

COLLISION CONTROL FOR BIKERS USING IOT

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ABSTRACT

Nowadays accidents are a major cause of death and disability. Public awareness and safety is one of the most important confrontations in the place of effective welfare for the bikers. Bike accidents in highways and roadways is one of the increasing fatality rates for the previous years. With the help of our project we desire to reduce the feasibility of dying because of bike accidents. In this project, we have advanced the two wheelers system by the sensors that monitors and control the speed. The sensor used in our project to control the speed is the speed sensor. Here ultrasonic sensor is also placed in order to maintain the distance between the vehicles to avoid collision between the vehicles. The riders will be given indication when the control of the bike exceeds the particular limit. The microcontroller used in this vehicle controls the whole sensors and devices connected in the speedometer and in the gear box. The red light brightens if the speed goes above 80km/hr. Because of this death, accidents and collisions can be evaded. The aim of our project is to initially check whether the person riding the bike is aware about the speed control, distance between the vehicles in order to avoid the hazards.

INTRODUCTION

Death and disabilities caused due to the accidents in highways and roadways mainly due to the reason of traffic. Nowadays bike accidents increases year by year. Though various advancements in technologies increasing day to day hazards also increases in parallel to that advancements. Bikers face the problems most regarding the bike accidents and collisions in traffic. In order to help them our project proposes this model which helps them and save their lives. Awareness should be created to all the riders about the death and disabilities. With the intention of balanced synchronization within the model and the execution of an IoT based Smart Vehicle system that promote social guidance. Here in this project we mainly focus on the systems implemented in order to avoid collisions. This paper briefly explains about the wide usage of advanced technologies in Internet of Things (IoT) for implementing smart way for monitoring the methodologies coordinated with highway roads which helps in finding out better advancements. It has various networks connected within each other that makes the system work effectively. This paper gives the detailed description of the drawbacks of the previous system and the problems faced in that system related to accident avoidance. Here we define about the current analysis from the survey of the previous studies. The system proposed here will analyze the distance between the vehicles and controls the speed by the sensor placed in the speedometer

which protect the two wheelers from accidents. The idea of proposing this paper come from the social impact on the bikers who face more difficulties in highways.

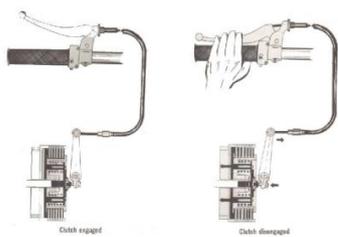


Fig 1: Clutch

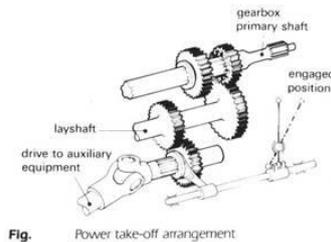


Fig 2: Gear Box

LITERATURE SURVEY

Everyone should be aware about the safety measures and security mechanisms that are to be followed in the roadways. The number of highway fatality rate is very high and is increasing per year when compared to other hazards which is unpredictable. Survey says that humans waste more than million hours in traffic which is also major cause to the occurrence of accidents and hazards. Two vehicles same time at a same point riding at the same range of speed will cause anyone of the vehicle to be attempted into collision. In order to avoid this kind of collision two vehicles must communicate with each other about the directions, speed and other information about the path they are travelling. So that there will be a possibility of reducing collisions between the vehicles.

This method consists of Raspberry pi which is a small sized computer with the compatible processor 1.2 GHz and 1 Gb RAM. The methodologies compared to two wheelers and collision detection examine the several methods and systems with the proposed methodologies including hardware and output based on various conditions. The vehicle tracking is performed lively and is well suited for all the riders. Though tracking of vehicle is performed live, the collision detection cannot be made live due to the limitations in this project and this could be the disadvantage in this paper. Open CV is an Intel open source library which proposes an algorithm for identifying the number, the path they are travelling and detects collision and also the area.

In each existing methodologies the provider use to send the data with the help of Zigbee which is secured. Whenever network or data is used there is an issue of low range and due to the network problem battery’s life get reduced which will be the drawback that we cannot use it longer. To rectify this situation Bluetooth is used which lasts permanently within the range. Here

IEEE 802.11 is used for the communication between the vehicles and to the server who monitors the entire system. The information can be easily sent and received but it cannot be used for the long range distance which is the drawback in this project.

