INTERCAR VIBRATIONAL COMMUNICATION SYSTEM USING IOT

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INTRODUCTION TO INTERCAR VIBRATIONAL COMMUNICATION SYSTEM USING IOT

AN INTRODUCTION TO THE INNOVATIVE ONTERCAR VIBRATIONAL COMMUNICATION.
REVOLUTIONIZING COMMUNICATION BETWEEN VECHILES ON THE ROAD.

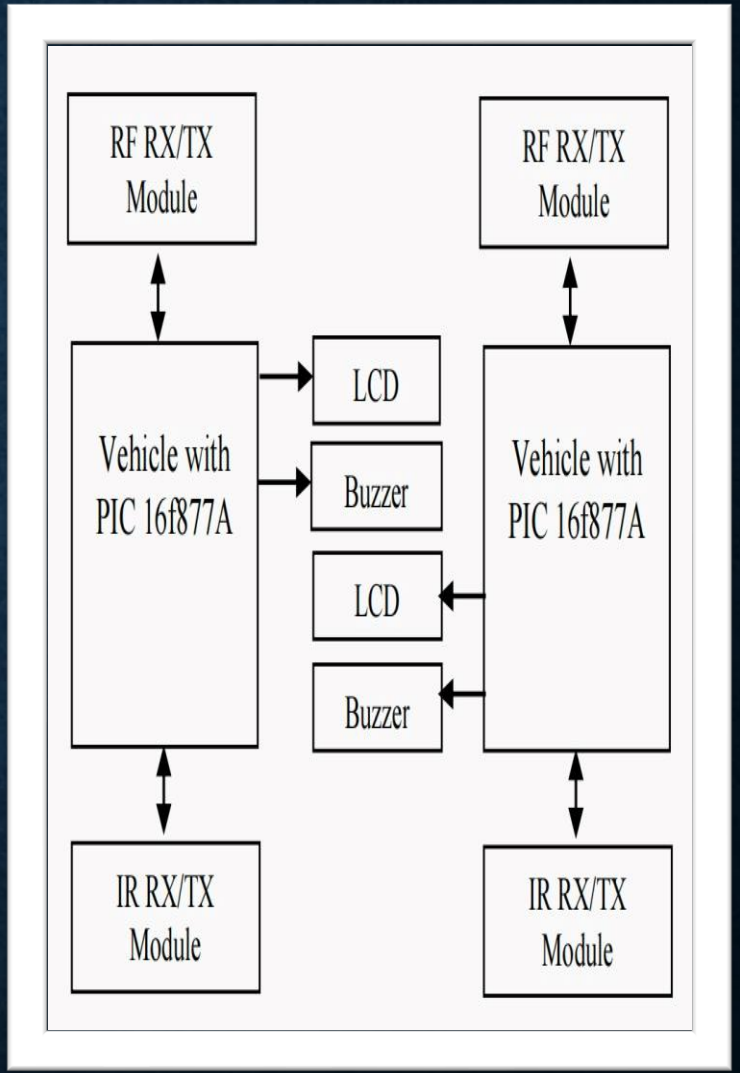
PROBLEM STATEMENT

The introduction of our problem statement for an Intercar Vibrational Communication System using IoT could start by highlighting the inefficiencies and limitations of current communication systems in vehicles, such as reliance on traditional radio frequencies or cellular networks, which can be unreliable or insufficient for certain situations. Then, we can emphasize the need for a more robust and reliable communication solution that can facilitate seamless communication between vehicles for safety, efficiency, traffic and convenience purposes. Additionally, we might mention the potential benefits of leveraging IoT technology to enhance communication capabilities within and between vehicles, without horn which leads to less traffic and accidents ,setting the stage for our proposed solution.

