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Real-Time Voice Command/Alert Warning System

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ABSTRACT

The paper discussed on the vehicle safety devices where in vehicle people will be getting notification with the help of RTVCAWS. This could help the drive-in to take control of the car and provide voice notifications derived from the AI by using the Arduino IDE, it gives a remainder about multi aspects that may forget to remain in mind because of some urgency. This project concentrates on developing a voice alert notification about car conditions like what all the major things we want to know about radiator water coolant, brake fluid other turned on switches, voice commands for multiple operations and to get info of forward obstacles, it differs from the model of rear end vehicle collision avoidance system that detects when obstacles are close enough to collide.

Keywords: *Voice Command, Voice Alert, Arduino, Mishaps, Ultrasonic.*

1. INTRODUCTION

These days as a speedy advancement in people bit by bit the amounts of transportation and vehicles have developed the roads and turnpikes. This end in extra mishaps that prompts the gridlocks, in late innovative advancements have made a lot of upgrades in keeping away from the disasters and to save lots of human life. To begin with, character latent gadgets and capacities including safety belts, airbags, knee reinforces, smash zones, etc., were created for saving lives and limiting mishaps while a touch of destiny occurs. Nonetheless, we can't disregard the established truth that large number of individuals lose their life or endure extraordinary mishaps in light of vehicle impacts once every year. Almost 75% of parkway auto collisions are brought about by not being careful distance between moving vehicles and in this manner the driver's inaccurate judgment for slowing down wellbeing. As demonstrated by the 2013 overall survey of auto crashes by the UN World Health Organization, India persevered through a road setback speed of 17 for every 100,000 life's in 2013. India's typical auto crash loss rate resembled the world ordinary speed of 17.4 passing's per 100,000 people, not actually the low-pay countries which tracked down the center worth of 24.1 passing's per 100,000, and higher than the high-level compensation countries which reported the most un-ordinary speed of 9.2 passing's per 100,000 of each 2013.
To know any malfunction in car of major things where we get only LED indication in dashboard, along with distance estimation of a deterrent or vehicle ahead of a moving vehicle is needed inside the current traffic situation. The gadgets used to gauge the space could even be little or enormous and simple or complex. the principal reason for this undertaking is to distinguish the voice warnings that we get from AI utilizing ARDUINO IDE, it's anything but a remaining portion about multi angles that we may neglect to stay as a main priority due to some criticalness. There are different varying kinds of sensors accessible to play out this. In the vast majority of the applications are minimal expense, more exactness of the gadgets and considered to the quick. By this REAL TIME VOICE COMMAND/ALERT WARNING SYSTEM different notices and data about the vehicle is given to the drivers or owners through voice cautions and voice command operations, which is not difficult to understand.

2. LITERATURE SURVEY

"An ultrasonic sensor is used to grow a character evidence structure for the vehicle. Electronic frameworks are used which include the use of the vehicle in order to help limit a vehicle accident. Using an embedded system, this research aims to empower a back vehicle crash evasion framework that detects the distance between two moving vehicles and alerts the driver when the individual is within close range of one." [1]

"The make of forward crash easing structure that ensures that every car has an equal playing ground regardless of make, age, model, or type, in the interest of overcoming impending peril one might experience all over town and for a minimal price. In this system,

using a microcontroller and ultrasonic sensor, the driver will be alerted when the person to whom the system refers is within danger range, when two vehicles are travelling in a comparable manner, in a similar direction. We assess distance by means of an ultrasound and an alert if enough preparation has taken place." [2]

"This article describes a 2-minute demonstration of a new innovation in automotive design that keeps 10 meters between two vehicles, so that there are no accidents or traffic issues. Frameworks are intended to prevent accidents due to the lack of knowledge about coupling distances (i.e., 5m) between vehicles. By utilizing LCD, the proposed framework displays the distance between one vehicle and another device to the driver, identifies any articles inside the surrounding distance, and considers the wellbeing of the driver while the vehicle is being turned around. As well as utilizing this framework in great cranes, which are largely utilized in harbor regions, the security is kept up in the enclosed areas by utilizing this configuration." [3]

