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BLIND AID STICK USING OFFLINE GPS, OBSTACLE DETECTION, VOICE BASED CO-OPERATION VIA GPS ALONG WITH PANIC ALERT SYSTEM

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Abstract: This Research proposes a new thought developing an intelligent stick equipped with offline GPS navigation system will provide voice assistance to desired location. We have used ultrasonic range finder circuit for hurdle detection which detect the obstacles in path and gives information about their location using offline GPS coordinates. The combination of ultrasonic sensors and offline GPS will detect the obstacles and determine the position. Also for proper navigation we had used speaker and vibrators to navigate the user in desired direction of his destination location.

Keywords: MSP430, offline GPS, Ultrasonic Sensor, Embedded System, APR.

I INTRODUCTION

Vision is the most essential senses as most of the information persons acquires from the environment is via vision. WHO reported that in August 2014, around 285 million people hurt from deficiency of vision .It is estimated universal: 39 million are sightless and 246 million have a reduced amount of vision. Around 90% of the visually impaired living in low income situations. 82% of persons living with impaired vision are around 50 and above. Worldwide, uncorrected refractive faults are the main cause of sensible and severe visual impairment; cataract is the foremost cause of sightlessness in middle- and low-income countries. The number of persons visually lessened from infectious illnesses has reduced in the past 20 years rendering to universal estimates work. 80% of the visual damages can be preserved. The basic difficulty which every sightless person faces is with respect to commutation and direction finding in daily life. The most basic tools for them are walking stick and guide dogs and also on compassion of fellow commuters. The most commonly used tool is still the blind stick .It suffers from drawbacks like lots of practice, range of motion, less reliability in terms of dynamic hurdles and also range detection. We will try to modify this cane with electronic components and sensors. The ever growing technology and with recent developments can help in artificial and accurate navigation.

Our model uses offline GPS technology. In addition we have used ultrasonic sensors which provide assistance in obstacle recognition and on barrier recognition will ring the speaker for different durations to point out different distances. It is based on the usage of new technologies to recover visually impaired person's mobility. Our investigation focuses on hurdle detection and finding location in order to decrease navigation difficulties for visually impaired persons.

II MOTIVATION

Out of all sense organs that people have, eighty fifth of the physical info record from setting return through "Eyes". Almost thirty seven million of total populace is visually impaired, and hence purge one among the premier fundamental and instructive quality "Eyes". We have a tendency to distinguished that conventional visually impaired sticks utilized by blinds have beyond any doubt constraints like police work pot-gaps, stairs, inaccessible items, higher than knee deterrents and so on. At steady time by and by available gadget prepared sticks in Bharat e frightfully expensive and excessively expensive by Indian people. We have a tendency to took a lot of contributions from impair people and concocted the possibility of building up a conservative gadget prepared stick fit for supporting incognizant in regards to explore basically. Our last style is kind of less expensive than existing options and cautions the individual by means of vibrating and audile signs.

III LITERATURE REVIEW

The audit is related by the examination theme has been considered for most recent 10 years. Daze Aid Stick has been a well known undertaking with steady upgrades and adjustments. As of now the economically accessible of visually impaired stick are not that famous because of surprising expense and absence of precision. Sub frameworks are associated with microcontroller which executes and organizes the tasks. The framework is minimal effort. The precision is high. Yet, the plan many-sided quality is high. Comparable examination for unsighted utilizations beat resound procedure for gives a notice sound when identifying the deterrents. This procedure is utilized by the United States military for finding the submarines. They beats are of ultrasound extend from 21 KHz to 50 KHz when hit the hard surface they have a tendency to create reverberate, But the power prerequisite is high. Another examination done by (Sung, Young, Kim and IN, 2001) .Keeping as a primary concern the usability and basic plan with ease we have proposed our model. We have join android application for simplicity of client. The ringer span and stick vibrations, keep the visually impaired individual refreshed constantly. The Google maps based sound route is exceptionally exact and dependable, yet can't be utilized as a part of spots like shut structures for route, however impediment will be recognized. We can likewise spare areas which are visit like office, transport stops, home. Thus, our model is shabby, simple to utilize and has a basic outline with an extent of join new advances. Throughout the most recent decades, inquire about has been directed for new gadgets to plan a decent and dependable framework for outwardly debilitated people to identify obstructions and caution them at threat places. There are a few frameworks which has a few insufficiencies.

IV PROBLEM STATEMENT

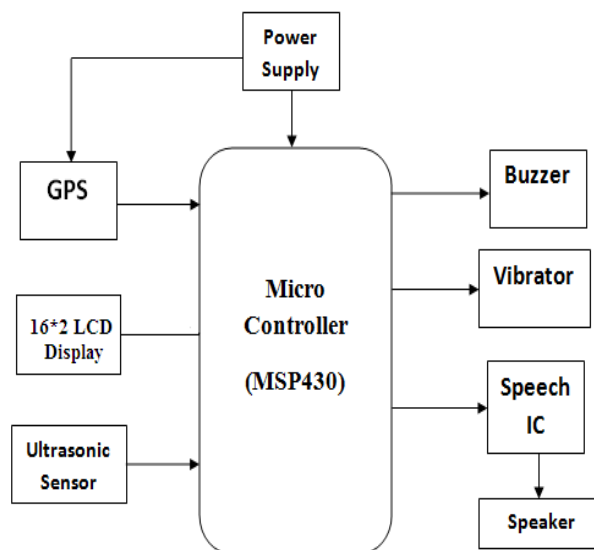
Visually disabled people experience difficulty to interface and feel their condition. They have little contact with encompassing. Physical development is a test for outwardly debilitated people, since it can wind up precarious to recognize where he is, and how to get wh ere he needs to travel between different places. To explore obscure spots he will bring a located relative or his companion for help. Over portion of the lawfully dazzle individuals on the planet are jobless. Since restricted on the sorts of occupations they can do. They have a less level of work. They are subject to their families for development and money related help. Their versatility contradicts them from relating with individuals and social exercises. In the past various frameworks are outlined with impediments without a strong comprehension of the non-visual understanding. A portion of the frameworks are just for indoor heading finding, and has no obstacle recognition and characterizing area include in open air

condition. There is nobody framework existing to coordinate indoor, open air and furthermore decide area and position to effortlessly help the outwardly debilitated people. The accessible frameworks are extremely costly; a portion of the frameworks are exceptionally profound reason physical shortcoming and expected preparing to utilize.

