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Smart Helmet

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Abstract: ***The smart helmet is a unique concept that makes motorcycles safer than ever. This is a way to start and stop the car without wearing a helmet. Moreover, one of its great features is that it can quickly report the location of the bike to a specific person before an accident occurs and after the accident, with the help of GPS and GSM based tracking. Ambulance can easily reach the scene. We want to use the sensor in the helmet vibration sensor. Traffic in India is so abundant and dense that it can take time to travel even a few kilometers, which can be inconvenient for cyclists. Additionally, if you answer the phone while driving, accidents may occur. Even in remote areas, it can be very difficult to find the person who caused the accident. We have created a helmet with the best solutions to solve existing problems. The helmet is equipped with Bluetooth 5.0 headphones. We can easily get through calls and continue talking without removing the helmet. By sending a rescue notification to the desired number, it helps to deliver medicine to the victim quickly. In other emergencies such as bullying, theft, or violence, the emergency notification system can be used to request help from police or family members. These situations led us to create a smart helmet that uses the Internet of Things to reduce the risk of accidents and deaths.***

I. INTRODUCTION

Traffic accidents around the world pose a serious threat to public safety and often result in serious injuries. Among the many factors that cause these accidents, not wearing a helmet and riding in the back are the most important problems. Solving these problems requires new solutions that ensure passenger safety and responsible behavior.

This strategy provides a safety strategy designed to reduce the risks associated with motorcycle riding. Thanks to technologies such as the combination of RF transmitters and receivers, alcohol sensors, GSM modules, Arduino Uno microcontrollers and ultrasonic sensors, the system offers many ways to improve safety standards. One of the main purposes of the system is to encourage the use of helmets by cyclists.

Research shows a steady decrease in head injuries and deaths due to helmet use. Therefore, to encourage compliance with the importance of safety, use a system that protects the bike when the rider is not wearing a helmet. In addition, the system eliminates the problem of drunk driving, which causes serious accidents.

By connecting the Breathalyzer and the transmitter, the system can detect the drunk driver and immobilize the bike if necessary. Additionally, the integration of ultrasonic sensors allows the system to detect the proximity of vehicles behind the motorcycle. If the vehicles are too close, the system triggers the alarm to warn the passenger and prevent accidents.

This safety directive represents a significant advance in motorcycle safety technology and is designed to reduce accidents, injuries and deaths resulting from motorcycle riding. It demonstrates the importance of using technology to encourage behavior and create a safe environment for passengers and pedestrians.

Additionally, the system has an LCD screen that provides real-time recommendations to passengers about the helmet and alcohol measurement system, making it visible in an accurate and user-friendly manner. Additionally, ultrasonic sensors monitor the proximity of vehicles behind. If the vehicles are too close, the system triggers the alarm to warn the passenger and prevent accidents. Ultimately, the proposal will help as a smart safety mechanism for motorcycles, ensuring passengers wear helmets, preventing drunkenness and providing warning for approaching vehicles. By utilizing advanced technology and proactive measures, the system aims to reduce accidents and create a safe road environment for everyone by encouraging responsible cycling habits.

II. LITERATURE REVIEW

As the number of two-wheeler thefts increases, there is a need to improve the security level of bicycles. Common and frequently used locks on bicycles are well known to thieves and can therefore be easily opened by professional thieves. Passenger safety is also an important issue. In order to overcome these problems, a system that can help ensure the safety of both the vehicle and the passengers is needed. To ensure the safety of passengers, it is recommended to have a smart two-wheeler with a smart helmet installed.

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The system ensures the safety of the vehicle and the passenger. The system first requires the driver to be authenticated based on a fingerprint uploaded to the microcontroller data, and the driver must wear a helmet in accordance with government rules. The system includes an alcohol sensor. ATmega328 microcontroller is used to operate the system. The RF module performs communication with the help of IR sensors.

