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Design and Development of Smart Horn Automation System using GPS

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Abstract: To build a horn system that will help us to reduce the noise pollution. Automation of the driving control of car is one of the most vital need of the hour. This technology can very well implement what was absent before, by the help of obstacle sensor it detects the closer vehicle in any direction immediately it sends control signal to control. And also based on the location tracker the corresponding signals are send to the controller (arduino) and accordingly the sound of the horn get varied automatically.

Keywords: GPS, Horn, Location, Controller

I. INTRODUCTION

Due to increase in vehicle the amount of pollution, that is generated by these vehicles have increased significantly. This has in turn caused disturbances and therefore, in some areas such as in central cities, near hospital, near school, zoos etc, honking (operating a horn to generate to generate sound) is prohibited by law or regulation. On the contrary the driver, in some areas uses the horn to draw attention of people or the animals towards his vehicle. In general, there are many traffic signs in various areas to notice the drivers not to operate horns. Additionally, or alternatively, local governments issue permanent or temporary regulations the horn operations. However, some drivers ignore such traffic signs or forget or do not know of such regulations, especially in those areas that they are not familiar with, and thus operate horns in a wrong way against the regulations. The only way by which the driver can honk is that if the driver gets close to the other cars range only then the driver will have full access to honk, if the other car is not nearer to the car of the driver, he will not be able to honk. Thus, it needs to provide a technical solution for automatically deciding the closeness of the car and preventing unnecessary honking. The proposed system will help us to detect the location using the global positioning system and then vary the frequency according to the detected location. This system also varies the frequency of horn when the vehicle is near. . The closeness of the vehicle is detected using the infra-red sensors. The location is detected using the GPS NEO 6M-0-001, which helps us to detect the latitude and longitude at the particular location. This latitude and longitude helps us to sense the location whether it is an hospital zone or silent zone or traffic area and then the pulse wide modulation is varied and then the frequency is adjusted using the Arduino embedded-c.

II. METHOD FOR THE SMART HORN AUTOMATION SYSTEM USING GPS

Noise pollution seems to be a general problem. When honking unnecessarily is reduced it results in a peaceful environment and less stress for the daily travellers. Travelling is a part of day to day life for every human, so when noise due to unnecessary honking is eliminated humans will be able to sleep, concentrate and improvise their memory efficiently. This technology prevents the noise pollution impacts due to over honking of the vehicles and also helps us to keep the environment peaceful and reduces the negative health effects seen in living beings around.

III. EXISTING SYSTEM

It is known that a horn, although indispensable for a vehicle, produces much noise. Thus, in some areas, such as in central cities, near hospitals, schools or zoos, etc., honking (operating a horn to generate sound) is prohibited by regulation. It uses Global Positioning System to

- A. If in a current driving location where honking is prohibited then the circuit will not allow to operate the horn to produce the noise.
- B. If at current location, when there is a need to honk, the horn is prepared to honk.
- C. If at current location, the horn is set in a free mode in which the driver may decide whether to operate horn or not according to the real traffic condition.

This is the proposed system and it also contains the proximity sensor. This proximity sensor helps us to detect the distance between the obstacles and reduce the decibels of the horn. When the vehicle is very close to us then the horn decibels will be very low so that they do not affect the ear drums of the driver and can be helpful in changing the unnecessary honking. But, when the vehicle is very far from us then they will have a high decibel. This is a very useful method in this vehicle dependent world. The main disadvantage is that the proximity sensor will not be able to detect so longer and the horn system will work only for the specified system.

IV. PROPOSED SYSTEM

The disadvantages are overcome by the proposed system. The proposed system has an IR sensor to detect the system obstacles that are present in front of them. In the proposed system the decibels of the horn can be automatically varied according to the location of the vehicle. The proposed system consists of the Global Positioning System device called the GPS NEO 6M-0-001, which helps us to detect the latitude and longitude of the particular place. Then if the detected place is a silent zone then the honking sound will be so low, when the detected place is a residential place then they will be normal and so on.

