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A LITERATURE REVIEW ON FABRICATION OF AN ELECTRONIC DEVICE TO PREVENT ON-ROAD WHEELING FOR TWO WHEELERS

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ABSTRACT:

Driving has become difficult in the presence of bikers, who resort to dangerous stunts on busy roads despite the ban on the practice of the same. It is evident through enough cases where reckless youngsters risk their lives and perform dangerous stunts, one is wheeling. Recent years have seen an alarming rise in this dangerous trend Amongst the youth. However, the police have miserably failed to curb this fatal practice amongst which has claimed several lives in the past. The project aims at developing an electromechanical device to prevent the wheeling of two wheelers on road. The need of such device is necessary for our society. These daredevils are often seen driving their motorcycles during the day and night on the back wheel, driving inversely and doing other dangerous tricks. So here is an electronic mechanical equipment which avoids the same. The bike consists of inbuilt sensor which sends a signal to the Arduino board and stops the vehicle. It also sends a message to the police control room about the vehicle number and its location. The increasing trend of one-wheeling and bike-racing continues on roads, creating troubles for traffic. Therefore here comes a small effort of us for curbing the same. The usage of this device can save many lives and prevent such injuries that could not be repaired and cured by surgery as it would be a complicated task and minimize the chances of survival.

Introduction:

Driving has become difficult in the presence of bikers, who are performing dangerous stunts on busy roads despite the ban on these practices by the government Territory administration. The ICT administration should take action against wheeling and bike-racing Physics Behind Wheeling. The increasing trend of wheeling and bike-racing continues on the busy roads of the twin cities, creating troubles for traffic. A number of youngsters can be seen resorting to wheeling and bike-stunts on various roads, particularly on Highway, posing a risk to their lives and to that of others. The youths are more delicate in case of doing some uncommon stunts will be reduced. So considering all these things we have come up with an idea to stop wheeling of two wheelers by installing an electronic device for two wheelers. When a motorcycle moves on a level surface, the force of gravity is exerted on the center of mass of the motorcycle and the normal forces are exerted by the ground on the front and rear wheels. More specifically, you need to balance the torques acting the rear wheel. If the game of death is not stopped soon, its fire almost wraps all the youth into which will cost us roughly in near future, to anticipate such offense it is truly vital to ban such bike wheeling actions. Considering all these things we have come up with an idea to stop wheeling of two wheelers by installing electromechanical device to the two wheelers. So considering all these points we have come up with an idea of to stop the wheeling of Two wheelers by installing an Electronic Device to the two wheelers.

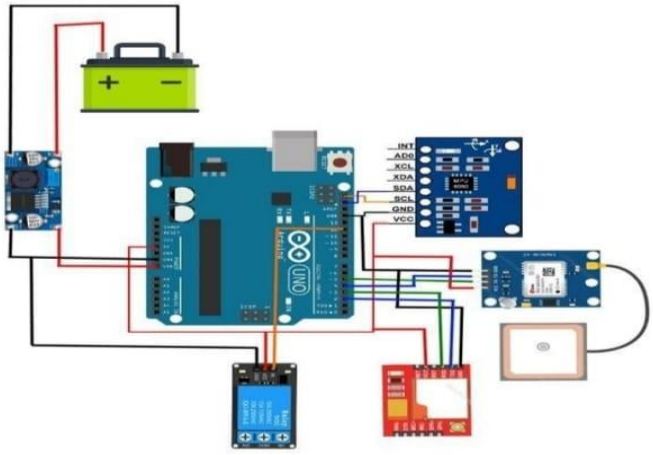
Project Description

Nowadays two wheeler wheeling is increasing rapidly and also causing problem to the society so we have come across an idea of using mechatronics knowledge in our project and have made an attempt to implement the desired change in the society by installing an electromechanical component into two wheeler for avoiding wheeling. Firstly we have noted down the components and assembly of the components are done accordingly, required coding for the project is done. Initially the gyro sensor will be in 0° with respect to the vertical position, once the gyro sensor will be titled above 30° the gyro sensor sends the signal to the Arduino uno board . Once the signal is received the Arduino uno board sends corresponding signal to the GSM, GPS and Relay module. GSM sends the message to the police control room about the location and vehicle number using the GPS. Finally using the relay module the power from the device is cut off for about 10 minutes. By using this project lot many lives will be saved and brings a halt to the wheeling action ensuring travel safety.The components used in the fabrication of electromechanical device are very economical and user friendly The usage of this device can save many lives and prevent such injuries that could not be repaired and cured by surgery as it would be a complicated task and minimize the chances of survival

Purpose of the Project

The main purpose of the project is that Driving has become difficult in the presence of bikers, who are performing dangerous stunts on busy roads despite the ban on these practice by government Territory administration. When a motorcycle moves on a level surface, the force of gravity is exerted on the center of mass of the motorcycle and the normal forces are exerted by the ground on the front and rear wheels. More specifically, you need to balance the torques acting the rear wheel. If the game of death is not stopped soon, its fire almost wraps all the youth into which will cost us roughly in near future, to anticipate such offense it is truly vital to ban such bike wheeling actions. Considering all these things we have come up with an idea to stop wheeling of two wheelers by installing electromechanical device to the two wheelers.

METHODOLOGY:



***Hardware Requirements*:**

Arduino Board

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on wiring), and the arduino software (IDE), based on processing.

