

A Novel Approach to Reduce the Noise Pollution Caused by Honking of Vehicles

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Abstract: Noise is playing an ever increasing role in our lives and seems a regrettable, but ultimately avoidable by cutting edge technology. This paper deals with establishing a vehicle to vehicle communication using IR transmitters and receivers, green corridor for emergency vehicles and helps to reduce bad parking. This paper deals with the methodologies to reduce noise caused by honking of vehicles.

I. INTRODUCTION and LITERATURE SURVEY

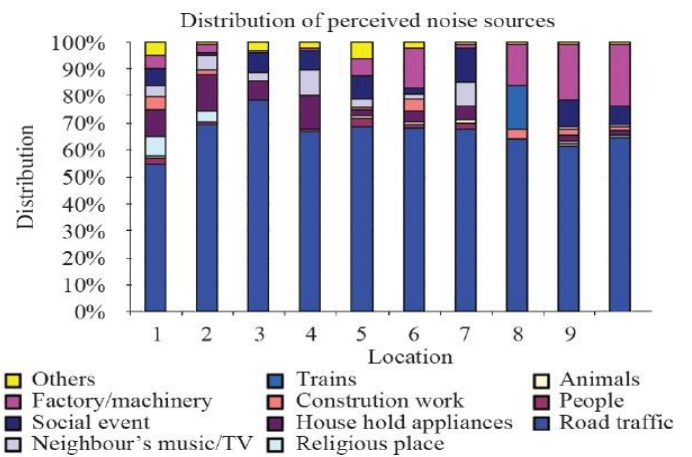
Ambient noise levels prescribed by CPCB are;
 Silence Zone (Low congested) - 50dB
 Residential Zone (Medium congested) - 55dB
 Commercial area (Heavy congested) - 65dB
 Under the Central Motor Vehicle Rules, 1989, the noise range for horns has been fixed between 93 decibel (dB) and 112dB.

The decibel is measured at a distance of 7.5 meters from the horn and at a height of 0.5 to 1.5 meters.
 “Despite the Central Motor Vehicle Rules banning multi-tone horns, it is rampantly used by trucks and buses. This is illegal and authorities should take strict penal action.”
 The decibel level of such horns can go up to 140dB.

SOUND MONITORING DEVICE & STATIONS

- Indira Gandhi Institute of Child Health.
- RVCE Mysore Road.
- TERI Office, Domlur.
- BTM Layout.
- Regional Office Complex, KSPCB, NisargaBhavan , S.G.Halli.
- Parisara Bhavan, Church Street, KSPCB.
- CAAQMS of CPCB at BWSSB site, Kadubidanahalli,Marathahalli.
- Yeshwanthpur, Police Station.
- Near ITPL, White field Industrial Area
- (Graphite India) Industrial Area.
- CAAQMS of CPCB at ACE Manufacturing System, Peenya Industrial Area.

From all these above stations plotting a graph of different noise distribution v/s station locations, we get

