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Track Locator Using Voice Controller For Visually Impaired Person

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Abstract-A GPS Navigational sensor shaft for impaired people is used for blind people. For reducing that problem we are using the sensor shaft to avoiding that we are design this shaft .We are using some electrical components i.es transistors, resistors, sensors, gps, shaft, and battery. By using shaft the blind people can walk. While walking, the shaft can detect the obstackle and it gives the information about the direction of the path. And it also gives the information of the bus numbers and places. The information is receive from the reception which is placed in the shaft and the transmitter should transfer the information. If any obstackle is there it will detects and gives the buzzer signal.

Keywords: GPS, Battery, Shaft, Sensors, Resistors, Buzzer.

I. INTRODUCTION

A. GPS

Whether you are using a very economical handheld GPS receiver, an expensive marine chart plotter, or an integrated flight management system on an airliner, many of the principles of navigation are similar. Different receivers have different keystrokes and menu selections to accomplish certain tasks. This is certainly true from manufacture to manufacture, but this is even true between different receivers made by the same manufacture Another issue is where to get waypoints. Before you can navigate with a GPS. It is necessary to describe where you want to go to the GPS receiver. There are a variety of methods for getting these coordinates. Some are as easy as pointing and clicking on a mapping GPS. There are also ways to get coordinates using a computer including Internet sites. Maps and charts are also useful for finding coordinates. Using a road map for flying would obviously be improper. However, a road map might be ideal for using with a basic GPS for a canoe trip. A proper topographic map may be better in such a case. However, the time and expense of 9 acquiring such a map may be overkill when a road map or free map from the ranger station might be adequate.

B. Characteristics of GPS

It is a global navigation satellite system that provides geolocation and time information to a GPS receiver anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.

a). *Properties of the System*

The hardware and software parts which we are using for making the system are ultrasonic- sensor, IR sensor, Memory registers, audio speakers, c language for programming. These are the parts of hardware and software. By using this board the person who is blind can travel one place to another.

b). Objective

A GPS navigation device is a device that accurately calculates geographical location by receiving information from GPS satellite. Initially it was used by the United States military, but now most receivers are in automobiles and Smartphone.

The Global Positing System (GPS) is a satellite based navigation system made up of a network of a minimum of 24, but currently 30, satellites placed into orbit by the department of defense. Military action was the original intent for GPS, but in the 1980s, the U.S. government decided to allow the GPS program to be used by civilians. The satellite data is free and works anywhere in the world.

GPS devices may be able to indicate:

- The roads or paths available,
- Traffic congestion and alternative routes,
- Roads or paths that might be taken to get to the destination,
- If some roads are busy (now or historically) the best route to take,
- The location of food, banks, hotels, fuel, airports or other places of interests,
- The shortest route between the two locations,
- The different options to drive on highway or back roads.

c). Linear Integrated Circuit

- *Description*

The UTC 78XX family is monolithic fixed voltage regulator integrated circuit. They are suitable for applications that required supply current up to 1 A.

- *Features*

- Output current up to 1.5 A.
- Fixed output voltage of 5V, 6V, 8V, 9V, 10V, 12V, 15V ,18V and 24V available
- Thermal overload shutdown protection.
- Short circuit current limiting.
- Output transistor SOA protection.

