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Automatic Speed Breaker on Time Demand using Embedded Systems

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Abstract: ***The idea of this examination work is to have a programmed speed breaker on time request as indicated by the necessities. Means when there is no need of the speed breaker out and about, it vanishes from the street and the street turns out to be level and when there is a need then the breaker goes ahead the street from ground and it begins its working of easing back speed of the vehicles.***
In execution of this idea, we utilize an iron made hemi-barrel shaped speed breaker which is equipped for pivoting itself utilizing control hardware of implanted frameworks.
So when required, it goes ahead the street by pivoting itself from level position and when not required, it turns itself again and gets level and joins with level street. In the framework, ongoing clock is utilized to make reference to the necessary time for having the speed breaker on street.
At the point when time begins, breaker goes ahead the street and stays until the commencement gets zero. In the Embedded framework's clock whenever and date can be put away on which the speed breaker is required out and about. So this sort of speed breaker is valuable before any structure for which the time is indicated for coming in the structure and going out from it e. g. schools, any association and so forth. Furthermore we utilized a Wireless sensor organize which gives an interface to screen and control various mounds simultaneously.
Further we utilized a web of things (IOT) for better capacity of dealing with from remote regions. For the remarkable cases like crisis or for the Ambulance the RF is utilized. With the goal that the RF will naturally impair the Speed slowing mechanism
Keywords: hemi- cylindrical speed breaker, internet of things, Embedded systems

I. INTRODUCTION

An embedded system is a special- purpose system is that the computer is completely encapsulated by or dedicated to the device or system it controls. Unlike a general- purpose computer, a personal computer, an embedded system performs one or more predefined tasks, with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. Embedded systems are often mass- produced.

II. BLOCK DIAGRAM & HARDWARE COMPONENTS

A. Block Diagram

Node MCU v3 is a development board that runs on the ESP8266 with the help of Espresso if Non- OS SDK, and hardware based on the ESP- 12 module. In this NodeMCU inbuilt wifi module is there with that we can store the data as our requirements. And it plays major role in our project.

For IOT based purpose it is used. IR1 Sensor has VCC, gnd and output pins. The output pin is connected to D2 pin of nodemcu. IR2 Sensor also has VCC, gnd nd output pins . the output pin is connected to D3 Pin of nodemcu. then the IR sensor will be activated when the power supply is given to it.

Servo motor has VCC pin, gnd pin and output pin. the output pin is connected to D1 of node mcu. then power supply is given to servo motor then it start to rotates the speed breaker

RFID, means radio frequency identification, it also have same as above like vcc, gnd, and output pins. the output pin is connected to D7 of nodemcu. In our project this is used because of ambulance purpose.

Red led is connected to D5 of nodemcu and green led is connected to D6 of nodemcu for indication.

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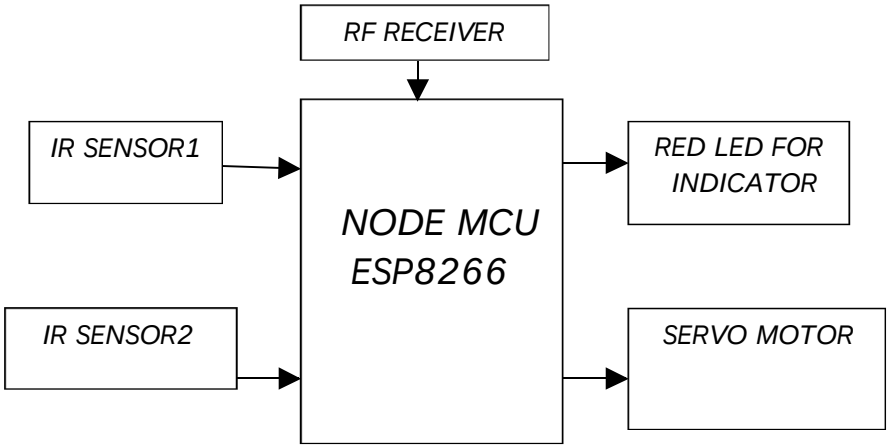


