IOT Project Idea

Smart Bike

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1) Overall objective

With the idea of Smart Bike IOT Project, we plan to develop an IOT system that will help many bikers (and also drivers of trucks or any other vehicle mounted with this system) to know the distance and be warned of an object/vehicle behind them when driving or parking the vehicle.

This IOT system has what we call a distance o'meter on the lines of the speedometer with a dial, moving needle to indicate the distance of the vehicle or object behind the bike.

We use LEDs and buzzers to warn the rider when the distance is less than the minimum required distance between the bike and the object/vehicle behind it.

Along with this , to make the bike a smarter bike, we plan to add another system which senses the light intensity and turns on the LEDS or lights of the vehicle when it is moving through a dim lit tunnel or during nights or cloudy dark days.

We also plan to add a security system which activates the buzzer if it finds human movement near the bike when it is parked and locked.

2) The inputs/physical quantities measured

a) **Ultrasonic distance sensor** is mounted on the backside of a bike to measure the distance of a vehicle or object behind it.

b) The **LDR sensor** is used to measure the light intensity.

c) The **PIR motion sensor** is enabled or activated when security mode is on and is used to detect motion of any suspicious characters.

3) Usage of the received input

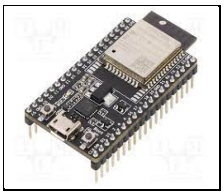
a) Based on the data received from the **ultrasonic distance sensor**, we use the **servo motor** to make a distance o'meter on the lines of a speedometer to indicate the distance of the vehicle or object behind the bike and the buzzer can go off when this distance is less than 2 meters or so and along with the **buzzer** we can make the **LEDs** glow too.

Based on the same data, we can also calculate the speed of that object relative to the sensor for the purpose of analysis if not to warn the rider in time.

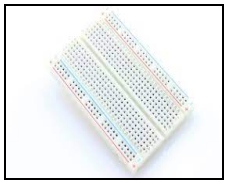
b) We use the data from **LDR** when the security mode is disabled to turn on the **LEDs** on the bike when the light intensity is low.

c) When the security mode is enabled, if human movement is detected by the PIR motion sensor then the buzzer will go off and LEDs should blink.

Devices used :



ESP32 microcontroller board



Bread Board

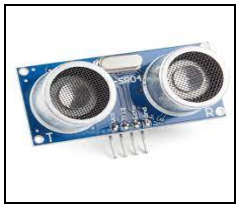
Jumper wires

LEDs

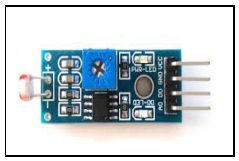
B-10 Buzzer

Servo Motor

Sensors :



HC-SR04 Ultrasonic Distance



LDR module

HC-SR501 PIR Motion Sensor