Test Circuit

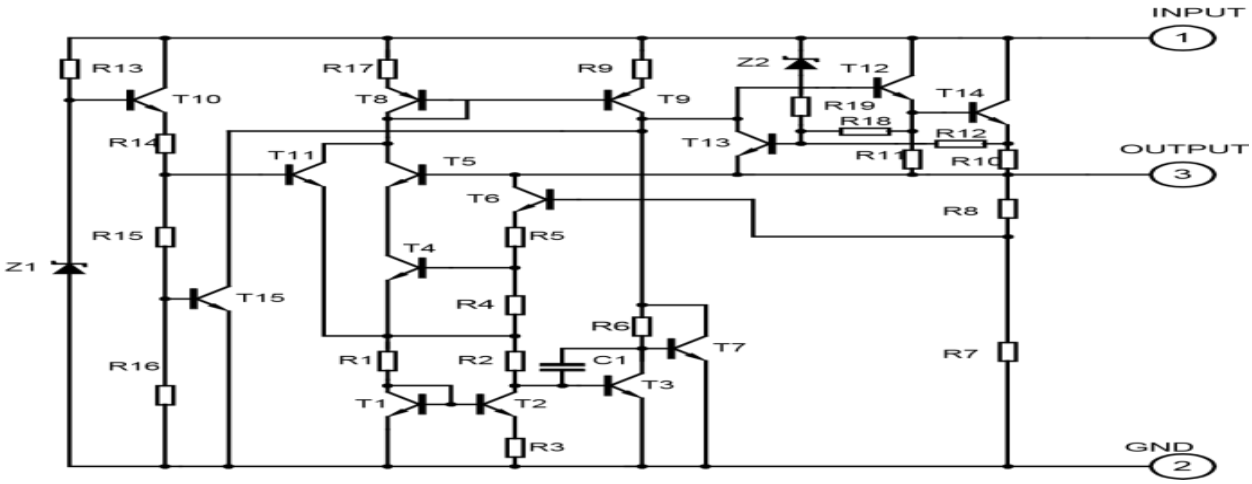

Fig. (1) Test Circuit.

d). UTC NE555

- *Single Timer*
- *Description*

The UTC NE555 is a highly stable timer integrated circuit. It can be operated in Astable mode and Monostable mode. With monostable operation, the time delay is controlled by one external and one capacitor. With a stable operation, the frequency and duty cycle are accurately controlled with two external resistors and one capacitor.

- *Features*

- High current driver capability (=200mA) Adjustable duty cycle
- Timing from µSec to Hours
- Turn off time less than 2µSec.

e). *Ultrasonic Sensor*

The Parallax (PING) ultrasonic distance sensor provides precise, non-contact distance measurements from about 2 cm (0.8 inches) to 3 meters (3.3 yards). It is very easy to Connect to microcontrollers such as the BASIC Stamp®, SX or Propeller chip, requiring only one I/O pin.

The (PING) sensor works by transmitting an ultrasonic (well above human hearing range) burst and providing an output pulse that corresponds to the time required for the burst echo to return to the sensor. By measuring the echo pulse width, the distance to target can easily be calculated.

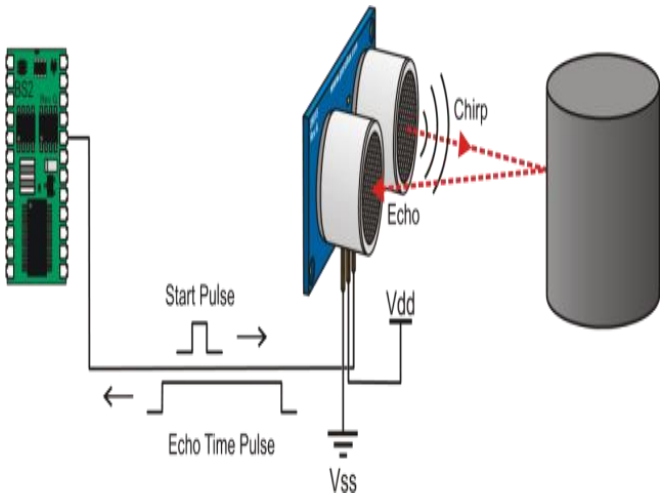

Fig. (2)Diagram of Ultra Sonic Sensor

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- *Features*
  - Range: 2 cm to 3 m (0.8 in to 3.3 yd)
  - Burst indicator LED shows sensor activity
  - Bidirectional TTL pulse interface on a single I/O pin can communicate with 5 V
  - TTL or 3.3 V CMOS microcontrollers y Input trigger: positive TTL pulse, 2 µs min, 5 µs typ.
  - Echo pulse: positive TTL pulse, 115 µs
  - minimum to 18.5 ms maximum.
  - RoHS Compliant

- *Key Specifications*
  - y Supply voltage: +5 VDC y Supply current: 30 mA typ; 35 mA max y Communication: Positive TTL pulse y Package: 3-pin SIP, 0.1" spacing
  - (ground, power, signal) y Operating temperature: 0 – 70° C. y Size: 22 mm H x 46 mm W x 16 mm

- *Communication Protocol*

The PING))) sensor detects objects by emitting a short ultrasonic burst and then "listening" for the echo. Under control of a host microcontroller (trigger pulse), the sensor emits a short 40 kHz (ultrasonic) burst. This burst travels through the air, hits an object and then bounces back to the sensor. The PING))) sensor provides an output pulse to the host that will terminate when the echo is detected, hence the width of this pulse corresponds to the distance to the target.