Wearing helmet is the most important and mandatory for the riders. Many deaths and disabilities in accidents are because of not wearing the helmets. In this project helmet is made smart for the bikers. If the person who is riding the bike must wear the helmet. If he is not wearing the helmet the engine will not start until he wears the helmet. The sensor placed in the helmet is connected with the smart phone which identifies the location of the rider and inform to his/her relatives if accident occurred. The LED light in the helmet glows if he is going to apply break or he turns left or right. Thus this project is proposed. Here in this project collision can be controlled but not completely only partially, it informs to their known ones after the accident occurred which turns into the disadvantage in this paper.

This project aims completely for the rider's safety. Here force sensing sensor is placed in the helmet to monitor that the rider is with helmet or not. The force applied to the surface is calculated and it can be easily found whether he/she is wearing the helmet or not. This is not proposed earlier. The data transfer within the two systems is made with the high range frequency of 315 MHZ of radio frequencies. A comparator is fixed to note the changes in the voltage whether the voltage supply changes or varies from initial value to the given fixed value.

A smart phone is designed in IoT for the welfare of transportation system. Mostly the public transport is preferred by the economic people which should be safely and securely maintained. In order to maintain the transportation in a secured way this sector uses GPS and the sensor to detect the speed of the vehicle which is a fan like motor. It has four holes and this identifies the speed. RFID is placed which automatically tracks the vehicle that are used for the public transportation. It can only sense the speed and track the vehicle which is not up to the level of giving safety to the social.

PROPOSED SYSTEM

The major recent technologies monitored so far in the live surroundings does not provide complete security to the two wheelers. But in most of the cases the accidents and collision are happened to the bikers and increases day to day. In order to avoid that this project proposes that the collision can be controlled completely with the help of the sensors that are implemented in this system. The sensors used in this system are speed sensor which senses the speed and controls if the speed goes beyond 80 km/hr. The ultrasonic sensor notifies the distance between the vehicles. Normally the distance maintained by the vehicles should be 10 meters. If the distances between the vehicles comes below 10 or 7 meters then the indication will be given to the rider who rides the bike. We cannot easily predict the speed, break applied by the vehicle which goes in front of our bike, if something is going to happen means, the biker will suddenly

apply break which causes heavy damage to the person and also to the bike. In order to avoid this collision and this situation a device is placed in the gear box which suddenly release the clutch and reduces one gear. In this case if the break is applied the bike will not skid and we can avoid the collision. The sensors are connected using Arduino board which is a small microcontroller with the capability of ATmega168 and is now presented with 328 processor. The speed sensor is fixed in the speedometer which monitors and controls the speed. The ultrasonic sensor is placed in front of the vehicle to maintain and monitor the distance.



Fig 3: Speed Sensor



Fig 4: Ultrasonic Sensor

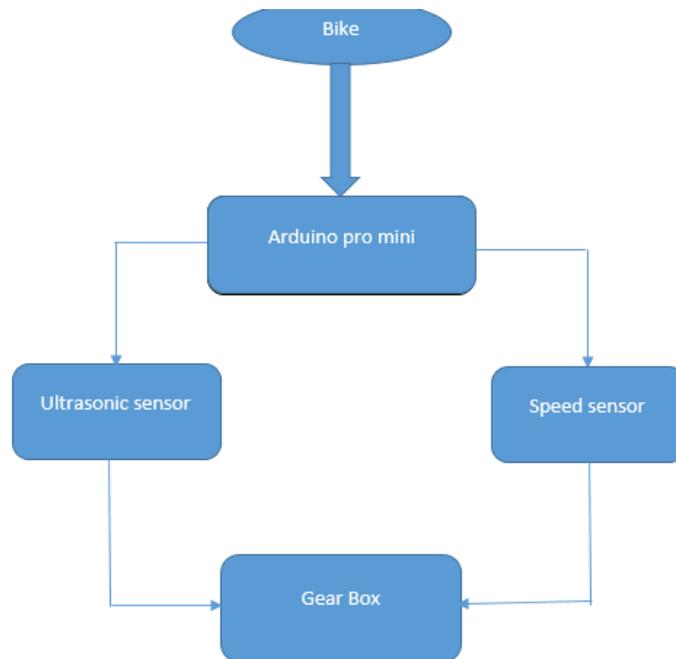


Fig 5: Architecture diagram of collision control for bikers using IoT



Fig 6: Ultrasonic Sensor

CONCLUSION

This project gives a practical implementation of the device in order to control the collisions and accidents that occur in the roadways. The riders will always think of to ride the two wheeler in uncontrollable speed which is the main reason for the occurrence of the accident. To avoid this our project proposes this methodology. The brief survey about the collision detection and occurrence of accident is given and idea to overcome these problems are also proposed. Many rules and ideologies are given to the public but they are not ready to follow those and they don't have awareness about these principles. In future further technologies will be proposed for the better improvement of the smart system.

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