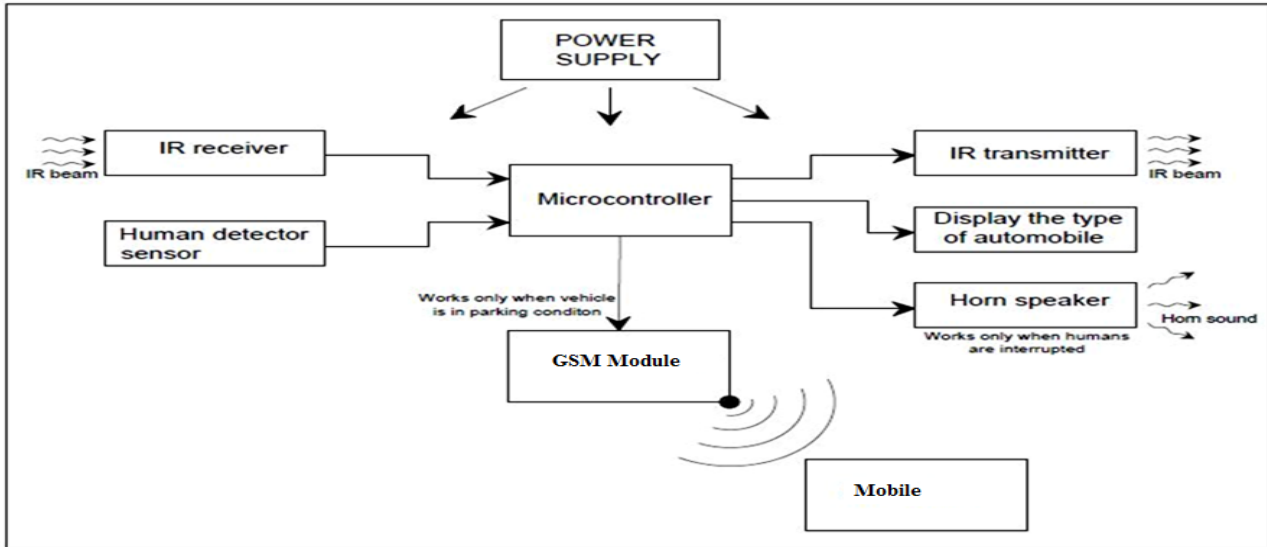


Here, the dominating percentage of pollution is only caused by Road Traffic. And from the survey of CPCB, they have reported that nearly 60%-70% of noise pollution is caused only by honking of vehicles.

Considering Health Factors due to Honking by CPCB:

Health factor	Male (%)			Female (%)		
	Yes	No	Don't know	Yes	No	Don't know
No disturbance	18.5	65.8	15.7	10.7	77.1	12.2
Irritation	52	35	13	64	27	09
Headache	67.3	15.8	16.9	85	10	05
Hypertension	46	48.9	5.1	54	31	15
Loss of Sleep	48.6	35.2	16.2	78.3	8.3	13.4
Stress	34.7	38.5	26.8	55.4	28	16.6

II. BLOCK DIAGRAM OF HARDWARE:



III. HARDWARE USED:

➤ INFRARED TRANSMITTER



An infrared transmitter, or IR transmitter, is hardware that sends information from an infrared beam to control the device by receiving and decoding signals. In this project these IR transmitters are connected in series in front of the automobile.

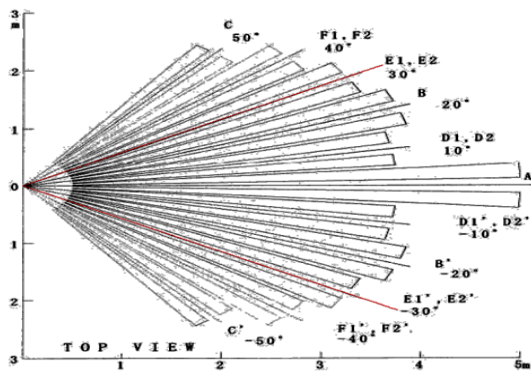


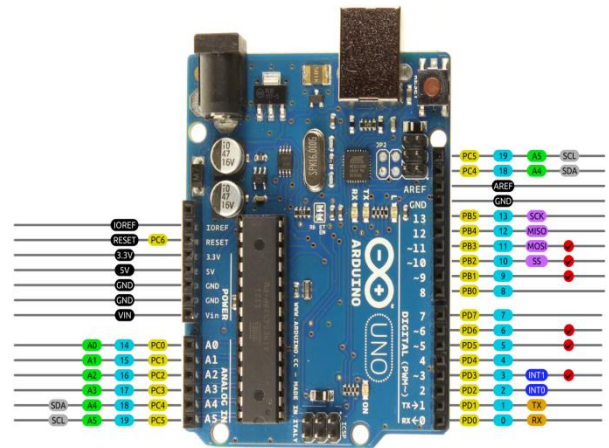
Fig: IR beam emission angle

➤ INFRARED RECEIVER



IR receiver is nothing but Photo Diode/Transistors.