METHODOLOGY

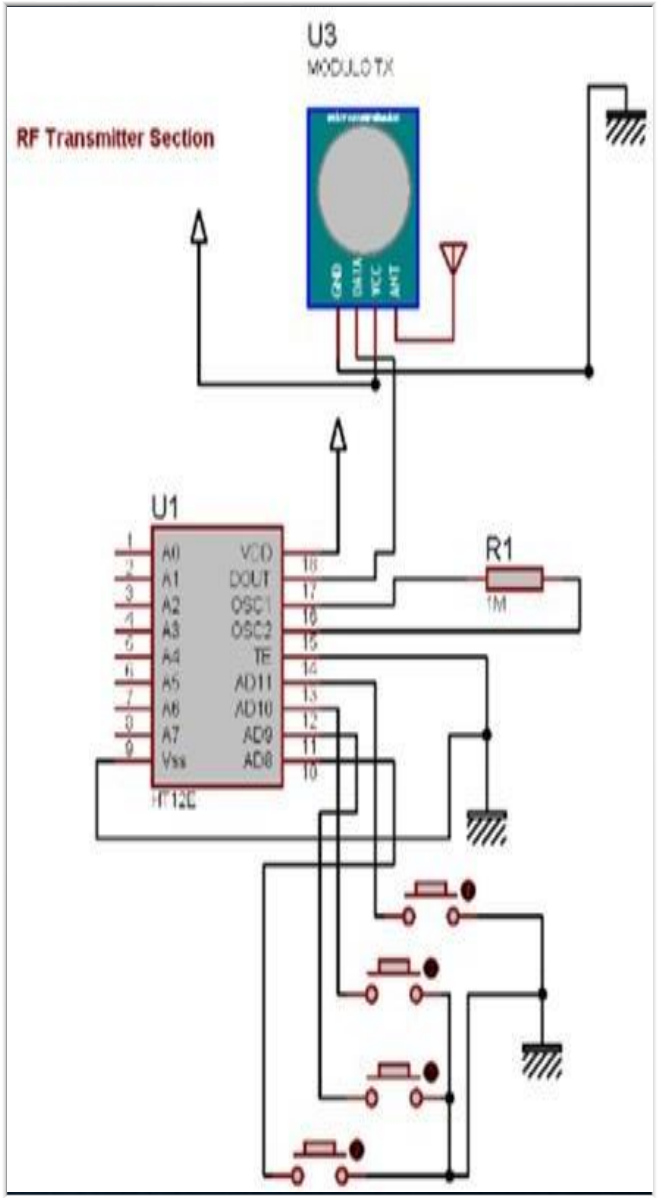
The Intercar Vibrational Communication System is a method of communication that utilizes vibrations to transmit messages between vehicles. It involves converting messages into vibrational signals that can be detected and interpreted by other vehicles equipped with compatible receivers. Even if the near by environments are noisy or a person who have disability also this system can be useful in situations where traditional communication methods like radio waves or visual signals and Horn are not practical or effective, such as in noisy or visually obstructed environments.

This work presents a lot of considerations and improvements to remove vehicle horn system and replace the place of vehicle horn by using a V2V communication system which can help to mitigate the excessive sound levels that roadside people face in a traffic congestion area. Fig describes the basic block diagram of the proposed system. The design uses two communication protocol to exchange messages without honking between vehicles in traffic area. Radio Frequency communication technique has been used in this System. RF transmitter are placed in front of the driver and both receivers are placed behind the vehicle. Receivers are attached with a PIC microcontroller which takes transmitted signal that sends by the transmitters and read the signal to reproduce the messages. A LCD is used to show the receiving messages and a buzzer is also used to draw the attention of driver. The circuit uses a RF transmitter and receiver to send and receive messages to the front side vehicle.



Transmitter Section

The core of this system is an RF module. It transmit data code serially to the receiver placed behind the vehicles which then get passed onto the microcontroller where it gets decoded. The required information is then displayed in an LCD depending on which driver changes the position of the vehicle. Radio waves are a type of electromagnetic radiation with wavelengths in the electromagnetic spectrum longer than infrared light. Radio waves have frequencies from 300 GHZ to as low as 3kHz . Like all other electromagnetic waves, they travel at the speed of light. Different frequencies of radio waves have different propagation characteristics in the Earth's atmosphere, long waves may cover a part of the Earth very consistently, shorter waves can reflect very little and travel on a line of sight. In order to receive radio signals, for instance from AM/FM radio stations, a radio antenna must be used. The transmitter used in this system works at 434MHz. A 4 way DIP switch is used to simulate different assigned messages that shows in the LCD when driver push these switches. When switches are being pressed this generate a 4 words transmission cycle that is fed parallel to the encoder IC HT 12E, which converts it to a serial bit stream and sends to the RF transmitter. these transmitters kept at the front of the driver to transmit the data wirelessly to the approaching vehicles.



TECNOLOGIES USED (H/W,S/W)

- To evaluate the Intercar Vibrational Communication System, you would typically consider several factors related to its hardware, software, and performance.
- Here's a general outline of what we include in our evaluation:
- Hardware:
- List of hardware components used in the system (e.g., sensors, transmitters, receivers).
- Specifications of each component (e.g., frequency range, sensitivity, power requirements).
- * Evaluation of hardware performance (e.g., accuracy, reliability, durability).

- Software:
- Description of the software architecture (e.g., communication protocols, signal processing algorithms).
- Evaluation of software functionality (e.g., ability to detect and interpret vibrations, data transmission efficiency).
- Compatibility with different operating systems and devices.
- Data Set:
- Description of the dataset used for evaluation (e.g., size, type of data).
- Methodology for data collection and preprocessing.
- Evaluation metrics used to assess the system's performance (e.g., accuracy, speed).*

How well the hardware and software components are integrated.