II. LITERATURE SURVEY

A. *Channel Allocation With Recovery Strategy In Wireless Networks*

With the increasing popularity of wireless communications systems, customers are expecting the same level of service, reliability and performance from the wireless communications systems as the traditional wire-line networks. Due to the dynamic environment, such as the roaming of mobile subscribers, maintaining a high radio frequency (RF) availability is one of the most challenging aspects in wireless networks. RF availability depends on natural environment, infrastructure, and subscriber handsets.

In this paper, our investigation focuses on RF channel failure recovery in the infrastructure, more specifically, in remote base site. There are many factors that cause RF failure, such as base repeater power failure, base repeater RF amplifier failure, etc. The main focus of this investigation is not on the causes of the RF failure. Instead, it is on the recovery method in the radio resource management of the base site, which maintains the ongoing calls.

B. *Sensor – Based Dead Rockening For Land Vehicle Navigation System*

walking speed can be measured through counting the steps and assess the step length from which the distance traveled is estimated. By coupling the distance with the azimuth, navigation through the pedestrian dead reckoning is considered. This research provides a possible seamless pedestrian navigation solution which can be applied to a wide range of areas where the global navigation satellite system.

GPS has gained widespread acceptance for personal, commercial, and government applications requiring location awareness. More than 24 satellites orbit the earth in six orbital planes to provide visibility to four or more satellites from any location on Earth. Four satellites are required to compute three dimensional position fixes. The visibility to the satellites in hindered so continuous navigation for tracking is not guaranteed.

SBAS. Today's GPS receivers support satellite based augmentation systems (SBAS) such as the Wide Area Augmentation System (WAAS) in North America and the European Geostationary Navigation Overlay Service (EGNOS) in Europe.

C. *Review Paper on Navigation System for Visually Impaired People*

Visually challenged persons face constraints in independent mobility and navigation. Mobility means the possibility of liberally moving, without support of any supplementary person, at home and unfamiliar scenarios. People with visual impairment tackle enormous limitations in terms of mobility. A system which guide or assist people with vision loss, ranging from partially sight to totally blind, by means of sound commands is referred as Navigation assistance for visually impaired (NAVI). Many researches are being conducted to build navigation system for blind people. Most of these technologies have limitations as its challenge involves accuracy, usability, interoperability, coverage which is not easy to overcome with current technology for both indoor and outdoor navigation.

Certain obstacles (e.g. protruding window panes, raised platforms, a moving vehicle, horizontal bars) cannot be detected till they are dangerously close to the person. Even dog guides are very capable to guide these persons but they are unable to detect potentially hazardous obstacles at head level. Guide dog service stage is on average 6 years and requires regular dog up-keeping expenditure and lifestyle changes.

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Navigation system generally comprised either an indoor or outdoor positioning system or both, for detecting the position of consumer. Most of the outdoor navigation systems employ GPS for positioning. Unfortunately, GPS can only be used outside of buildings because the employed radio signals cannot penetrate solid walls.

D. Design And Development of GPS-GSM Based Tracking System With Google Map Based Monitering

This system has Global Positioning System (GPS) which will receive the coordinates from the satellites among other critical information. Tracking system is very important in modern world. This can be useful in soldier monitoring, tracking of the theft vehicle and various other applications. The system is microcontroller based that consists of a global positioning system (GPS) and global system for mobile communication (GSM). This project uses only one GPS device and a two way communication process is achieved using a GSM modem. GSM modem, provided with a SIM card uses the same communication process as we are using in regular phone.

This system is user friendly, easily installable, easily accessible and can be used for various other purposes. After installation system will locate target by the use of a Web application (HTML based application) in Google map. The system allows to track the target anytime and anywhere in any weather conditions.

E. Gps Navigation System for Challenging Close-Proximity Formation-Flight

Charmed by its performance and maturity, future formation-flying missions able to track navigation signals from a Global Navigation Satellite System (GNSS) will undoubtedly foresee the utilization of such a navigation system to support their objectives and ensure the safety of the mission.

After a brief recall of the PRISMA GPS-navigation system, the paper describes the main issues which have been encountered during the mission. The main options available to improve the common visibility are then described and the retained solution is presented, consisting in using two independent GPS receivers covering simultaneously two different hemispheres instead of only one. Minor adaptions of the PRISMA flight software would be necessary to fuse the measurements coming from the different receivers. The architecture presented in the paper is finally validated by highly realistic simulations of typical closeproximity scenarios (v-bar docking and inspection flight) during which the spacecraft are intensively maneuvering and are subject to large variations of attitude.