V OBJECTIVES

The key goal is to assist daze individuals with the assistance of propel innovation to explore with straightforwardness. In this expertise controlled world, where individuals attempt to alive exclusively. This venture proposes a disconnected GPS and ultrasonic sensor based stick for daze individuals to help the increase individual freedom. Since this is practical and not cumbersome one can make utilization of it effectively.

VI BLOCK DIAGRAM AND WORKING



In the above piece outline, first square contains control supply. As we realize that in each electronic circuit control supply is basic. The correct activity of every single module, the correct measure of voltage and current to be given to it. On the off chance that the power outperform its limit, it can be not kidding. The following is the circuit chart of energy supply which gives yield of 5V, as just that much is required for microcontroller. It is an imaginative thought of shrewd stick which has mostly two highlights the first is "Deterrent discovery" and the second one is "Giving precise area and position through disconnected GPS". It will give security and support to outwardly weakened Persons. The ultrasonic sensors in the stick will detect encompassing and will distinguish the snags and offer reaction to bell and vibrator to modify the way. The vibration is a better than average component for high listening people if there should be an occurrence of not tuning in to the blare sound. This stick will offer the right area and position to the visually impaired individual through disconnected GPS collector. A

particular region will be customized for these people which they use in everyday life. The critical element of our venture is that a man can shift the disconnected GPS arranges in the programming and places names in discourse IC wherever on the planet.

VII HARDWARE DESCRIPTION

1. MSP430 Microcontroller

The Texas Instruments MSP430 group of ultra-low-control microcontrollers contains of a few gadgets containing different arrangements of peripherals focused for different applications. The engineering, joint with five low-control modes, is upgraded to achieve expanded battery lifetime in mobile estimation applications. The plan includes a compelling 16-bit RISC CPU, 16-bit registers, and ceaseless generators that give to greatest code adequacy. The carefully controlled oscillator (DCO) grants wake-up from low-control modes to dynamic mode in under 1 μ s.

2. 16*2 LCD Display

A broadly useful alphanumeric LCD, with two lines of 16 characters. LCD utilized here is the 16x2 line LCD. Fluid Crystal Display which is regularly known as LCD is an Alphanumeric Display it implies that it can show Alphabets, Numbers and in addition uncommon images in this way LCD is an easy to use Display gadget which can be utilized for showing different messages dissimilar to seven portion show which can show just numbers and a portion of the letter sets.

3. GPS Module

GPS stands for Global Positioning System by which anyone can simply get the area data anyplace on the planet. Right off the bat, the flag of period is sent from a GPS satellite at a predetermined point. Accordingly, the time contrast among GPS time and the purpose of time clock which GPS recipient acquires the time flag will be figured to create the separation from the collector to the satellite

4. Ultrasonic Sensor

An Ultrasonic sensor is a gadget that can ascertain the separation to a question by utilizing sound waves. It allots separate by exchange a sound wave at a particular recurrence and going to for that sound wave to skip back. By recording the gone time between the sound wave being created and the sound wave skipping back, it is conceivable to ascertain the separation between the sonar sensor and question..

5. Speech IC

The aPR33A arrangement are capable sound processor alongside superior sound simple to-advanced converters (ADCs) and computerized to-simple converters (DACs). The aPR33A arrangement are a completely coordinated arrangement offering superior and unparalleled mix with simple information, advanced handling and simple yield usefulness.

VIII ADVANTAGES

1. Auto detection of destination location with audio indication.
2. Obstacle detection with indication support.
3. Simple to implement.
4. Low cost.

IX RESULTS



Figure 1 Hardware Implementation of Proposed Device

The above Fig. shows the overall interfacing of the various modules as shown in the circuit diagram. The microcontroller MSP430, GPS module, vibrators, buzzer, ultrasonic sensor etc. are interfaced so as to provide required output i.e. to trace the desired location.

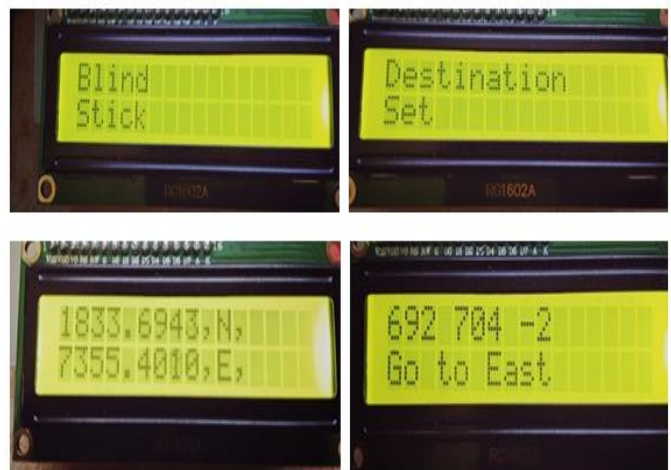


Figure 2 Tested Results of Proposed System

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