A. Vehicle Ranges

- 1) Bikes : 78 – 84 db
- 2) Car : 72 – 81 db
- 3) Bus : 83 – 90 db
- 4) Trucks: 86 – 92 db

B. Day and Night

- 1) Industrial area : 75 – 70 db
- 2) Commercial area : 65 – 55 db
- 3) Residential area : 55 – 45 db
- 4) Silent zone : 50 – 40 db

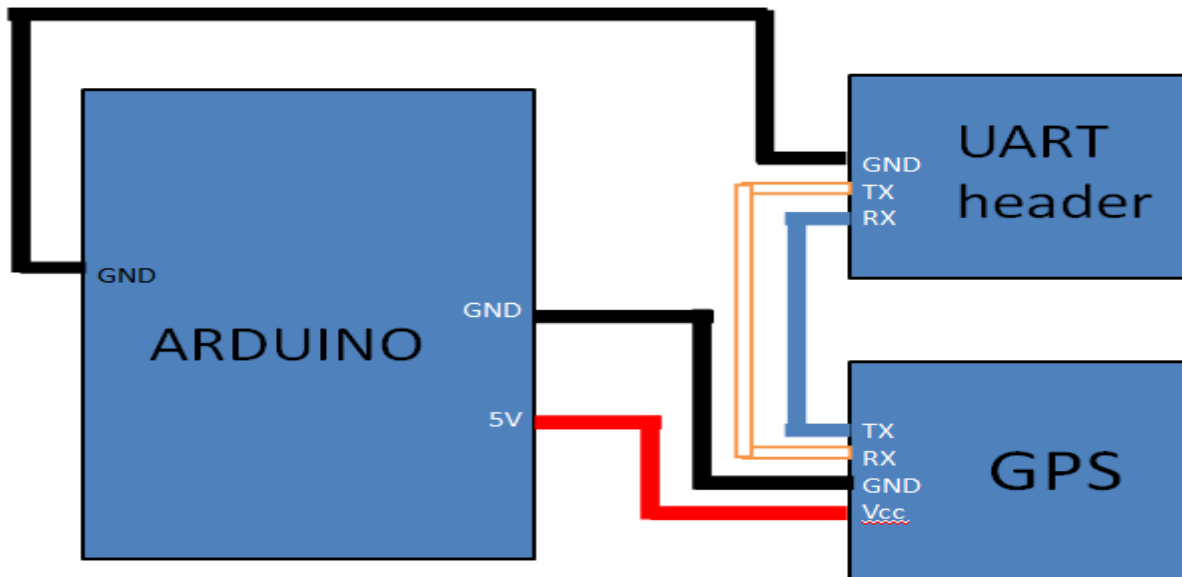


Fig 1. Block Diagram for Detecting The Location

The smart horn automation system works on the bases of tracking the particular location of the vehicle by using the global positioning system-6m-0-001. They help us to get the latitude and longitude of the particular location and the decibel of the horn is varied using the Arduino-IDE (pulse width modulation). Then the latitude and longitude of the particular system is matched with the fed data and the decibels get varied. The infra red sensor in that system helps us to vary the decibels of the horn by calculating the distance between the particular obstacles. If the obstacles are too nearer, then the decibels will be so low, so that it does not damage the ear drums of the drivers. This is the basic method for the smart horn system.