F. Low Cost Sensor Based Obstacle Detection and Description

The operation of a mobile robot in a unstructured environment is only possible, if the robot has ability to cope with changes in the environment. These changes, which include the presence of new obstacles, can be detected using sensorial systems. In most cases a trajectory planner, using some a priori description of the robot's workspace, generates feasible paths to execute the desired missions. Using sensorial information, it is possible to improve the mobile robot capabilities, allowing a realtime reaction to avoid the collision and/or to re-plan the trajectory as proposed by Chatila.

Normally sonar sensors are chosen to acquire information around the mobile robot. Although sonar sensors present several problems which are related with the limited information that can be obtained from raw data. The choice was based mainly on their low cost, the ease of their use and the relatively low computational power required.

The direction of motion is used to explore the sensors' activity. Robot's activity serves two purposes: the rst is to determine which region is of concern, because we don't need to care about obstacles located in regions where we are not going through, and using this information we can decide which set of sensors should be scanned. This has implication on the time processing since scanning more sensors is time costly both in data acquisition and also in data processing.

III. ULTRASONIC RANGING MODULE HC - SR04

A. Product Features

Ultrasonic ranging module HC - SR04 provides 2cm - 400cm non-contact measurement function, the ranging accuracy can reach to 3mm. The modules include ultrasonic transmitters, receiver and control circuit. The basic principle of work .

- Using IO trigger for at least 10us high level signal,
- The Module automatically sends eight 40 kHz and detect whether there is a pulse signal back.
- IF the signal back, through high level time of high output IO duration is the time from sending ultrasonic to returning.
- Test distance = (high level time × velocity of sound (340M/S)

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B. Wire Connecting Direct as Following

- 5V Supply
- Trigger Pulse Input
- Echo Pulse Output
- 0V Ground

C. Electric Parameter

Fig. (3) Ultrasonic Sensor.

D. Timing Diagram

The Timing diagram is shown below. You only need to supply a short 10uS pulse to the trigger input to start the ranging, and then the module will send out an 8 cycle burst of ultrasound at 40 kHz and raise its echo. The Echo is a distance object that is pulse width and the range in proportion You can calculate the range through the time interval between sending trigger signal and receiving echo signal. Formula: uS / 58 = centimetre or us / 148 =inch; or: the range = high level time * velocity (340M/S) / 2; we suggest to use over 60ms measurement cycle, in order to prevent trigger signal to the echo signal.

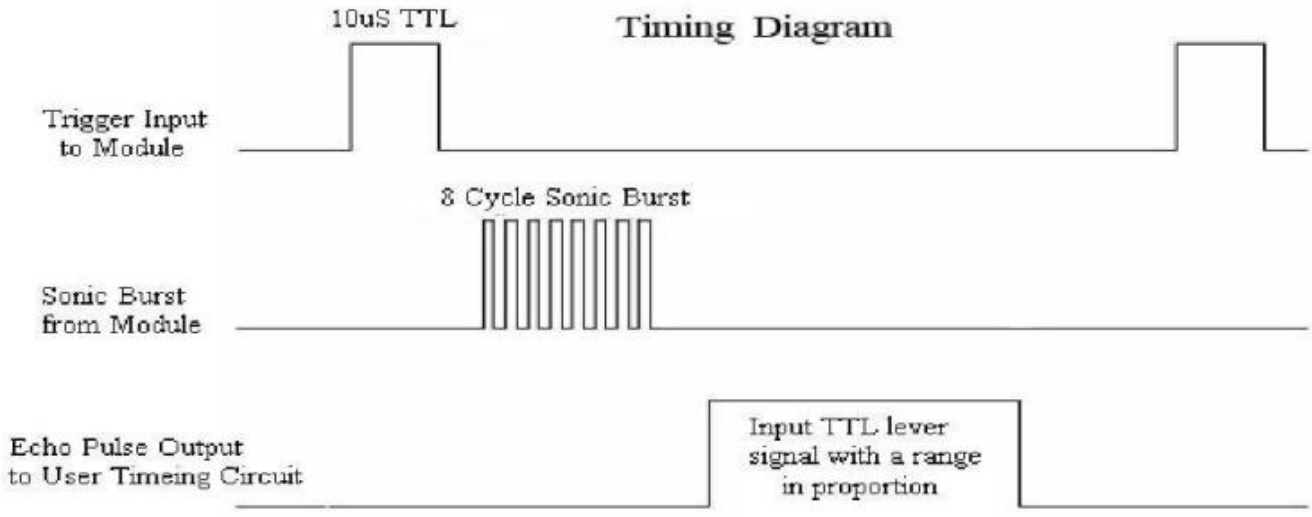

Fig. (4) Timing Diagram

E. Construction and Operational Principle

As shown in the diagram of an ultrasonic sensor (Fig. 2), a multiple vibrator is fixed elastically to the base. This multiple vibrator is a combination of a resonator and a vibrator which is composed of a metal sheet and a piezoelectric ceramics sheet. The resonator is conical in order to efficiently radiate the ultrasonic waves generated by the vibration and also in order to effectively concentrate the ultrasonic waves at the central part of the vibrator.