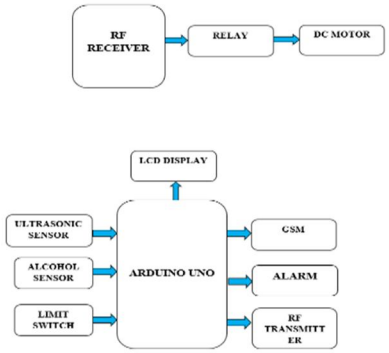


Figure 1. Blockdiagram Of Smart Helmet

According to the World Health Organization, 1.2 million people die every year due to road traffic accidents. More than half of two-wheeler deaths are due to head trauma. Most deaths can be prevented by using a helmet. Studies show that wearing a helmet can reduce the number of deaths by 70%. Various recommendations have been made around the world to make helmets a public health priority.

Many awareness campaigns have been published and laws have been implemented for the public good, but we still see people following the rules and driving in different ways without helmets, thus endangering their lives. Therefore, we prepared a new smart helmet project to solve this problem. The system was designed in such a way that the passenger must wear a helmet and pass an alcohol test before the vehicle is started, thus solving the problem of drunkenness.

This helmet also features crash and broadcast GPS - GSM technology that sends messages to hospitals and families in case of an accident. The project was designed for the safety of people and the well-being of society.

Nowadays, many countries require their citizens to wear a helmet while cycling and not to ride a bicycle while driving. I'm under the influence of alcohol, but I'm still breaking the law. To overcome this problem, "Safety Detection, Theft and Driving Prevention Using Smart Wireless Safety Helmets" was developed. Helmets and cars feature smart technology.

Helmet protection ensures that the driver wears a helmet and is not affected by alcohol while driving. If the above conditions are not met, it will communicate with the car to change the voltage of the bike. The geometric shape of the vehicle is checked and the status is reported via SMS service. Using geometric coordinates, passengers' location can be tracked using a simple GPS tracking application. In addition, since the helmet and bike starting key are also very important, the system provides protection against theft.

In recent years, advances in technology have revolutionized water quality monitoring. Technologies such as optical, electrochemical and microbial sensors enable real-time monitoring of various water parameters, including pH, dissolved oxygen, turbidity and nutrient levels. These sensors are often integrated into control platforms such as buoys, drones and underwater vehicles, allowing continuous monitoring of water bodies.

Traffic accidents are increasing day by day, bicycles are becoming more common in countries like India and many people die because they do not wear helmets. Although government officials continue to raise awareness about helmets and seat belts, most drivers are unaware of them.

To end this pain, we have developed a smart motorcycle helmet that is a way to stop the car from starting without wearing a helmet. This smart bicycle helmet has two models, one as a helmet and the other as a bicycle. The two modules communicate wirelessly using an RF transmitter and receiver with an AT89S52 encoder and decoder. According to the World Health Organization, 1.2 million people die in traffic accidents every year. More than half of deaths from two-wheelers are due to head injuries. Most deaths can be prevented by using a helmet. Studies show that wearing a helmet can reduce the number of deaths by 70%. Many recommendations have been made around the world to make helmets a public health priority. > Therefore, we have prepared a new smart helmet project to solve this problem. The system is designed to ensure that passengers wear helmets and pass a breathalyzer test before the vehicle is started, thus solving the problem of drunkenness.

The helmet also features crash and broadcast GPS - GSM technology, which sends messages to hospitals and families to provide assistance in case of accidents. The project was designed with people's safety and health in mind.

Currently, many countries require their citizens to wear a helmet while cycling and not to ride a bicycle while driving. I was under the influence of alcohol, but I still broke the law. To solve this problem, "Security inspection, protection against theft and use of non-standard helmets against driving" was created. There are smart devices in helmets and cars.

Helmet protection ensures that the driver wears a helmet and does not drink alcohol while driving. If the above conditions are not met, it will communicate with the vehicle to change the bike's voltage. Check vehicle geometry and report status via SMS service. Using geometric coordinates, the passenger's location can be tracked using a simple GPS tracking app. In addition, since the helmet and the ignition key of the bike are very important, the system provides protection against theft.

In recent years, technology has revolutionized water quality monitoring. Technologies such as optical, electrochemical and microbial sensors enable real-time monitoring of various water parameters, including pH, dissolved oxygen, turbidity and nutrient levels. These sensors are often placed on control platforms such as buoys, drones and underwater vehicles, allowing continuous monitoring of bodies of water.