➤ ARDUINO MICROCONTROLLER



AVR DIGITAL ANALOG POWER SERIAL SPI I2C PWM INTERRUPT

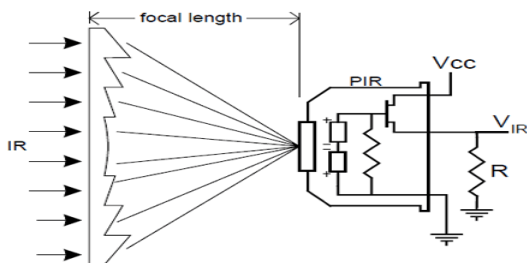
The Arduino microcontroller is an easy to use yet powerful single board computer that has gained considerable traction in the hobby and professional market. The Arduino is open-source, which means hardware is reasonably priced and development software is free.

➤ GSM S900



GSM (Global System for Mobile Communications, is a standard developed by the European Telecommunications Standards Institute(ETSI) to describe the protocols for second-generation (2G) digital cellular networks used by mobile phones, first deployed in Finland in December 1991.

➤ HUMAN DETECTOR SENSOR(PIR)



Pyro-electric Infrared Sensor

PIR sensors allow you to sense motion, and are mostly used to detect if a human moves in or out of the sensor range. These are small, inexpensive, low-power, easy to use and do not wear out.

IV. METHODOLOGY

- Series of IR transmitter is fixed in front of an automobile and IR receiver is fixed on the sides and at back of an automobile as a form of strip shown in Fig.1.
- Considering a driver requests for the way from the IR transmitter which is placed in front of it, when the button is pressed the IR transmitter produces a IR beam, this IR beam transmitted is received from the IR receiver and the signal is fed to microcontroller. Where microcontroller detects the type of automobile which is requesting for the way and is displayed on the dash board using LEDs. On depending upon the type of the automobile convenient way can be provided for them to overtake.

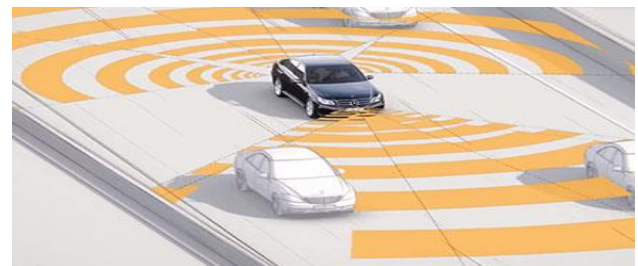
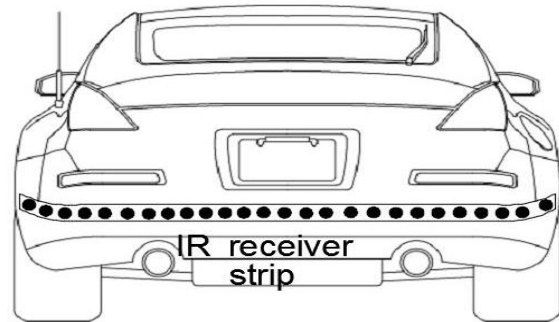
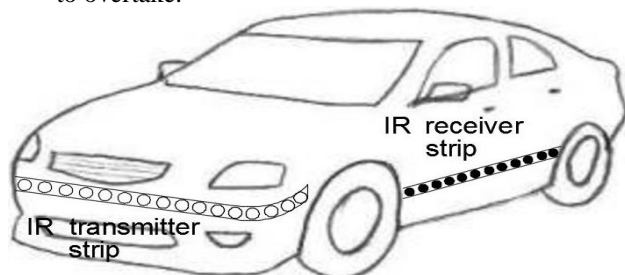


Fig.1 Vehicle to Vehicle communication

- If in case of any human beings or animals comes in front of the automobile the sensor detects the presence and the automobile switches its mode from IR to HORN so that the way can be provided to move on.



- In case of an emergency vehicle, automobile in front of it gets to know about it and in a smart way the IR transmitter of the automobile which is in front of emergency vehicle transmit the same pattern of IR beam produced by the emergency vehicle this goes on from one automobile to another till the automobile which is first at the traffic signal to switch the green light.



➤ In the case of automobile is parked and other automobile needs to move, the IR beam received notifies the driver with the GSM Module notification is sent to the Driver's mobile.



V.CONCLUSION

This proposed method reduces the noise pollution on and around 30-40% caused by automobiles, the proposed Green corridor for emergency vehicles result in saving of many peoples life on emergency cases. Our proposed method also provides a good parking facility which automatically reduces paying penalties.

VI.REFERENCES

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