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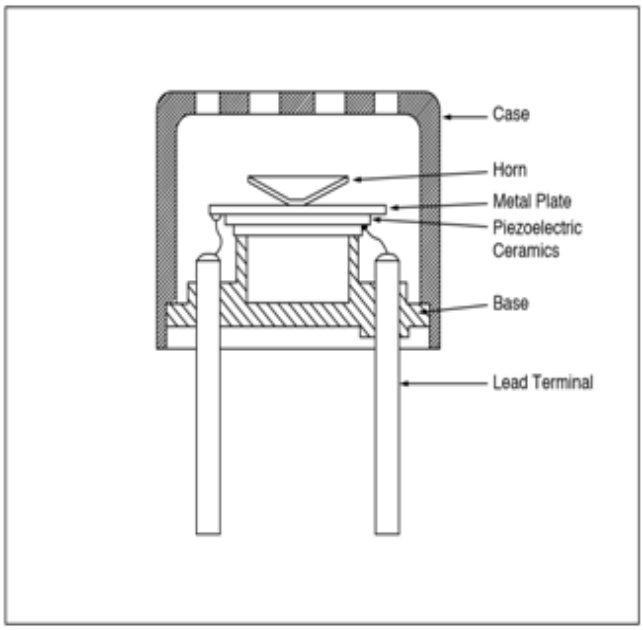

Fig. (5) Open Circuit Type Ultrasonic Sensor

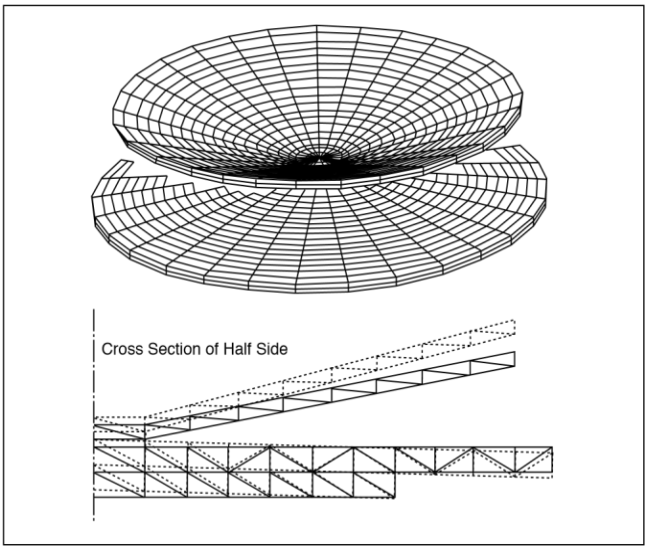

Fig. (6) Simulation of Vibration

IV. OVERVIEW

A. *Theretical*

The subject of the product that we have been creating is a mix of Mobile Arrangements and Leveraging Geo information and Maps to sort out the world's data and to make it generally open and valuable to a more extensive and better degree. Our task is a portable application that permits the client to download and introduce road maps of a specific city, state on the other hand nation relying upon his present needs from a webpage .The downloaded maps can be scanned disconnected from the net by the client and the client can download new maps or redesign the current ones at whatever point he feels the need to do as such.

B. *Working Principle*

The downloaded maps will be changing giving the client the vibe as on the off chance that he is scanning the maps on the web. The client's present area will be appeared on the guide utilizing the cell tower data that is given by all the cell system suppliers subsequently making the application utilization totally free of network access. The downloaded maps won't be similar to some picture of a road delineate like a completely useful and dynamic guide that permits the client to hunt down a specific spot such as some shopping center, or some spot for visitor enthusiasm by just talking the name of the spot which will be prepared by the discourse acknowledgment framework which is an extraordinary component of our application exceptionally valuable for individuals who don't know how to perused or write in English.