All car accidents are increasing, cycling is becoming more common in countries like India, and many people are dying because they are not wearing helmets. Although government officials continue to raise awareness about helmets and seat belts, most drivers are unaware of them.

To end this pain, we created a smart motorcycle helmet that is a way to stop your car without wearing a helmet. This smart bike helmet comes in two types, one for helmet and the other for cycling. The motorcycle safety concept combines various components to increase rider safety. During initial startup, the system uses a number of parameters to control the use of the helmet. If the rider does not wear a helmet, the bicycle protection body opens and encourages helmet use. When the helmet is detected, the system moves to the next stage. The alcohol sensor is then activated to detect alcohol consumption. If alcohol is detected, the system stops the bike by activating a relay that cuts power to the DC motor.

Currently, information containing the passenger's location is sent to the local police via GSM modules. Warn of oncoming vehicles and encourage responsible driving. The system is designed to use advanced technology to reduce accidents and create a safe environment for everyone.

The system includes a module next to the bike that provides the driver with instant information about helmet control and alcohol, ensuring users are always informed. Ultrasonic sensors also monitor the proximity of vehicles behind you. If the vehicle is too close, the system will trigger an alarm to warn passengers and avoid a collision.

A. GSM

GSM (Global System for Telecommunications) is the world's most popular telephone standard, originally owned by private groups. The GSM Association, a trade group that supports mobile phone users and manufacturers, estimates that 80% of the world's mobile market uses this standard. GSM is used by more than 1.5 billion people in more than 212 countries and regions.

Ubiquity allows mobile phone owners to create worldwide roaming plans, allowing users to use their phones in different parts of the world. GSM differs from previous technologies in that both the signal and voice are digital, so GSM is considered a second generation (2G) phone. This also makes it easier to use general information communication in the system.

The advantage of using the GSM (Global Business) standard is good in that customers both benefit from competition and can change business owners without changing hands, because network users have a choice. The device is used by many GSM devices. GSM also pioneered the low cost of Short Message Service (SMS), also known as text messaging, which has since been supported by other mobile phone standards. This model includes a valid international emergency number.

All of these models are compatible with older GSM systems. For example, Standard Edition '97 adds the new data capability of General Packet Radio Service (GPRS). The '99 version uses Extended Data for GSM Evolution (EDGE) to provide faster data transfer.

B. Alcohol Sensor

Blood alcohol content (BAC), also known as blood alcohol concentration, blood ethanol concentration, or blood alcohol, is often used as an indicator of alcohol consumption for legal or medical purposes. Blood alcohol content is usually expressed as a percentage of alcohol (usually ethanol) in the blood. For example, a BAC of 0.10 means that 0.10% (one tenth) of a person's blood by volume (usually, but in some countries by mass) is alcohol.

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The alcohol analyzer is designed to detect the amount of alcohol in the blood. Just like your inhaler, you can't breathe. It has sensitivity and fast response time. This sensor provides an analog resistive output based on alcohol concentration.

C. Arduino Uno Microcontroller

Arduino/G Uno is a microcontroller board based on ATmega328. It has 14 input/output pins (6 of which can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, USB connection, power jack, ICSP header, and a reset button. It includes everything you need to support your microcontroller; Just connect it to your computer with a USB cable or power it with an AC-DC adapter or battery starter.

Uno, meaning "one" in Italian, was chosen to celebrate the release of Arduino Software (IDE) 1.0. The Uno board and Arduino Software (IDE) version 1.0 are the reference version of Arduino. Now developed in an updated version, the Uno board is the first in a series of USB Arduino boards and reference models for the Arduino platform; Contains a comprehensive list of current, past or former names.

In the Getting Started section you'll find all the information you need to set up your board, use the Arduino software (IDE), and start sharing your coding and electronics skills. Learn about software on the Arduino Forum, projects on the Arduino Forum, and products from our customer support team.

It's fun to create a water quality monitoring system using the Arduino Uno microcontroller. You can use sensors to measure many parameters in water, such as pH, turbidity, temperature and dissolved oxygen. By connecting these sensors to the Arduino Uno, you can collect data and immediately use it to monitor the quality of water, which is important for protecting the environment or providing good drinking water.

