is deducted from smart card with a message sent to the offender. Each time the motorist is found jumping the red signal Rs25 is deducted, before the amount reaches zero balance the system providing 3 warning signal. In zone sign management system, restrictions are applied on specified zones; automatically the speed of the vehicle is reduced to required restriction using RFID technology.



### III. RESULTS



The above diagram shows the implementation of Smart Automobile where we can see the different types of modes asking to enroll the vehicle number and to recharge the smart card for penalty deduction

### IV. COST ANALYSIS

Implementation process of the project can cost around One lakhs at min & as a part of implementation process i.e., cost of Rfid readers & Rfid tags depends on the government how much can they afford financially, that includes based on active and passive tags and readers . This project can be implemented in the highways & as well as existing roads.

### V. ADVANTAGES

Discipline will be maintained by every vehicle user. Road accidents and Accidental prone areas will be reduced to some extent also Physical damage of the vehicles will be reduced Zone sign rules will be strictly followed ,jumping of red signal will be avoided due to on spot penalty amount deduction

### VI. CONCLUSION AND FUTURE WORK

This project presents an implementation of automatic Speed Control of vehicles at school Zones using Rfid readers .Experimental work has been carried out carefully in this modern world ,everything is fast .so ,there is high probability for the occurrence of accidents, the statistical analysis also reveals this facts. We can also link our smart card to bank account to deduct the penalty amount and make the Rfid number as the vehicle number

### REFERENCES

- [1] V. Buchmann, S. Violich, M. Billingham A. Cockburn: FingARTips: Gesture based direct manipulation in Augmented Reality, In Proc. of the 2nd international conf. on Computer graphics and interactive techniques in Australasia and South East Asia (Graphite 2004). 15-18th June Singapore, 2004, ACM Press, New York, New York, pp. 212-221.
- [2] Y. Kojima, Y. Yasumuro, H. Sasaki, I. Kanaya, O. Oshiro, T. Kuroda, Y. Manabe and K. Chihara: Hand Manipulation of Virtual Object in Wearable Augmented Reality, In Proc. 7th International Conf. on Virtual Systems and Multimedia (VSMM'01), pp 463-470, October 2001
- [3] Y. Iwai, K. Watanabe, Y. Yagi, M. Yachida: Gesture Recognition by Using Colored Gloves, IEEE International Conference on Systems, Man and Cybernetics (SMC'96),Vol. 1, pp. 76-81, Beijing, China, Aug. 1996.
- [4] Canny, J., "A Computational Approach to Edge Detection", IEEE Trans. Pattern Analysis and Machine Intelligence, 8:679-714, November 1986.
- [5] V. I. Pavlovic, R. Sharma, and T. S. Huang, "Visual interpretation of hand gestures for human-computer interaction: A review."IEEE Trans.