C. *Frame Work*

The outcome created by the application will be a most limited by street course to the spot which will be highlighted on the guide, the separation and the assessment expense of coming to there by a taxicab or a transport administration, any transportation implies like a transport stand or a taxi stand in the nearby region of the clients current area will be highlighted in the guide. The cursor on the guide demonstrating the client's present area will move alongside the client as he voyages therefore giving him continuous data of his area.

The downloaded maps won't be similar to some picture of a road delineate like a completely useful and dynamic guide that permits the client to hunt down a specific spot such as some shopping centre, or some spot for visitor enthusiasm by just talking the name of the spot which will be prepared by the discourse acknowledgment framework which is an extraordinary component of our application exceptionally valuable for individuals who don't know how to perused.

D. *Presentation*

The inspiration driving our undertaking is in finished synchronization with the topic that is to sort out the world's data and make it all around open and valuable. The application created will join versatile arrangements and geo-mapping to give basic enlightening dynamic maps to visitors , explorers , climbers or any individual attempting to look for data about some place that is obscure to him. The application will be able to do decreasing the vacationer's dissatisfaction and anxiety, as it were, as he will have all the

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data he needs on the palm of his hands that is on his cell phone. The best part is that the data will arrive with him all the time without obliging him to have any access to any kind of web access, he should do nothing more than to download and introduce the maps of the spot/places he will be going to before leaving and the application will deal with the rest. This administration will work in zones having extremely week cell systems like provincial or remote places as everything it needs is an exceptionally insignificant gps/cdma association with get the cell information show for finding the client's present area.

E. Design

As the greater part of the information that is the maps and the data identified with creating mapping applications is as of now accessible so the advancement of the application won't cost much as the just work that should be done is sorting out the accessible data legitimately. This application will plainly expand the availability of the data as it permits mapping administrations to be utilized by individuals who don't have 24x7 access to web or in nations where the web administrations gave by the cell administration suppliers is terrible or questionable.The application will without a doubt be of incredible use to explorers and individuals going by provincial or remote territories furthermore, all things considered to the rustic populace itself. The cherry on the cake is that the quality and substance of the administration would be same as though the client was getting to the maps web giving him all out consumer loyalty.

F. Related Works

Utilizing of Geo information and Mapping Technologies in Mobile gadgets has been existent for a significant number of years now. The vast majority of the mapping innovations we have now are Online or Global Situating System (GPS) based, similar to the Nokia Maps and Google Maps which are the market pioneers in mapping advancements and versatile route framework now. Changing over Route to Offline and making it more easy to understand and available to a more extensive scope of individuals with constrained setup cell phones (not just the top of the line GPS empowered.

G. Use Cases

By and large, any individual who voyages or adores to visit new places can utilize our item. For the most part voyagers are the general population who can utilize it, as it finds close-by visitors spots by finding their position and gives data how to arrive. It even can be utilized by the neighbourhood individuals who need the fundamental data like separation between two spots, reasonable of the taxi from one spot to other. Its disconnected from the net mode capacity builds its interest in the area of the general population who can't access web effectively. Point by point portrayal about the surely understood spots and adjacent spots to those spots is additionally an imperative element which will empower the general population to discover places and about them. This application can be effortlessly introduced on any java empowered mixed media telephone furthermore, its guide must be downloaded from the website of it .Download the guide of whichever city, range or nation you need and spare it in its information organizer. Furthermore, begin utilizing it. It has a voice interface that follows up on the voice charges given to it, you simply talk the spot you need to inquiry and you will have it on the screen with the required points of interest.