With Arduino Uno's extensive collection of sensors and modules, you can customize your monitoring system to meet your specific needs and even use features such as data logging or remote monitoring. It is a practical application of environmental protection and management technology.

D. RF Transmitters and Receivers

Radio frequency (RF) radiation is part of the electromagnetic spectrum with wavelengths from 100 kilometers to 1 millimeter. The frequency range is 3 KHz to 300 GHz respectively. The range of electrical energy produced is the radio spectrum, which corresponds to the frequency of the current transformers used to generate and capture weak radio waves. Radio frequency means: electromagnetic oscillations in electrical circuits or electricity from air and space. Like other electromagnetic waves, radio frequency travels at the speed of light.

E. Relay

Relay is an electrical switch. Current flowing through the relay coil creates a magnetic field that draws power and switches the contacts. The current coil can be opened or closed, so the relay has two switching functions, these are double-throw (changeover) switches.

The relay allows a circuit to switch from the first circuit to a separate second circuit. For example, a low voltage battery can be used to replace 230V AC power. The relay has no electrical connection between the two circuits; the connection is magnetic etc.

The relay's coil produces a large current; usually 30mA for a 12V relay, but can be as high as 100mA for relays designed to operate at low voltage. Most ICs (chips) cannot supply current, and transistors are often used to expand the IC current beyond what the relay coil requires. The popular 555 timer IC has a maximum output of 200mA, so the device can directly power relay coils without amplification.

F. Limit Switch

Switches are the simplest type of all sensors. Are there two types? Normally open and normally closed. Before the development of electronics, electronics were widely used in control applications. Transformers are still used for this purpose due to improvements in reliability and efficiency, but they often benefit from replacement and show little wear.

A standard key is a mechanical device that uses physical contact to identify a target. Recent changes limit body flexibility and head function. A physical switch consists of wires used to energize or de-energize a circuit. The drive head has a power or piston. This is also called actuator. The actuator rotates when the target applies force. This exercise will change one's body. There are many types of actuators to choose from. Cylinder style actuators are ideal for applications where sliding contact causes rotating parts to rotate as they come into contact over time.

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III. CONCLUSION

Duty Status is a major step forward in integrating safety and time management, especially in areas where head protection is critical. This new initiative aims to develop new helmets by integrating smart features to increase user safety, communication and situational awareness. The concept of a smart helmet is to use advanced technology, communication modules and computing power to monitor our carbon monoxide levels, check whether the helmet should be worn or not, and make recommendations to users of the time. The helmet is equipped with a variety of sensors, including gyroscopes, alcohol sensors and ultrasonic sensors, to measure factors such as impact force, temperature, humidity and air quality. In addition, a high-risk detector built into the helmet detects dangerous situations such as high carbon monoxide or high temperature, allowing people to quickly take measurements and be careful. In addition to improving safety, smart hats also promote effective communication between users and caregivers through interactive communication. Using technologies such as Bluetooth or Wi-Fi, users can send messages, receive commands, or ask for help without the need for external devices. These features have proven useful in situations where effective communication is required, such as on construction sites or factories. Additionally, smart helmets use augmented reality (AR) technology to improve situational awareness and provide assistance in the workplace. Users can make informed decisions and improve performance by accessing relevant information, guidance or interactive insights from home appliances or similar smart devices. The Nature project represents a collaboration between manufacturers, designers and safety experts to redefine the standard for helmet protection. This measure combines advanced technology with advanced security features to not only improve user protection but also improve future security and new technology. As the industry continues to evolve, smart hats have become a beacon of light, allowing technology to protect lives and improve workplace safety standards. 5. As a result of this efficient process, we monitored the water quality and monitored the water level. Water is an important resource for people and the environment. Most infections are caused by poor water quality. For this reason, we are creating this project to ensure safe drinking and efficient use of water in agricultural areas. Using our project, we can easily understand the quality and level of water. The key to this project is that we use IoT based monitoring where we can activate the water pump based on the water level. The pH status sensor monitors water quality and displays it on the IoT server. Liquid level sensor operation also occurs on the IoT server. In summary, protecting water quality has become important due to technological developments and the need to protect the environment. These systems play an important role in protecting water resources and ensuring the health and well-being of people and ecosystems

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We also appreciate the contribution of [insert other contributor], whose comments and suggestions helped improve the system and increase its functionality. Finally, we would like to thank [insert funding agency or sponsor] for their financial support; without this support this project would not have been possible. Finally, we would like to thank other supervisors and groups for their guidance that helped us improve our presentations, especially when presenting projects.

