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Literature Survey on Antitheft Vehicle & Helmet Monitoring

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Abstract:As we all know, accidents are becoming more common by the day. As a result, the government has enacted a slew of rules and regulations to prevent these mishaps. Accidents are described as an unforeseen incident or a mistake that occurs and results in harm or, in extreme cases, death. When compared to other vehicles, two-wheelers have more accidents. Wearing helmets and not driving while intoxicated are two ways to avoid this. This review examines different relevant strategies as well as smart helmets for accident avoidance. This study also aids in our understanding of IoT technology, which is gaining popularity these days. According to the literature review, the method proposed using a micro controller, an RF transmitter, and other sensors is cost effective, but the system proposed using a Raspberry Pi module, a Pi camera, a pressure sensor, and a GPS system that uses image processing algorithms is the most efficient because image processing is included, allowing us to easily detect whether the rider is wearing a helmet. Two-wheeler riders benefit from a smart helmet system that helps to ensure their safety and security. techniques.

Keywords: Accidents, smart helmet, IOT, and Regulation.

I. INTRODUCTION

The Internet of Things is now being used in a variety of disciplines such as wearables, home automation, smart appliances, smart agriculture, and other areas where equipment and people communicate across a network. The IoT devices' job is to sense data and transfer it to a server, where a massive amount of data may be created. We can make conclusions based on the generated data by processing and analysing the data. This provides a benefit in terms of real-time data reporting from the environment. Motorbike accidents are on the rise these days, and we're seeing a lot of people die. This may be avoided by using a smart helmet. According to the poll, four individuals die every hour in India because they do not wear a helmet. Over 48,746 two-wheeler users perished in road accidents in 2017, with 78.3 percent of them without wearing a helmet. There are two crucial requirements that need be evaluated before the bike starts by the smart helmet in order to get through or fix this. The first criterion is to see if the cyclist is actually wearing the helmet and not merely retaining it. Second, sensors may be used to determine whether or not the user has consumed an alcoholic substance by analysing his breath. Third, if a person is involved in an accident, the sensor evaluates the state of the person and the bike.

II. LITERATURE REVIEW

In this study, we'll look at a variety of smart helmets and their methods and methodology. Jesudoos A et al.[1] presented a technique in which sensors such as an infrared sensor, a vibration sensor, and a gas sensor are employed in conjunction with mems. By examining the breath of a person wearing the helmet, the gas sensor can determine how much alcohol he has drank. MEMS is in charge of the vehicle's bar control. A vibration sensor detects an accident. The load checker detects the vehicle's load. The PIC microcontroller is connected to the sensors. If a user has drunk alcohol, the gas sensor will detect it and display it on the LED display. If an accident happens, the vibration sensor will detect it and relay information to the controller through GPS.. If the rider engages in any reckless driving, the MEME sensor detects the quantity of the person's bank account. The IR sensor is used to determine whether or not the rider is wearing a helmet. This technology has a high level of precision and accuracy, and an ambulance is automatically dispatched depending on 10 different locations.

K.M. Mehata et al.[2] proposed techniques for ensuring worker safety or detecting any worker falls in the workplace. There are two parts to the proposed system. One example is a wearable gadget made up of sensors and electrical components. The mobile phone is also an important component. The GSM module facilitates communication between the two components. These gadgets also continually check the worker's health and safety. This technology guarantees that falls are detected accurately and that the register person is alerted to provide medical assistance.

Divyasudha N et al[3] proposed a system that incorporates a microcontroller, position sensor, alcohol sensor, piezoelectric sensor, RF transmitter, IOT modem, GPS receiver, power supply, and solar panel to prevent accidents and

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monitor alcohol consumption. This gadget looks for two things: if the rider is wearing a helmet and whether or not he has consumed alcohol. The bike will not start if the user does not comply with these parameters, as indicated by a beep sound.If an accident occurs, an IOT modem is used to notify a predetermined number and the police station. In comparison to other types of helmets, this system is less expensive.

Manish Uniyalet.al[4] designed a system that consists of two components: a helmet and a two-wheeler. The two-wheeler component receives the helmet location data through an RF receiver tuned to the corresponding frequency. The microcontroller on the TW portion will contain information about the helmet position, which will be checked on a regular basis. Other sensors on the TW vehicle include an accelerometer (tilt angle measurement), a Hall-effect sensor (speed measurement), and a GPS module (location pointer). The sensors collect data and send it to the micro controller, which subsequently sends it to the server if there is an internet connection. This technology allows anyone to get information about the vehicle's speed at any time. People can use this method to get information.

A smart helmet strategy for identifying and reporting accidents was proposed by ShoebAhmed Shabbeer and colleagues [5]. In this way, they use a micro controller with an accelerometer and a GSM module. Accident notifications and reports are delivered using cloud infrastructures. If the acceleration level exceeds the threshold or an accident occurs, the information is sent to the emergency authority server, which then sends the message via GPS module to the selected emergency contact. This approach correctly identified 94.82 percent of occurrences and 96.72 percent of the time sent the correct locations.

P.Rojaet.al[6] suggested a system that consists of six components: a remover sensor, an infrared sensor, an air quality sensor, an Arduinouno micro controller, GPRS, and GSM. When the helmet is removed, the workers receive an alarm regarding dangerous gases in the mining regions, and the information is sent to the server. This data is transmitted utilising IoT technology in this case.