"Depicts ultrasonic outwardly debilitated walking stay with the use of Arduino. As shown by WHO, 30 million social classes are forever outwardly debilitated and 285 billion social classes with vision incapacity. By seeing them, you can consider it they can't walk around the help of other. Using this outwardly weakened stick, an individual can walk even more certainly. This stick separates the thing before the individual and offer response to the customer either by vibrating or through request. Thusly, the individual can walk around no fear." [4]

"The usage of Arduino on ultrasonic outwardly hindered walking stick. 30 million people are everlastingly outwardly hindered and 285 billion are ostensibly debilitated, according to the WHO. Right when you consider them, you will recognize very well that without the aid of others they can't walk around show up at your target one necessities to demand orientation. During their regular day to day existences, they need to stand up to more challenges. The outwardly hindered handle is safer for a person to walk. The bar identifies the thing before the individual and offers the client a vibrational response or on demand. Furthermore, the individual can abandon pressure." [5]

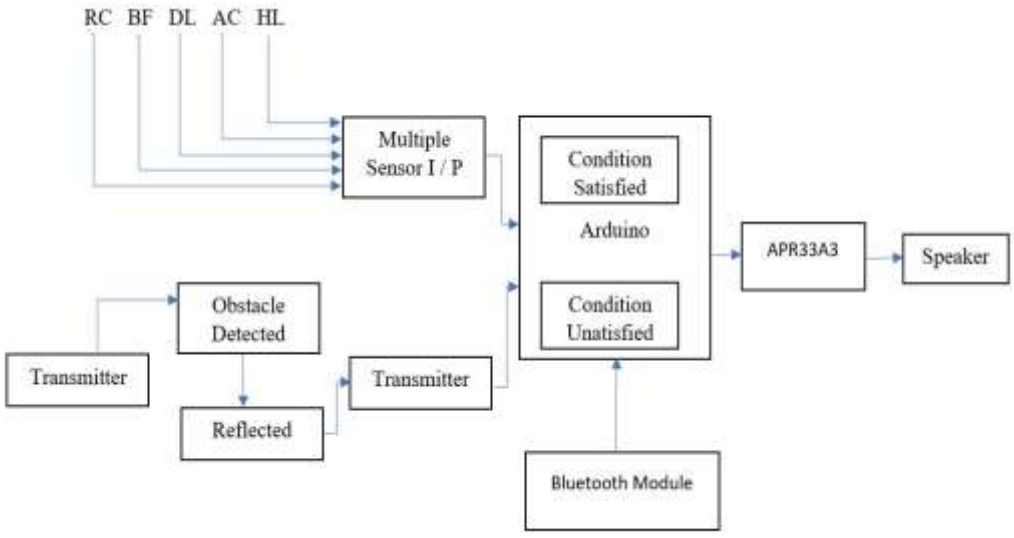
"The android has picked up the speech input and will send it to the Arduino Uno. The Arduino Uno's Bluetooth module recognised the sign and created an information sign to control the light and fan. The proposed framework aimed to control electrical machines with a user interface that was fairly straightforward to understand and set up. We demonstrated a Bluetooth range of up to 20 metres for controlling home devices." [6]

"The robot is limited by the application's catches or the client's verbal commands. The robot's progress is aided by two dc servo engines connected to a microcontroller on the collector side. The Bluetooth RF transmitter converts the orders from the application in to the advanced indications for a reasonable range (about 100 metres) to the robot. The information is deciphered either by recipient and sent to the microcontroller, which controls the DC engines and performs the necessary tasks." [7]