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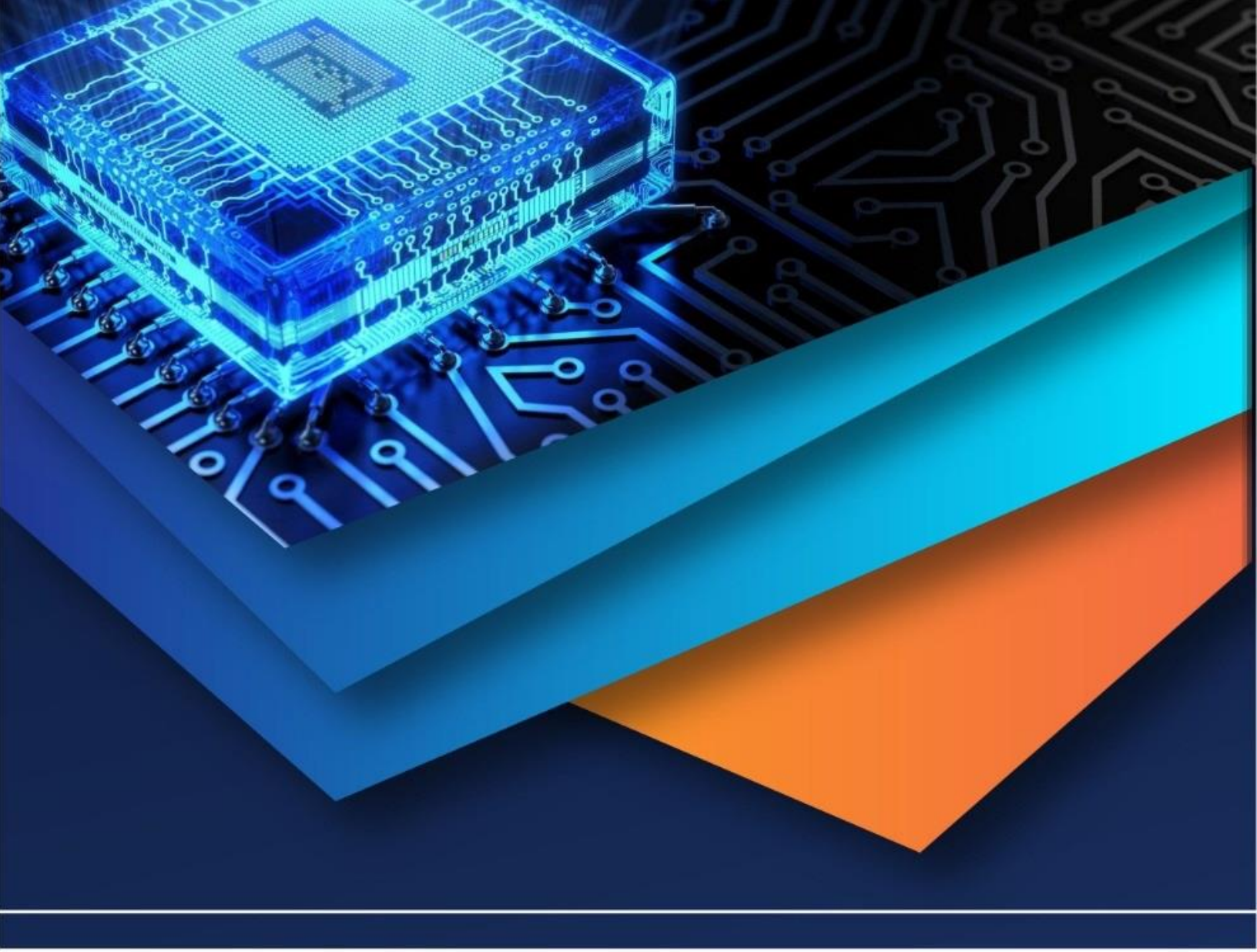
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