

Riders Safety Assurance System

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Abstract- As in the name the Rider's Safety Assurance System ensures the safety of the rider. This project is developed on two particular road problems. The first problem is that a bike rider does not wear a helmet while riding his or her two wheeler vehicle. This might lead to head injury when the rider comes with an accident, which could be fatal. The second problem is that the riders like teenagers and even some adults over speed in areas where speed should be minimum. This might lead to some fatal accidents, especially in school or college areas, construction areas, etc. So to solve these two problems we have come up with a solution which is Rider's Safety Assurance System. Firstly this project ensures that the rider can insert the key in his vehicle only if he or she has worn a helmet. This will not let the rider start his or her two-wheeler without wearing a helmet. And secondly to control the speed of two wheelers we have used the speed limit sign on the roadside. First the speed sign of a school or college area will detect the vehicle which is passing through that road. After detecting the sign circuit will send a signal containing the speed limit data of the road like 30kmph, 50kmph, etc. Then the vehicle will receive the data and compare it with the vehicle speed. If the vehicle speed is more than the required speed of the road then a mechanism will trigger that will not allow the rider to accelerate his bike further. This will keep the vehicle speed in range in the low speed areas like school, collage, etc. So this project will solve these two problems of not wearing helmet and over speeding. From this project, we hope that the rider and the people near him are safe and avoid accidents.

Index terms- component; formatting; style; styling; insert (key words)

I. INTRODUCTION

Rider's Safety Assurance System is a project based on 2 current problems in India which are bike riders not wearing helmet and they over speeding in certain areas like schools, collages, at traffic signals etc. This project is based as a solution to overcome these problems and reduce the number of accidents caused

due to over speeding and ensure safety by making it compulsory to wear a helmet.

1. Vehicle System
2. Helmet system
3. Speed limit circuit

These 3 circuits are briefly explained below

II. THE SYSTEMS

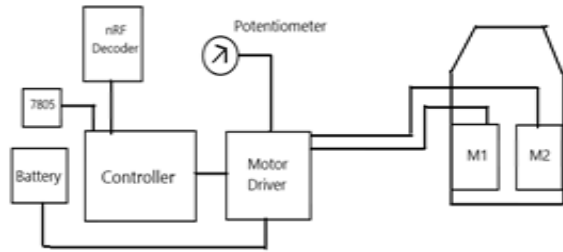
To develop a project like this we developed three systems to complete the project successfully. The 3 systems of the project are briefly explained below with their circuit diagram

A. Vehicle replica system

The vehicle System is designed to have a few features of a two-wheeler like a body of bike, accelerator, and brake. Wheels, motor etc. It also consists of a main controller system of the project. The main control system consists of a controller, Decoder, regulator, motor driver and other components like resistor capacitor etc.

Operation – This system is the main system of the project. When the supply is turned on the vehicle will start and can be driven normally like a vehicle with a potentiometer (accelerator) and a switch (brake). But as the project implies the vehicle will be operational only when the helmet is worn by the rider. The decoder in the circuit will receive signals from other 2 systems and transfer it to the controller. The controller will fetch the information and work accordingly. If the signal is received from the helmet system this implies that the vehicle becomes operational and if it is received from the speed limit system it implies that the vehicle speed is to be deducted to a specific point. This will make the bike operational only when the helmet is worn and when the vehicle is in areas like schools and collages its speed is deducted to a specific point

Diagram –

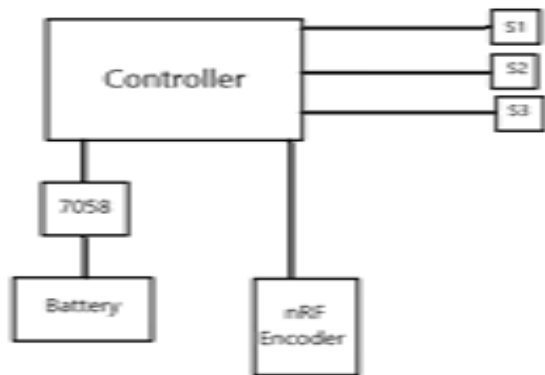


B. Helmet System

This system is designed and is embedded in a vehicle helmet. It's basic purpose is to ensure whether the rider has worn a helmet or not. It consists of limit switches, encoder and a mini controller.

Operation – The operation of helmet system is very simple. The switches are placed in the helmet will be pressed when the rider wears the helmet. After wearing the helmet and switches pressed the controller will detect it and send a signal through encoder to the vehicle system. Vehicle system will receive it and vehicle will become operational. The component used in the systems are selected to not cause any harm to the rider when he/she wears the helmet.

Diagram –



C. Speed Limit System

This system is a system developed to lock the speed of the vehicle to a specific speed in a selected area like schools, collages, traffic signals etc. This system is to be placed in these areas and when the vehicle enters the area it will detect it with the help of a sensor. The system consists of a mini controller, encoder and a sensor.

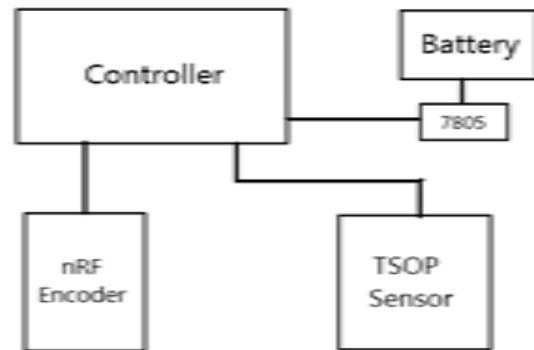
Operation – When the vehicle enters the selected areas it will sense the vehicle entering the area with

the help of the sensor embedded in the system. After the vehicle is detected, the encoder on the speed limit system will send a signal to the vehicle. The decoder on vehicle system will receive it and hence with help of motor driver the controller of vehicle system will lock the speed of vehicle to a specific speed.

When the speed is locked the vehicle cannot go over that speed. It's can be reduced and breaks can be applied but the speed cannot go over the specific speed.

When the vehicle will leave the area the lock is released and the rider can ride to his desired speed.

Diagram –



III. ADVANTAGES

Advantages -

- It will ensure the riders safety by ensuring helmet
- It will ensure the rider is not over speeding so accidents are reduced
- It is cost effective
- It will be useful for traffic control
- Number of accidents will be reduced

IV. FUTURE SCOPE

This project has a lot Scope in the future. Many applications and technical improvement can be made This project will help to make the wearing of helmet while riding a bike compulsory and also for a four wheeler instead of helmet, seat belt can be implemented

In future GPS technology can be added in the project which will help to locate the vehicle, warn for accidents, track it's speed and control it in certain areas can be possible.

With implementation of this project people can safely drive on road and can be safe from reckless drivers as there speed is controlled

97-000-people-killed-due-to-over-speeding-in-2018/amp-11574249715762.html

V. CONCLUSION

Hence it is concluded that with the help of this project the rider compulsory has to wear a helmet and he is not able to over speed in areas such as schools and colleges. This will greatly reduce the accidents and critical situation happening on roads due to over speeding.

VI. ACKNOWLEDGMENT

In the accomplishment of this project successfully, many people have owned upon us their blessing and the heart pledge support, this time we are utilizing to thank all the people who have been concerned with this project.

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REFERENCES

- [1] For nRF communication - <https://lastminuteengineers.com/nrf24101-arduino-wireless-communication/>
- [2] Aurduino programming - <https://www.arduino.cc/en/Main/Tutorials>
- [3] Concept based on - <https://www.livemint.com/news/india/road-accident-data-more-than->