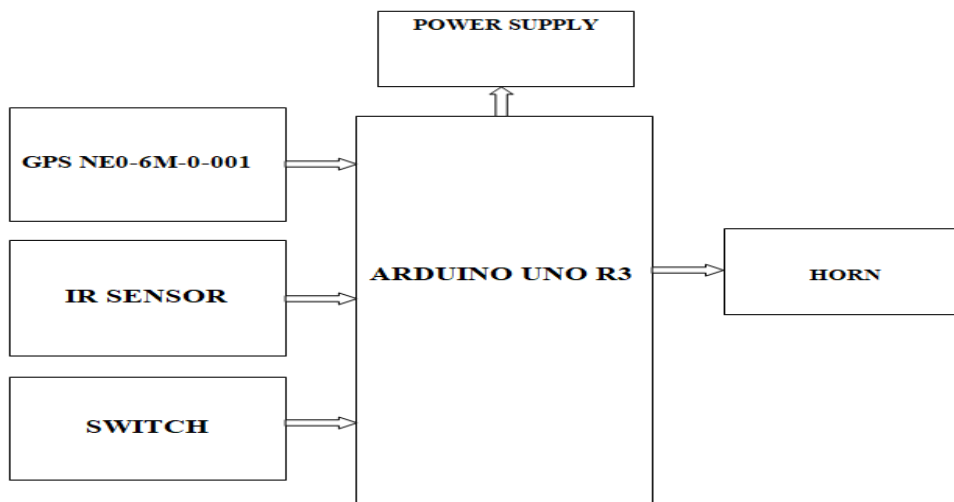


Fig 2 General Block Diagram

This technology is very much useful for our growing economy because this technology is useful to reduce the noise pollution. According to the location, the decibels of the horn is getting varied automatically and also this technology helps us to detecting the nearby obstacles using IR sensor and prevent the damage of the ear drums of the nearby drivers. This technology gives solutions like automatically deciding the closeness of the car and preventing the unnecessary honking. This system gives us a noiseless peaceful environment.

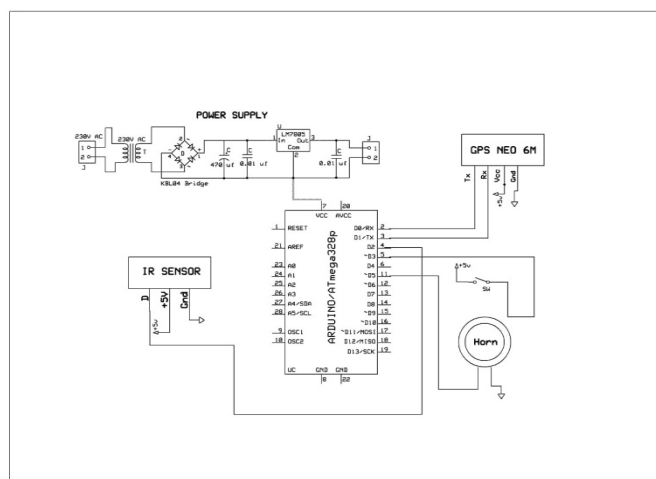


Fig 3 Circuit Diagram for Smart Horn Automation System Using GPS

V. FUTURE SCOPE

The future scope of the design and implementation of the smart horn system is that it will be more helpful in enhancing the whole transportation system. If the system is wholly implemented with interaction of the global positioning system it will change the entire system. .

VI. CONCLUSION

Noise pollution seems to be a general problem. When honking unnecessarily is reduced it results in a peaceful environment and less stress for the daily travellers. Travelling is a part of day to day life for every humans, so when noise due to unnecessary honking is eliminated humans will be able to sleep, concentrate and improvise their memory efficiently. This technology prevents the noise pollution impacts due to over honking of the vehicles and also helps us to keep the environment peaceful and reduces the negative health effects seen in living beings around.

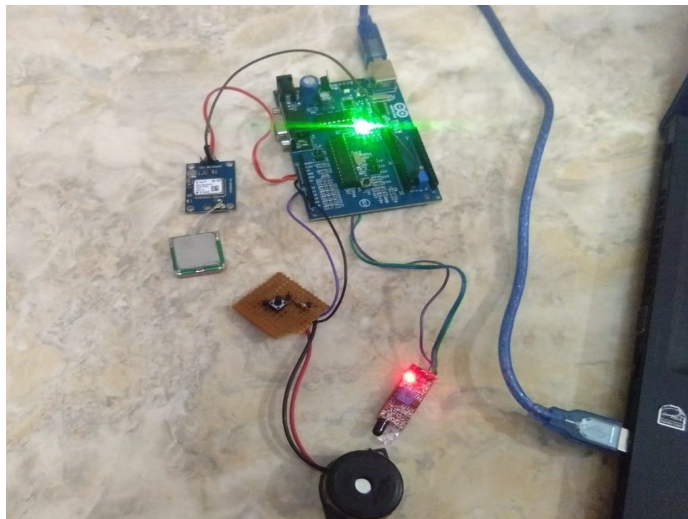


Fig 4 Snapshot of Hardware Kit of Smart Horn Automation System Using GPS

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