C.J Bheret.al[7] presented a smart mining helmet system that identifies three sorts of hazards: hazardous gases, helmet removal, and collisions. They employ a variety of sensors here, including infrared sensors, gas sensors, and an accelerometer.

Sreenithy Chandran et al. [8] have presented the konnect smart helmet system. To identify and prevent accidents, they deploy an integrated network of sensors, WiFi-enabled CPUs, and cloud computing infrastructures. This technology also sends data to the authorities.

Areebuddin Mohammed Khaja Areebuddin Aatifet.al[9] offered an arduino uno, Bluetooth module, push button, and 9V battery approach. The smart helmet is connected to the cell phones through Bluetooth, and a push button is utilised in the event of an emergency.

Archana.Det.al[10] presented a solution to decrease accidents, which consists of a sensor that detects the human touch when the bike key is plugged in. After he puts on the helmet, the sensor locks it, and he can only remove it when the bike is stopped.

To add safety to the system, Ahyoung Lee et al. [11] suggested a system based on three sensors: acceleration sensor, ultrasonic sensor, and carbon monoxide sensor, as well as an Arduino MCU (Micro Controller Unit) with a Bluetooth module.

Agung Rahmat Budiman et al. [12] suggested a smart helmet system that is integrated with several functions.If a rider is not wearing a helmet, a warning is give and if he arrives in hazardous conditions and does not wear a helmet correctly secured in order to ensure the rider's safety. In this case,The rider receives a system warning in the form of In the event that he is in a dangerous situation, he will receive a notification. During the In four smart helmets, the functionality test has yielded a 100% success rate.characteristics and a communication test success rating of 98.3 percent among the two modules

Sayan Tapadaret.al[13] also proposed a prototype which detects the rate of alcohol consumed by the rider and detecting the accidents using IOT module and sensors. Here they are trying to use Support Vector Machines to predict if the values of the sensors correspond to an accident or not, by training the device using real-time simulation. This system gives satisfactory results. The accuracy and precision is also high.

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Prashant Ahujaet.al[14] proposed smart helmet system using GSM and GPRS module. As we all know that the arrival of ambulance to the location may be late this prototype helps to inform the concerned person first about the accident and he may take the steps. In this system we can notice the feature such as high accuracy, cost efficient and giving information about the accident within minute.

Mingi Jeong et.al[15] proposed a system consisting sensors such as thermal camera, visible light camera, drone camera, oxygen remaining sensor, inertia sensor, smartwatch, HMD and command center system to avoid the accidents.This framework allows IOT services to be easily integrated and efficiently managed and able to notify the information in real time.

III. METHODOLGY

This technology focuses mostly on face recognition for automated bike unlocking. The web camera captures the person's photos, which are then saved in the processor for comparison.
Web Camera Captured Image For picture processing and comparison, Open CV software is employed. The reference image is the image that has been saved. The image is then compared to the reference image once it has been acquired by the web camera. Because of the reverse electromotive force (EMF) provided by the driving motor, if the picture matches the reference image, the trigger in the locker system opens, otherwise it remains locked.

BLOCK DIAGRAM :

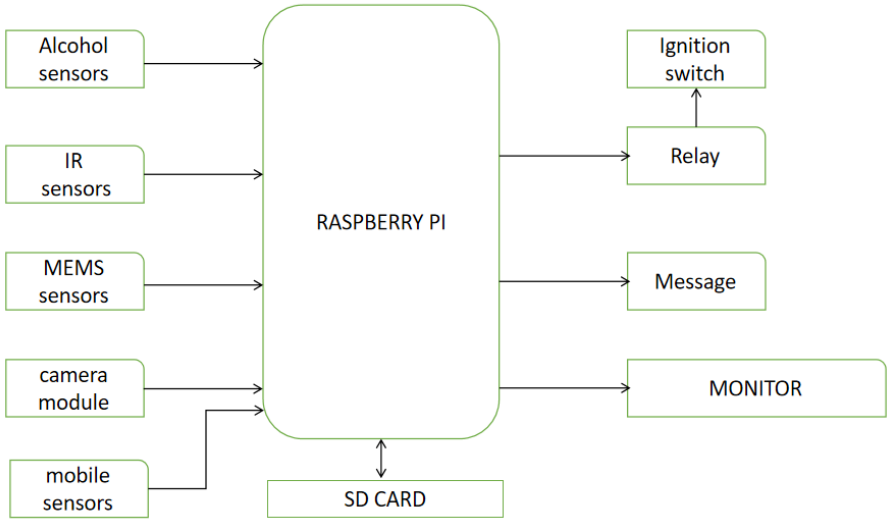

Fig. 1 Block Diagram

IV. CONCLUSION

The survey highlights the use of a Smart Helmet to prevent accidents. The helmet should be made in such a way that it is comfortable to wear. This can be done by lowering the number of accidents involving two-wheelers. IOT technologies was used to develop the gadget. Some IR sensors, alcohol sensors, GPS modules, and other sensors can be used.be utilised to create a low-cost, user-friendly smart home helmet. The end outcome must be precise and useful.to the government and the general public This intelligent helmet may also In the case of four-wheelers, the seat belt system should be replaced.

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