

Smart Helmet for Two-Wheelers

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Abstract

A helmet is a protective layer that is worn in order to prevent head injury. Helmet is the most important safety gear for two wheeler riders. But due to carelessness of people and paying less importance toward safety, there are a lot of casualties every year. Especially in countries like India these accidents are common due to ignorance toward safety. According to National Crime Records Bureau (NCRB) two wheelers claimed 92 lives every day out of which most were due to helmetless drive. Many seminars and road safety campaign were organized but still there is very less improvement. The most people who met accident were youngsters. So In order to overcome this problem we came up with the idea of SMART HELMET. The smart helmet will help to reduce the injuries to head. The smart helmet will be different in many ways. It will be technically advanced and electronically controlled. The system design will be such that without wearing the helmet the rider cannot start two wheelers. The helmet will be connected to vehicle key ignition systems which will be electronically controlled. The smart helmet will be having proximity sensor fitted inside it, which will act as our switch for on/off ignition and further with wireless connection the helmet sensor circuit will be connected to the vehicle ignition system. If the rider is wearing the helmet he will be able to crank the engine and could propel, where as in case if helmet is not there then vehicle will cannot start. This will surely reduce the no of fatalities on road and hence giving a safer drive.

Keywords: Smart helmet; Proximity sensor; Ignition system; Microcontroller

Introduction

Through this paper we would like to share our idea of SMART HELMET for two wheeler riders in order to reduce the casualties. Two wheelers are most sold vehicles throughout the India. The Indian two-wheeler (2W) industry registered sales volume of 13.7 million units in 2012-13, a growth of 2.9% over the previous year FY 2011-12. Lot of people are able to fulfil their dream of buying a vehicle of their own and it's growing ridiculously and will grow more in future.

The number of two wheelers are growing, especially the craze among youngsters. The people are buying the two wheelers which are faster and powerful. In accordance with the growth of the number of two wheelers the safety factor also rises. There a lot of accidents those are happening every day on the roads. There are certain causes which are responsible for it. Certain reasons are responsible for it such as drivers fault, bad road, and mistake from other person on road. These reason led to accident which result in body damage these shown in Figure 1. Out of all the most severe case is of head injury, which most of

the times lead to body paralysis and sometimes death. The main reason is due to lack of safety gear that is no Helmet. When the people are riding the two wheeler and then aren't wearing helmet and if, by their or some other's mistake they just met with some sort of accident, since the two wheelers have balancing on the two wheels hence after hitting the two wheeler get unbalanced and the rider fall down and at that time his head may collide with the solid surface and if helmet is not there then the head might have serious injuries (Figure 2). Now these injuries can be minimised by use of helmet but people in our country aren't using helmet as their habit [1]. So in order to minimise the injuries head injuries we came up with an idea that is SMART HELMET. The smart helmet will reduce the number of head injuries. The smart helmet will be such that without wearing it there won't be ignition in combustion chamber. When the rider is not wearing the helmet then there will be cut off from ignition and as soon as he wore it there will be a connection hence regulating the ignition.

Background

In keeping all the aspects as mentioned above we came up with the idea of smart helmet. It will reduce the number of accidents casualties shown in Figure 3.

Working

SMART HELMET working is simple. The system of helmet will be directly connected to the two wheeler ignition system by simple electronics. The smart helmet is a helmet in which there will be

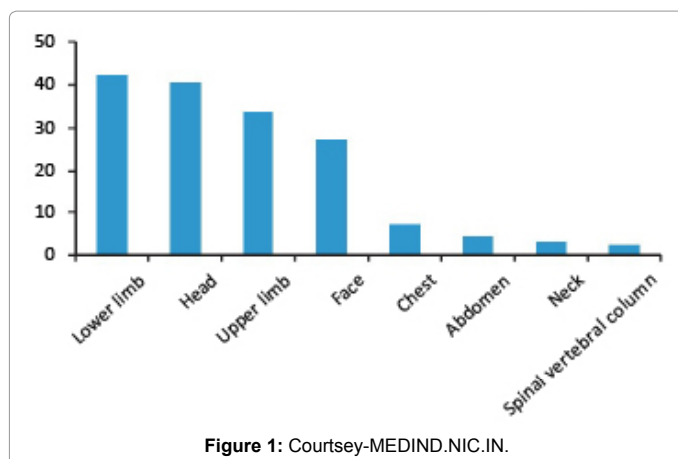


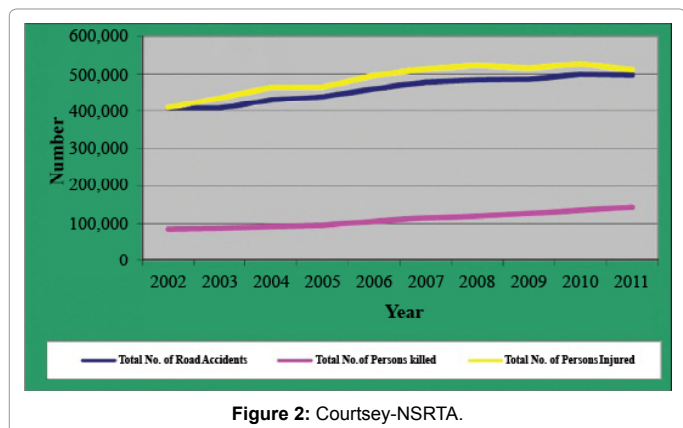
Figure 1: Courtesy-MEDIND.NIC.IN.

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basically two main devices the proximity sensor and a small led light. The working will be such that when the helmet is lying idle that is the rider is not wearing it there will be cut-off region. Now the system working will be such that the led light will be continuously falling on the proximity sensor. The proximity sensor is a device that detects the nearby object or hindrance without any physical contact. Proximity sensor has very high functional life as no mechanical part is involved. The light that would be used will be harmless to human head. The arrangement would be such that one side of helmet will be having led light on one side of helmet and on the exactly opposite side there will be the proximity sensor fixed inner wall of helmet [2]. Further this will have a signal transmitter.

The system that would be inculcated on the two-wheeler would be also simple enough. The system will be non-physically connected to the helmet system. The two-wheeler will be having a signal these shown in Figure 4.



Receiver end a microcontroller that will control the ignition. The ignition system will be incorporated by diode that would be acting as cutting off and on region connector, when there will be signals transmission from microcontroller like wisely the ignition would be done [3]. If the signal is for ignition then there will be current supply to spark plug otherwise there won't be any current transfer. Now the connection will be such that when the rider will wear the helmet the led light falling on the proximity sensor would be hindered by human head and thus there will be disturbance in proximity sensor, now through the signal transmitter the signal would be transferred to the signal receiver that would be present on the two wheeler and hence the microcontroller will execute its function resulting in ignition and hence the vehicle would start.

Conclusion

By seeing those many benefits and other factor we came to the conclusion that it is the best alternate in order to reduce the number of head injury happening. This being a very innovative idea should be developed further for improvements.

References

1. National statistics of road traffic accident–statistical data and pictograph.
2. Information over proximity sensor, microcontroller.
3. Kirpal Singh–automobile engineering.