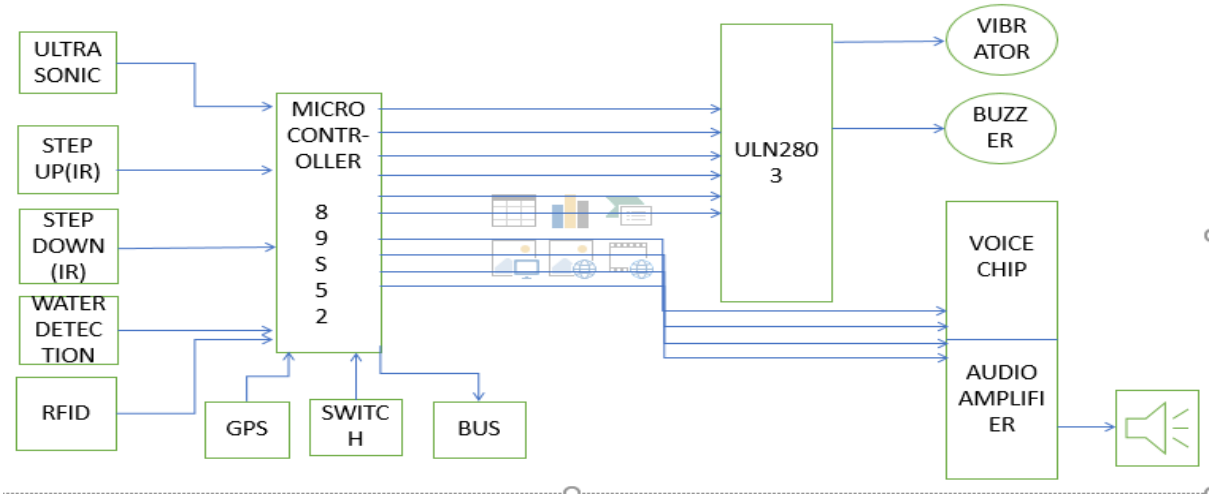

Fig. (7) Block Diagram of Sensor Shaft.

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V. RESULTS ANALYSIS AND CONCLUSION

A. *Portability*

As this is using so as to programme is worked java applications for cell phones and makes utilization of logged off mapping innovation, it offers incredible conveyability. Clients can utilize it in their cellphones without accessing the web. Voyagers and travelers will be the most profited ones.

a). Ease of Updation

This product can be effortlessly redesigned against a geographic change on the grounds that the product will be made for specific regions in pieces, so any adjustment in that specific range is anything but difficult to change. Additionally downloading will be simple as the client needs to just download the product for his specific required territory. The redesigned renditions will be promptly accessible in the site which can be effectively downloaded or acquired.

b). Secure and Reliable Application

As it is disconnected from the net cell phone programming, it is actually secure from the dangers of the web (infections and Trojans) and the abnormal state of subtle elements accommodated the required range furthermore, its simplicity of availability makes it extremely dependable.

c). Frame Work Design Application

The Design Procedure of our versatile application which is a disconnected from the net geo-mapping programming which makes utilization of voice acknowledgment innovation for info is depicted beneath.