Fig: Block Diagram

B. Hardware Components

1) Node MCU: NodeMCU is an open source firmware for which open source prototyping board designs are available. The name indicates that" NodeMCU" is combination of " node" and " MCU" (micro- controller unit) . The NodeMCU has one analog pin and remaining are digital pins. IN NOdeMCU Both the firmware and prototyping board designs are operated in open source. In this we store data by using inbuilt wifi module

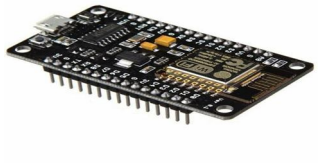


Fig: Node MCU

2) IR Sensor: An infrared sensor circuit is one of the basic and popular sensor module in an electronic device. This sensor is analogous to human' s visionary senses, which can be used to detect obstacles and it is one of the common applications in real-time. This is major component used in our project. In this project we use 2 IR sensors by sensing the speed of the vehicles.



Fig: IR Sensor

3) Servo Motor: A servo motor is a rotary actuator or a motor that allows for a precise control in terms of the angular position, acceleration, and velocity. Basically servo motors ha ve certain capabilities that a regular motor does not have. This servo motor is used to rotate the speed breaker and pairs it with a sensor for position feedback. This is also used in such as robotics, elevators and etc. . ,



Fig: Servomotor

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4) *RF Transmitter & Receiver:* As the name suggest, that it operates at radio frequency, For the use ambulance purpose we use this component. it suitable for long range applications. We place the tx in ambulance and rx at speed breaker side. When the ambulance is arrived then rx starts its working and speed breaker cannot lift at that time.

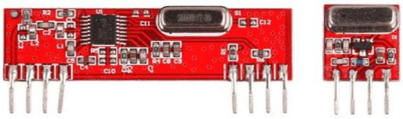


Fig: RF Tr ansmitter & receiver

III. WORKING

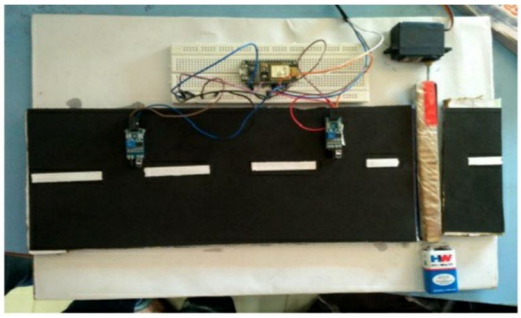


Fig: working model

The Automatic Speed Breaker System makes it conceivable to alter the hour of speed breaker on street. We utilize this creative thought before each school, which is on fundamental street. In this venture we utilize 2 IR sensors. at the point when the primary sensor gets actuate then one time will be determined. Again the subsequent sensor likewise gets actuate then additionally we figure one time. So we can base these timings we can pronounce the speed. So when speed is high at that point speed breaker will lift up and again it goes to its typical position. After thirty minutes speed breaker is consequently switched to the level position. Semi-hover part of the speed breaker is turned naturally according to the time set. Time set choice is alterable. We can set the hour of opening and shutting of the speed breaker according to our decision. Alterable time is to be put away in the outer memory up to next change. This memory is non-unpredictable and holds its information for quite a while. This undertaking depends on IOT so we utilized NodeMCU and we store tha information in web like time and information on which time the speed breaker is lifted.

IV. APPLICATIONS & CONCLUSION

A. Applications

1) The speed breaker is used to reduce the speed of the vehicle and maintain the performance of the vehicle.
2) Security damage
3) Effective in highly populate areas
4) Man Power is reduced by using this project.