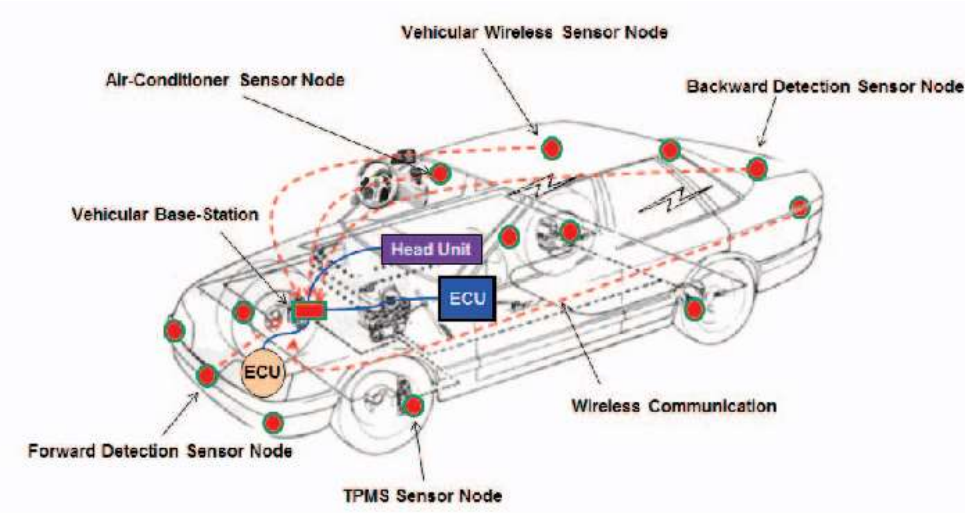
"With a focus on the development of an in-vehicle remote sensor network infrastructure. By utilising remote sensor networks applied to the in-vehicle framework, we show a framework design that will be used to comfort/wellness related administrations. This framework engineering refers to the use of in-car sensors and ECUs to develop an effective vehicle framework and reduce the increased vehicle weight (Electronics Control Unit). We show the framework design for a vehicular base station and a vehicular remote sensor hub that can be installed to the in-vehicle electronic segments in any order." [8]

3. BLOCK DIAGRAM

The above figure shows the flow chart of the proposed system. Introducing an innovative real time voice alert warning system for people to use advanced technology to know thing better. This combined with an ultrasonic sensor as well as multiple sensor inputs from various parts. "Our proposed project initially uses ultrasonic sensors to detect more obstacles using ultrasonic waves along with multiple sensors will receive signals from radiator coolant, brake fluid, door locks, AC working and other multiple inputs." [12] "The sensor inputs will transfer the data to the Arduino UNO. Then the Arduino UNO processes the data and determines whether the given condition inputs satisfied or unsatisfied. Then the Arduino UNO sends a voice alert warning depending on the conditions." [7]



4. VEHICLE SENSOR ARCHITECTURE



"The theoretical diagram of the in-vehicle remote sensor network framework is shown in Figure. A vehicular base-station and multiple vehicular remote sensor hubs comprise the in-vehicle remote sensor network architecture, which can be installed arbitrarily to in-vehicle electronic elements. They use remote communication to send and receive activity orders and vehicular sensor data in order to provide comfort and security-related services such as stopping assistance, tyre pressure monitoring system (TPMS), and forced air system framework. The ECU status data transmitted by ECUs via wired connection is received and screened by a base-station. Then, as indicated by ECU status data, a base-station delivers activity directives to vehicular remote sensor hubs. Sensor data from automobile remote sensor hubs is received and measured by a base station." [8]

5. HARDWARE IMPLEMENTATION

Arduino UNO

It is a microcontroller board dependent on ATmega328p. It has 20pins out of which 16 computerized info and yield pins and 6 simple information pins, 16MHZ Quartz gem, power jack, ICSP header and reset button contrast with PIC microcontroller, it is exceptionally simple to perform with Arduino since it is easy to understand, the operating voltage is 5V, and it may be easily connected to a computer through USB or powered by an AC-DC adapter or a battery.