PERFORMANCE

Overall performance of the system in terms of its ability to detect and communicate vibrations. Comparison with existing systems or benchmarks.

- User Experience:

User feedback on the system's ease of use and reliability.

Suggestions for improvement based on user experience.

- Conclusion:

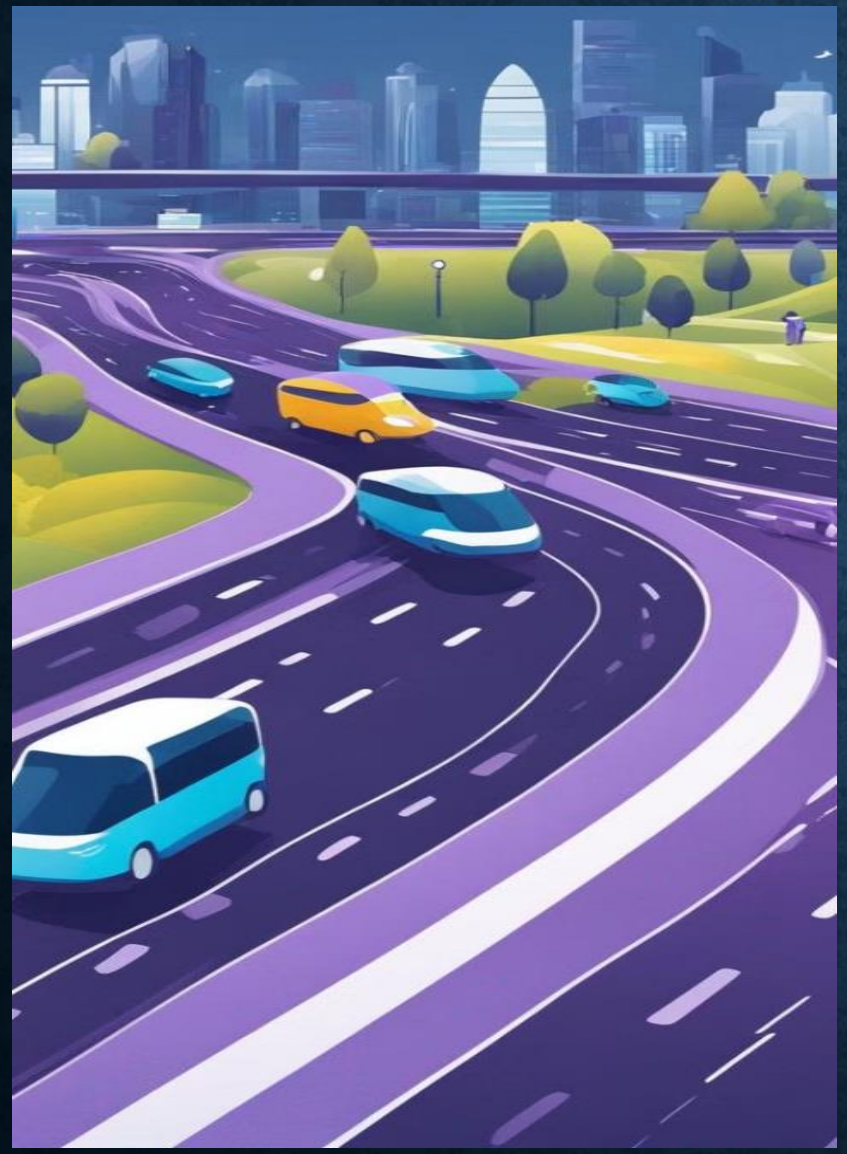
Recommendations for future improvements or enhancements to the system.This evaluation should provide a comprehensive assessment of the Intercar Vibrational Communication System, highlighting its strengths and areas for improvement.

RESULTS

- The Intercar Vibrational Communication System is a technology that allows cars to communicate with each other through vibrations. By using vibrations instead of traditional methods like radio waves or infrared signals, the system aims to improve communication between vehicles, especially in situations where other methods might be less effective, such as in tunnels or areas with poor visibility.As for results or outcomes, I don't have specific information on the effectiveness or widespread adoption of this technology, as my Gradution is going to complete in 2025. However, in theory, such a system could potentially enhance vehicle communication, leading to improved safety and efficiency on the road by allowing cars to convey information about road conditions, traffic, or potential hazards more effectively.

CONCLUSION

- The Intercar Vibrational Communication System offers a unique way for drivers to receive alerts and notifications without taking their eyes off the road. Its effectiveness depends on factors like user experience, safety, and integration with other car systems. In conclusion, while it has potential benefits, further testing and refinement may be necessary to ensure its practicality and safety on the road.It is also be useful for disable people and noisy environments which leads to save 10k life as year and more then 30 percent traffic.



Thank you