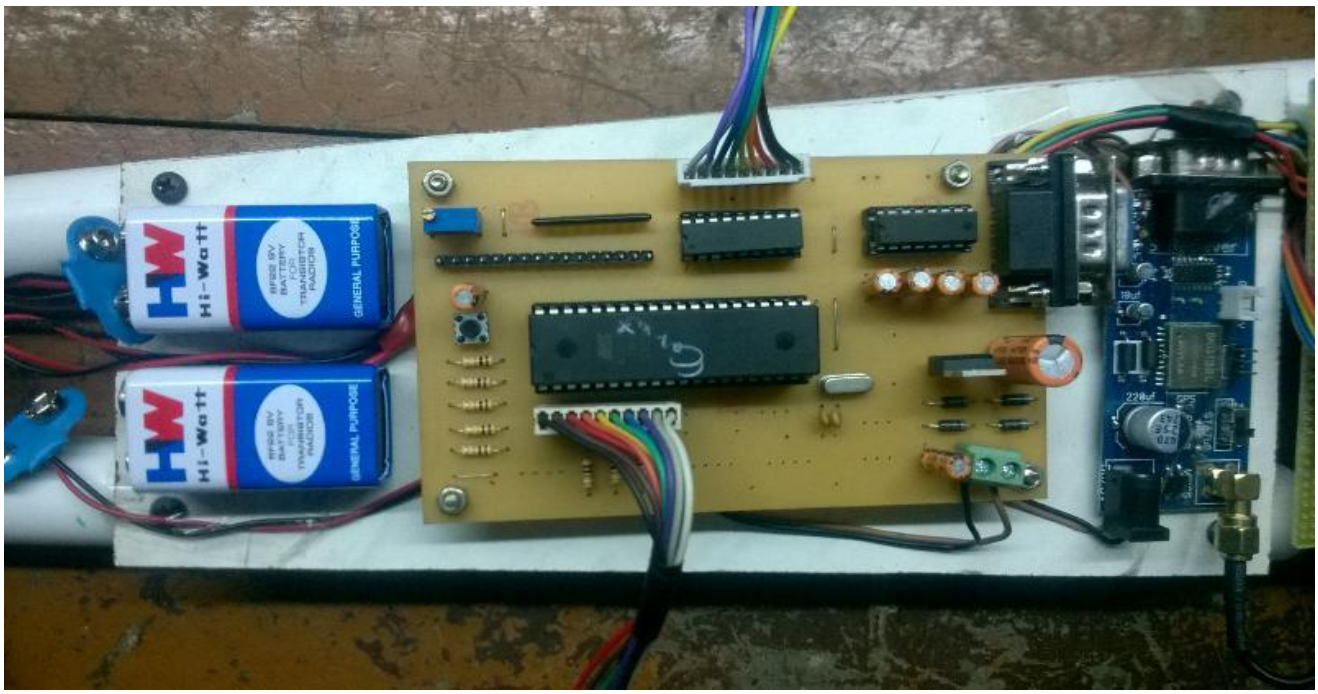

Fig.(8) Output Part 1

d). Client Input Interference

Our product will utilize an easy to understand voice acknowledgment innovation separated from the content information interface through which the client can enter the name of the territory to be sought in the mapping programming. Voice acknowledgment info framework .This product will utilize a speaker free voice acknowledgment framework through which the client can enter the region name to be looked. The framework will change over the word talked by the client to the content frame and will utilize it for seeking the required destination. Let us see quickly how this framework will be composed.

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Fig.(9)Output part 2

e). Composition

Firstly, we will utilize the hashing system to store the names of the considerable number of spots that can be situated in the guide in a hash table. By utilizing a hash capacity we will get a remarkable key for every spot on the guide. This key will be utilized for looking and referencing. Next are the procedures of changing over the discourse to information. The simple discourse signal gotten by the versatile sound data.

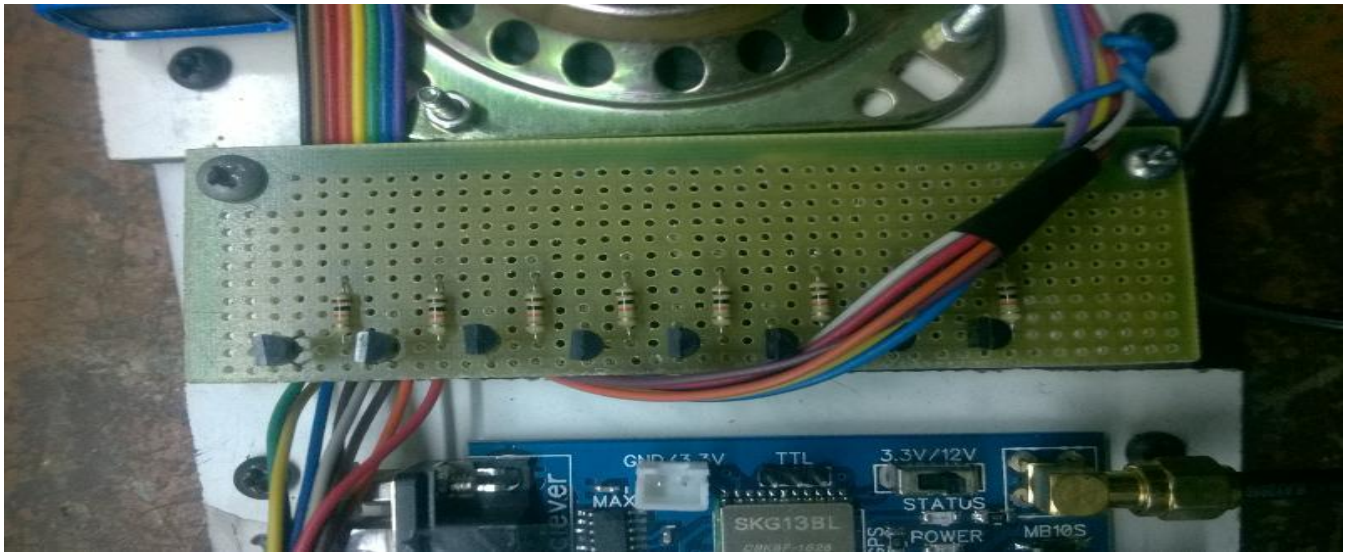

Fig .(10)Output Part 3

f). Simplicity and Usage

This is one of the fundamental elements of this geo-mapping programming. The utilization of voice innovation joined with a cell phone framework will furnish the general clients with awesome straightforwardness and usability. Indeed, even innovatively feeble clients can utilize this product as the orders are given through voice and downloading this product is straightforward.

Fig.(11)Final Output.

VI. CONTAINS REFERENCE

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