VOICE RECOGNITION AND VOICE GUIDANCE BASED GPS TURN-BY-TURN NAVIGATOR FOR BLIND WITH ULTRASONIC OBSTACLE AVOIDANCE

The main aim of the project is to design a navigator system for the blind based on GPS, voice recognition and ultrasonic sensor for obstacle detection. This advantage of this device is voice based announcement for easy navigation i.e. the user gets the voice which pronounces the directions he need to move to reach his destination. Here instead of the alerting through alarm, the user can directly hear the location recorded by the user himself using voice recognition system.

GPS is the acronym for Global Positioning System. It is employed to find the position where the user is located on the earth. This information is provided by the GPS receiver with the help of the data it receives from the satellites.

Ultrasonic Sensor senses the obstacles in its path by continuously transmitting the ultrasonic waves. If any obstacle comes in its vicinity then the ultrasonic waves get reflected back to the system. The ultrasonic receiver senses these ultrasonic waves and this information are passed to the Microcontroller. The microcontroller gives alerts through voice message.

The controlling device of the whole system is a Microcontroller. The user needs to give the destination location through voice to voice recognition system which is interfaced to Microcontroller. The Microcontroller checks the destination given with already stored locations and gives the navigation directions of destination with the help of GPS data, through voice circuit interfaced to the Microcontroller. Also, this system is equipped with an ultrasonic sensor, which is capable of detecting obstacles in its path and controller alerts the user through voice circuit in case of any obstacles, which helps the user to avoid obstacles in his way. This system is very

helpful or blind people. The Microcontroller is programmed using Embedded C language.

The main features of this project are:

1. Voice based destination selection.
2. Voice based alerts.
3. Obstacle detection.
4. Voice based navigation system.

This project provides learning's on the following advancements:

1. Characteristics of GPS.
2. Voice recognition module.
3. Interfacing voice recognition module to Microcontroller.
4. Voice circuit.
5. Interfacing voice circuit to Microcontroller.
6. Embedded C programming.
7. PCB designing.

The major building blocks of this project are:

1. Regulated Power Supply
2. GPS receiver.
3. Microcontroller.
4. Voice recognition system.
5. Voice circuit.
6. Crystal oscillator.
7. LED indicators.
8. LCD with driver.
9. Ultrasonic sensor.

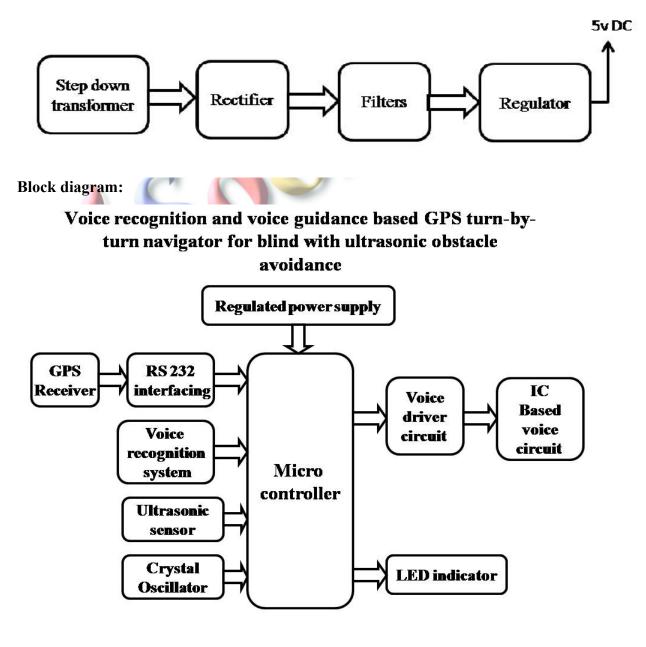*www.mycollegeproject.com*   *Ph: +91 9490219339, 040-23731030*
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Software's used:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

Regulated Power Supply:

5v DC

Step down transformer → Rectifier → Filters → Regulator →

Block diagram:

Voice recognition and voice guidance based GPS turn-by-turn navigator for blind with ultrasonic obstacle avoidance

Regulated power supply

GPS Receiver → RS 232 interfacing → Micro controller

Voice recognition system → Micro controller

Ultrasonic sensor → Micro controller

Crystal Oscillator → Micro controller

Micro controller → Voice driver circuit → IC Based voice circuit

Micro controller → LED indicator

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