Buck Converter

A buck converter steps down the applied DC input voltage level directly. By directly means that buck converter is non-isolated DC converter. Non-isolated converters are ideal for all board level circuits where local conversion is required. Fax machines, scanners, Cellphones, PDAs, computers, copiers are all examples of board level circuits where conversion may require at any level inside the circuit. Hence, a buck converter converts the DC level of input voltage into other required levels.Buck converter is having a wide range of use in low voltage low power applications. Multiphase version of buck converters can provide high current with low voltage. Therefore, it can be used for low voltage high power applications. This article will discuss both low voltage low power converter and low voltage high power converter.

Neo 6m GPS Module

Neo 6m GPS Module is one of the most frequently used GPS modules throughout the world. The Neo-6m GPS module is used for Location Tracking. This GPS module can be interfaced with the Arduino using VCC, RX, TX, and GDND. In order to interface this module with Arduino, we will need to solder 4 wires. Usually, the Ublox NEO GPS modules come with the male headers, and using Male to Female type jumper wires this module can be easily interfaced with the Arduino. But if this GPS module does not have any Male headers then you can solder 4 wires. GPS or Global Positioning System is a satellite navigation system that furnishes location and time information in all climate conditions to the user. GPS is used for navigation in planes, ships, cars, and so on. GPS provides continuous real-time, 3-dimensional positioning, navigation, and timing worldwide. The GPS is used to finding the Longitude and Latitude values.

SIM800c GSM Module

GSM GPRS SIM800C Modem-RS232 is built with Quad-Band GSM GPRS engineSIM800C, works on frequencies 850/900/1800/1900MHz. This Modem comes with RS232 interface, which allows you to connect PC as well as a microcontroller with RS232 Chip(MAX232). The baud rate is configurable from 9600-115200 through AT command. The GSM GPRS Modem is having internal TCP/IP stack to enable you to connect with internet

via GPRS. It is suitable for SMS, Voice as well as DATA transfer application in M2M interface. The onboard Regulated Power supply allows you to connect wide range unregulated power supply . Using this modem, you can make audio calls, SMS, Read SMS, attend the incoming calls and internet etc. through simple AT commands**.**

MPU6050

MPU6050 is a Micro Electro-mechanical system (MEMS), it consists of threeaxis accelerometer and three-axis gyroscope. It helps us to measure velocity, orientation, acceleration, displacement and other motion like features. MPU6050 consists of Digital Motion Processor (DMP), which has property to solve complex calculations. MPU6050 consists of a 16-bit analog to digital converter hardware. Due to this feature, it captures three-dimension motion at the same time.

RELAY Module

Relay is basically a switch which opens and closes the circuit either electronically or mechanically. In other words we can say that a relay is an electromechanical switch which uses electromagnetism from small current or voltage to switch higher current or voltage for different appliances. When a relay is in Normally Open (NO) contact, there is actually an open circuit until the relay is energized. You should also have a look at Relay Interfacing with Microcontroller using ULN2003.If a relay is in Normally Close (NC) contact, there is a closed circuit until a relay is energized. If we apply current to the relay contact in any of the above cases (NO, NC), they will change their states i.e. NC will become NO and vice versa. Relay is used for switching smaller currents in an electronic circuit.

WORKING:

Accumulate the required components and sensors that are needed for designing the wheeling prevention device and Fabricate the electronic device. By conducting certain test conditions checking the performance of the device. Finally mount the electronic device in two wheeler. Arduino Uno is a microcontroller board used. It is brain of the entire system monitoring angle and communication with the other modules in the system and the board is powered using a buck converter. Input of the buck converter is 12v from a battery. This voltage is reduced to 5v using the on board Pot/variable resistor.This reduced input is provided to Arduino uno using the Vin and GND pin. Arduino UNO communicates with MPU6050 using i2c communication with respect i2c pins (A4, A5 or SDA, SCL) And MPU6050 sends raw gyroscopic and acceleration data to Arduino uno with some processing converts the raw data into pitch, roll, yaw data. This is used to detect the angle of the vehicle and the Arduino system continuously monitors the angular variation of the vehicle. GPS module communicates with Arduino uno using UART protocol and it is attached on pin 4 and 5 of Arduino. GSM modules also communicate with the Arduino uno using UART protocol. GSM is attached on the pin 2 and 3 of Arduino. Both GSM and GPS uses software Serial library to communicate with Arduino. Software Serial library is a c program that is used to provided UART functionality to non-UART pins. This is done because The build-in UART pin if Arduino Uno is used to communicate with the PC via uploading the code. GSM and GPS both are powered using the 5v output of the Buck converter because Buck converter can provide high output current for powering two modules. Arduino Uno is programmed to get triggered at a fixed Angle. When the MPU6050 is tilted to that fixed Angle, the functionality is triggered and the current location of the vehicle is captured using GPS and send to the Contact specified in the code using GSM module and also the power signal to the vehicle is cut off. A relay module is used to cut off the power. Hence putting the vehicle in off state for 10 minute.

Objective:

1. The youths are more delicate in case of doing some uncommon stunts will be reduced.
2. The death caused due to wheeling can be controlled.
3. The accident caused by the two wheeler to the public will be reduced.
4. There will be no penalties for wheeling in two wheelers.

Conclusion

In Everyday life, there are certain unfortunate accidents, damages, or injuries happening to the vehicle riders due to lack of sincerity and having a tendency to attempt vehicle wheeling. Wheeling is a vulnerable activity that causes damage and in order to prevent this we have come up with a system that detects the commence of wheel upraise and detects the angle position and sends a message to the wheeling device and make the vehicle switch off. By prevention of wheeling a lot many lives will be saved and brings a halt to the wheeling action ensuring travel safety. The components used in the fabrication of electromechanical are very economical and user friendly.

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List all the material used from various sources for making this project proposal

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