APR33A3

It offers excellent recording and playback, with 11 minutes of sound at an 8 kHz sampling rate and a 16-cycle objective. The aPR33A series C2.x is particularly designed for basic key trigger; the client can reasonably record and playback the message for 1, 2, 4, or 8 voice message(s) by switching; it is suited in simple interfaces or when the length of a single message must be limited. [9]

Ultrasonic Sensors

Ultrasonic sensors and water sensors gather the information and send it progressively to the microcontroller. The microcontroller triggers the signal in the wake of preparing certain subtleties. The water sensor distinguishes water on the earth, and the circuits are worked by batteries.

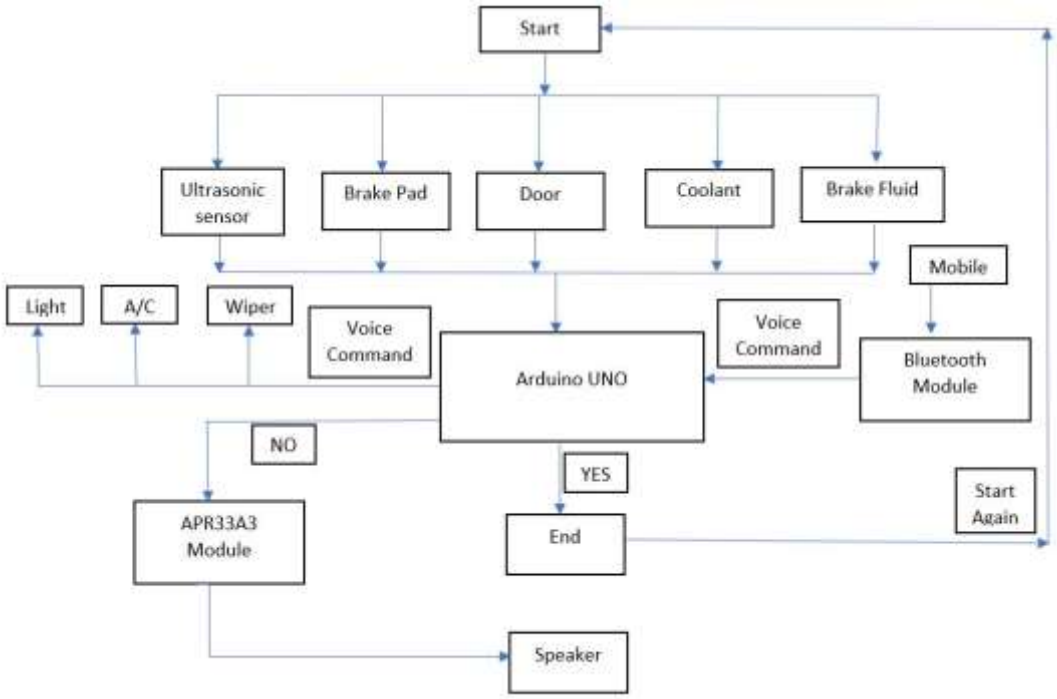
Water Level Sensor

"The number of substances that can flow is measured using level sensors. Fluids, slurries, granular matter, and powders are examples of such things. Estimating the level of a canal or lake should be achievable inside compartments. Such measurements can be used to determine the number of materials contained within a closed compartment or the flow of water in open channels." [10]

