

MICROCONTROLLER BASED AUTOMATIC ENGINE LOCKING SYSTEM FOR DRUNKEN DRIVERS

Ranjani M¹, Ramya S², Rajashree BK³, Bhagyashree G⁴, Sowmya CH⁵

^{1,2,3,4,5} School of Electronics and Communication, REVA University,(India)

ABSTRACT

The main aim is to reduce road side accidents, drunken driving is one among them. To avoid this problem, we have developed an automatic engine locking system. That is if a person tries to drive a vehicle after consumption of alcohol, the engine of the vehicle will be automatically locked. Using GPS module we can track the position of the vehicle and it also sends a message by using GSM to the registered number.

Keywords- AT89S52 Microcontroller, Automatic engine locking, GPS, GSM.

I. INTRODUCTION

Now-a-days we hear a lot of accident cases due to drunken driving. Drunken drivers will no longer be in solid circumstance and so the rash driving is inconvenience for other road users and also question of life and death for them[1] [2]. On this undertaking, we are developing an automobile lock gadget. The input for the gadget is from detection sensors either from alcohol breath analyzer or another mechanism [4] [6]. The controller keeps tracking the sensors, once the threshold is reached the system alerts[5].If there are any traces of alcohol then the system will automatically lock the engine. The engine will be activated through the relay and the complete manner is under the supervision of an intelligent 8051 microcontroller [7] [8]. Maximum of the conventional systems are probable to be greatly dependent on the operator and it is able to fail due to different factors just like the battery life, energy consumption in addition to the unavoidable outside disturbances. Therefore the further paper describes the literature review in section II. The proposed methodology is explained in section III. The result analysis is described in section IV. The conclusion of the paper in section V.

II. LITERATURE REVIEW

The program that are advanced in terms of some electronic and person present additives can be independently carried out despite the fact that there are some drawbacks and disadvantages for its existing standards of necessities. More precisely the quantity in these form of standalone applications were fashioned together to state them as embedded system packages. Embedded gadgets is automated with a committed functionality in which massive electrical, electronic and mechanical structures are inserted in conjunction with their constraints of execution. An software in embedded machine acquires precise traits of the system which are not useful.

As the number of accidents are increasing day by day continuous tracking of the causes for the accidents is necessary. The root cause is identification of drunkenness, drowsiness of driver and irrelevant behaviour of the vehicle. Some systems are proposed in this regard. In this paper our main focus is to provide solution to the above issues with certain characteristics, with continuous monitoring of alcohol consumption.

III. PROPOSED METHODOLOGY

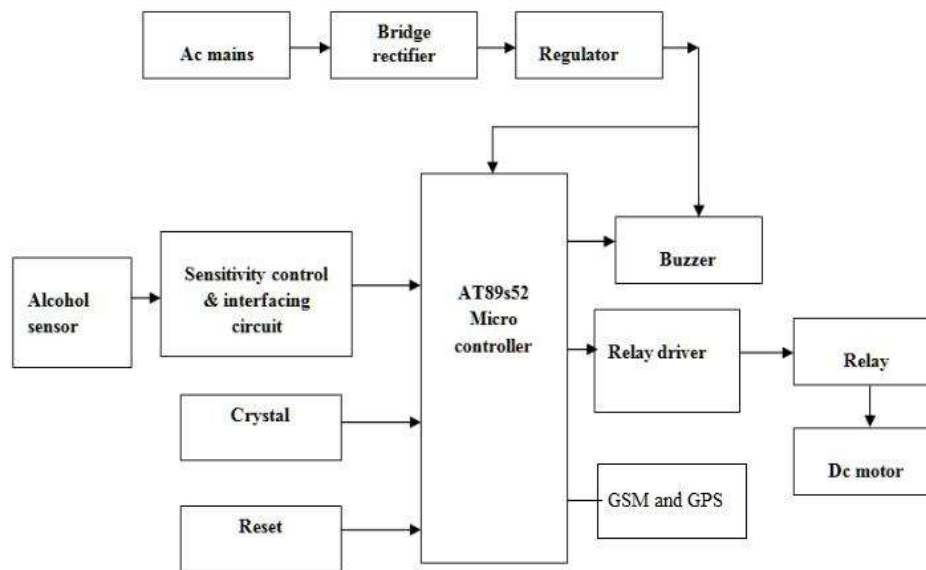


Fig.1 Proposed Model

As it is a well-known fact that the microcontrollers/microprocessors will play a major role in showing out the effective results in any of the global embedded systems and at the same time these will lead to the little inefficient results due to some additional components. This system uses efficient AT89c51 microcontroller that will operate, monitor and control the other functional parts of the system. Instead of routine implementation this will get use of the SFR's which are intelligent in handling typical issues deliberately. Although there are many varieties of microcontrollers this is more efficient and well suits the detection system. The system designed is for the sensing of alcohol using MQ3 alcohol sensor which in turn activates the rectifier that initiates the relay through which a signal is transmitted in form of a delay. This delay will activate/deactivate the DC motor. (In general a motor is the basic component in the engine vehicle system).