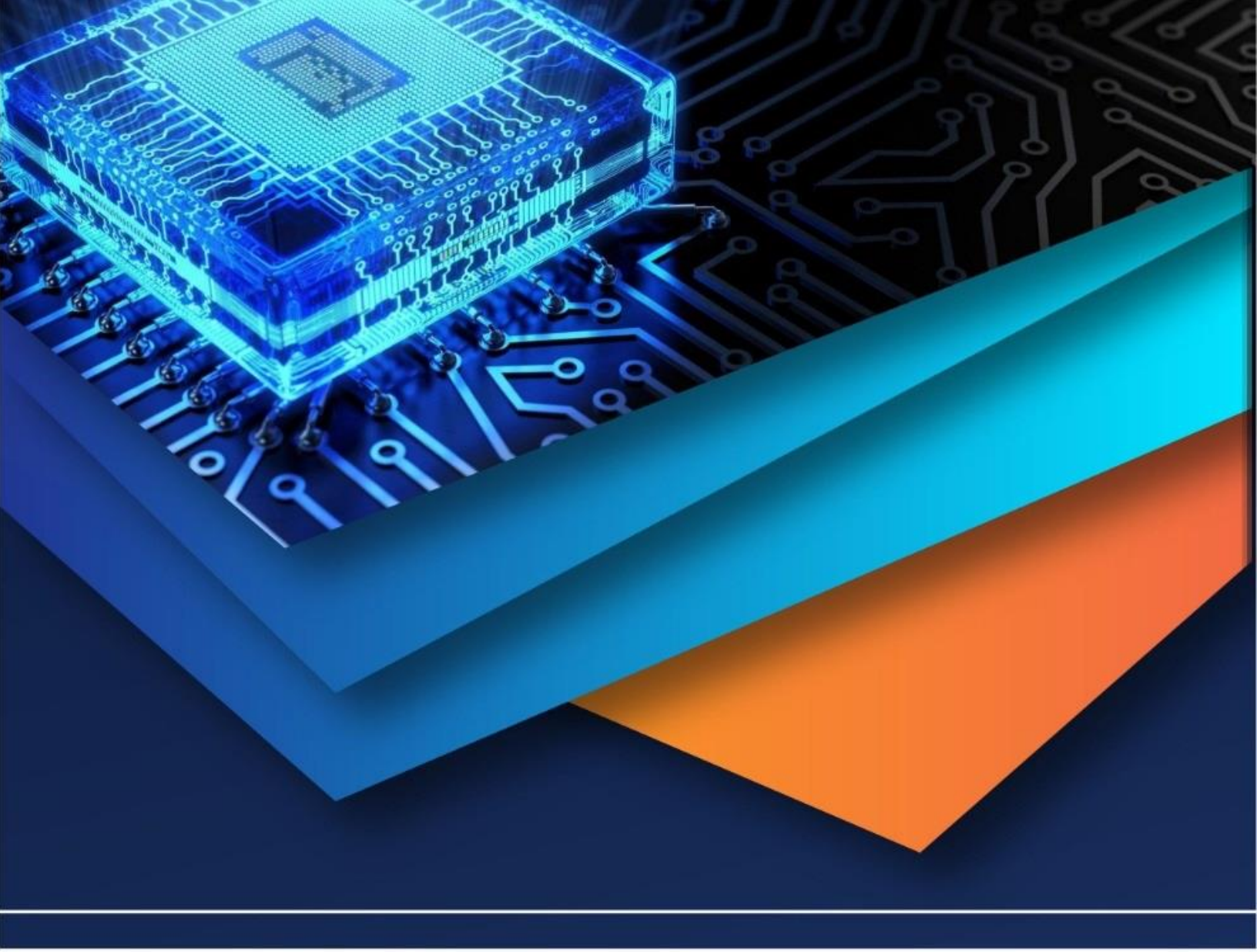
V. CONCLUSION

By using this system we can effectively control the speed of the vehicle according to different zones. This system will be implemented for any kind of vehicles' . With the help of this system we can control the over speed and the rash driving of the drivers. We can see this system in highly populated regions and thus we can decrease the effects of accidents Conclusion to the research work shows that a realistic and practical life like research work has been made which can be a milestone in electronics world. And in this IR sensors play a major role when the vehicles are going with high speed at that time the sensors will be activate and start it' s working according to their requirements.

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