Audio Speakers

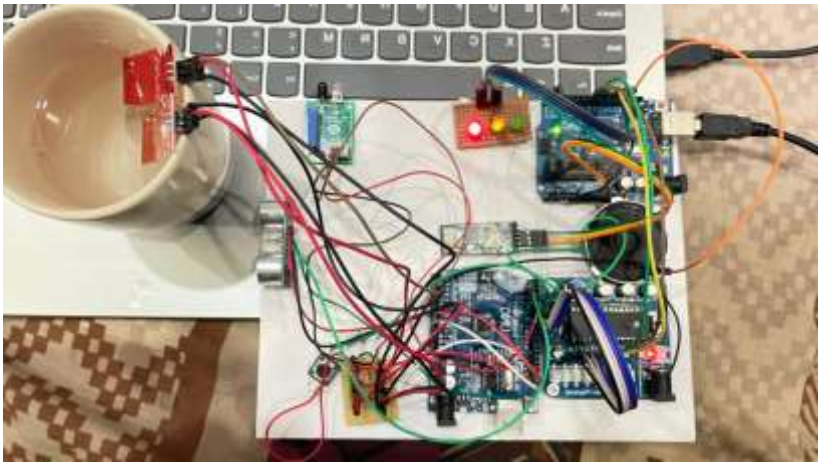
"Speakers, on the other hand, are often suitable for other sound sources, such as an MP3 player. Most such speakers include an inside intensifier, which necessitates the use of a force source, which can be a mains power supply (often via an AC connector), batteries, or a USB port." [11]

6. FLOW CHART



7. IMPLEMENTATION AND RESULTS

"The Arduino Uno microcontroller was utilized; it's a popular microcontroller that's easy to wire and programmed. It contains enough basic data ports to examine data from 17 different simple sensors at the same time, as well as a Serial Data (SDA) line and a Serial Clock (SCL) line. I2C sensors should benefit from both an SDA and a SCL line. The Arduino Uno may simultaneously examine data from three distinct basic sensors and two advanced sensors thanks to these data ports." [13] "The Arduino Uno also incorporates Serial Peripheral Interface (SPI) functionality." [14] Furthermore, "the board allows mechanized ports to be configured as either Serial Receive (RX) or Serial Transmit (TX) lines. These are required to properly interface with a Bluetooth module. Finally, because to its ubiquity, different hardware modules are proposed to function unambiguously with Arduino microcontrollers, including those required by the Sensor Interface, as well as Bluetooth modules and a variety of other sensors." [15]



The above shows the hardware implementation the detailed pins configuration is;

- From Ultrasonic VCC port to the Arduino 5v port.
- From Ultrasonic GND port to the Arduino GND port.
- From Ultrasonic TRIG port to the Arduino D3 port.
- From Ultrasonic ECHO port to the Arduino D2 port.
- From Water Level Sensor S port to the Arduino A1 & A2 port.
- From Water Level Sensor + port to the Arduino 5v port.
- From Water Level Sensor – port to the Arduino GND port.
- From IR sensor 5v port to the Arduino 5v port.
- From IR sensor GND port to the Arduino GND port.
- From IR Sensor O/P port to the Arduino D4 port.
- From Bluetooth Module port VCC to the Arduino 5v port.
- From Bluetooth Module GND port to the Arduino GND port.
- From Bluetooth Module TDX port to the Arduino RX port.
- From Arduino D11, D12 and D13 port to the LED port.
- From Arduino D5-D10 port to the APR33A3 Module Pin 1-8 port.

8. CONCLUSION AND FUTURE SCOPE

Generally, talk or voice request interface can be executed in various applications, voice request/prepared caution has been developed and viably made in this endeavor. The application uses steady data from an association of vehicles by use various sensors commitments to the Arduino board, the voice request system in this endeavor are perceived until 15 m of reach to impart the sign from the high-level cell to the vehicle machines through Bluetooth and alerts drivers to back and forth movement conditions of vehicles close by the approaching hazardous conditions up front. This application can be done in existing vehicles as prosperity feature at a negligible cost and could be chipped away at in the future with most broad ran equipment and could in like manner alert the driver. Subsequently, developing its applications farther where it very well may be carried out impeccably in old vehicles by getting warning in smartphone or in-car infotainment system with a committed application to guarantee about vehicle conditions like general help and significant parts change in customary stretches. Where we can see these sorts of administrations in high hand vehicles just, by this undertaking future work we can carry out those caring highlights and administrations to existing vehicles with high precision despite the fact that with minimal expense.

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