In the circuitry the connectivity issues have been shown with utmost reliability and negligible errors. A rectifier along with the relays is given for an input signal from the sensor and it in turn regulates the motor rotations for a specific amount of time. Other than the critical connectivity issues the programming part as well as the logical issues were to be resolved in the effective use of the microcontroller we are using for the design of the detection system. So for this purpose counter/timer circuits, special registers, interrupt handling circuits will be very prominent. In figure.1 the block diagram is shown.

If alcohol content is present then,

- 1) LCD displays “Engine locking system”
- 2) Vehicle automatically stops.
- 3) Buzzer turns ON.
- 4) GPS tracks the location of the vehicle.
- 5) GSM sends the message to the registered number.

3.1 Alcohol Sensor:

The alcohol sensor is used for detecting alcohol concentration of breath, just like common breath analyzer and send its value to microcontroller. Sensor provides an analog resistive output based on alcohol concentration.

3.2 LCD Display:

It acts as an indicator to driver and also for the passengers. It gives an indication that the driver has drunken, it also displays a warning message to stop the vehicle.

3.3 Microcontroller AT89S52:

Microcontrollers are “embedded inside some other device. They can control the features or actions of the product. Another name for a microcontroller is “embedded controller”. Microcontroller are dedicated to one task and run one specific program. The program is stored in ROM and generally does not change. Microcontrollers are often low power devices. A microcontroller has a dedicated input device and has a small LED or LCD display for output. A microcontroller also takes input from the device it is controlling and controls the device by sending signals to different components.

3.4 GSM Module:

It is a device which can be used to make a computer or any other processor to communicate over a network. It can accept any GSM network operator SIM card as like a mobile phones with its unique phone number. Whenever alcohol consumption is detected then the message is sent to relatives and police station with car number as well as location using GPS system.

3.5 GPS Module

: It is a global positioning system use to get the location of vehicles in latitude and longitude. When the alcohol consumption is detected the location of the vehicle will be tracked.

3.6 Relay:

Relay is an electrically operated switch which is used to turn off the ignition system.

IV. RESULT

Finally after the design of system the input is identified by the sensor through the breathe of a human. In the next scenario the levels of alcohol is measured by the sensor and compared with the set-in limits. If the set limit

of consumption in alcohol is less than the alcohol consumed by the person the system of activating relay is initiated which in turn activities the automatic lock on the vehicle i.e., stops the motor if it is in running state or it is unable to start. We can also give a comparative report of study with the variables of considering the internal factors. RTOS is the part where the comparison is needed in terms of time taken to account with respect to the interrupt latency and response time. Interrupt latency is the time taken to respond for the interrupt and the response time is the least amount of time taken to respond for the input given.

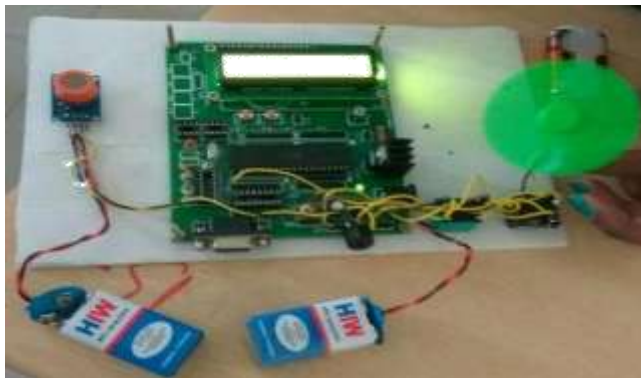


Fig.2 Output Model



Fig.3 GSM Model

V. CONCLUSION

Mishaps caused around us occur due to in numerous reasons, some being vital and alarming. The utmost and extensive entity is driving under the influence (DUI) of liquor. Hence, relevant measures must be taken to safeguard the mankind and the neighbourhood attributes. Proposed traditional schemes suggested to nullify the safety drawbacks could not accomplish the target as it had battery, energy, etc. Therefore, this paper corresponds to work carried out to invalidate the safety defects.

The main concept of this paper is “drink and drive detection”, where alcohol detector is installed, corresponding to auto lock system. The usage of microcontroller and sensors helps to detect the alcohol limit, which when

exceeded sends message to the registered number. Thus, the paper depicts the efficient work done to enhance the safety, mainly regarding to “drink and drive” disasters.

5.1. Future Work

- We can implement this technique further by making use of Internet of Things (IOT).
- This module can also be implemented in heavy vehicles, shipping vehicles, air buses and sensing devices.
- This can also be extended in bio medical fields and software industries.

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