

Review On-Voice Based Blind Stick for the Blind People Using GSM, GPS and Optical Device Indicator Mechanism

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ABSTRACT: This paper displays a hypothetical model and a framework idea to give a brilliant electronic guide to visually impaired individuals. This framework is planned to give general measures –object location and realtime help by means of Global Positioning System (GPS).The framework comprise of ultrasonic sensor, GPS Module, GSM Module and vibratory circuit (speakers or earphones). This venture goes for the advancement of an Electronic Traveling Aid (ETA) pack to help the visually impaired individuals to discover deterrent freeway. This ETA is settled to the stick of the visually impaired individuals. At the point when the article is identified close to the blinds stick it cautions them with the assistance of vibratory circuit (speakers or earphones). The area of the visually impaired is discovered utilizing Global System for Mobile correspondences (GSM) and Global Position System (GPS).

KEYWORDS-GSM, GPS, Ultrasonic sensor, ETA.

I. INTRODUCTION

Manufactured Vision is the most essential piece of human physiology as 83% of data person gets from nature is by means of sight. The insights by the World Health Organization (WHO) in 2011 evaluations that there are 285 billion individuals in world with visual debilitation, 39 billion of individuals which are visually impaired and 246 with low vision. The most seasoned and conventional versatility helps for persons with visual weaknesses are the strolling stick (additionally called white stick or stick) and guide mutts. The disadvantages of these guides are scope of movement and next to no Information passed on. With the quick advances of cutting edge innovation, both in equipment and programming front can possibly give smart route abilities. As of late there has been a considerable measure of Electronic Travel Aids (ETA) [1] planned and formulated to help the visually impaired individuals to explore securely and freely. Additionally top of the line innovative arrangements have been acquainted as of late with visually impaired persons explore autonomously. To distinguish the position and introduction and area of the visually impaired individual any of those arrangements depend on Global Positioning System (GPS) innovation. Such frameworks are suitable for open air route, because of the requirement for observable pathway access to the satellites; they require extra parts to enhance the determination and nearness recognition to avert crash of the visually impaired persons with different articles and henceforth subject his/her life to threat.

However in examination with different innovations numerous visually impaired direction frameworks use ultrasound as a result of its insusceptibility to the natural commotion. Another motivation behind why ultrasonic is well known is this innovation is generally cheap, furthermore the ultrasound emitters and identifiers are sufficiently little to be conveyed without the requirement for complex hardware. Aside from the routine route frameworks, a visually impaired guide framework can be given another measurement of Realtime help and manufactured vision alongside committed obstruction location hardware. These distinctive units are examined to execute the configuration of a 'Shrewd stick' for visually impaired. Strolling securely and unhesitatingly with no human help with urban or obscure situations is a troublesome errand for visually impaired individuals. Outwardly disabled individuals by and large utilize either the run

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of the mill white stick or the aide puppy to travel autonomously. In spite of the fact that the white stick gives a notice around 1 m before the obstruction, for a typical strolling rate of 1.2 m/s, an ideal opportunity to respond is short (just 1 s). The stick filters the floor and subsequently can't identify certain impediments (backs of trucks, low branches, and so forth.). Wellbeing and certainty could be expanded utilizing gadgets that give a sign to discover the heading of a snag free way in new or change in situations. Electronic travel helps (ETAs) are gadgets that radiate a notice by sound-related or/and material signs when a deterrent is standing out and permit the client to maintain a strategic distance from it.

A few gadgets have been produced to enhance the versatility of visually impaired individuals .talking GPS, gadgets for point of interest distinguishing proof, ultrasonic deterrent indicators (sensors). In indoor or outside swarmed situations, ultrasonic gadgets are restricted because of different reflections. These gadgets can't discover openings that are sufficiently wide for an individual to experience, with reckoning of a couple meters (4–6 m). So with a specific end goal to uproot the above challenges and educating the visually impaired individual about the deterrent well ahead of time is fundamental point of the task. In this task we are going to utilize an obstruction recognition sensor as the heart of the venture. In this module we are going to interface a deterrent sensor that will continue transmitting a sign created by the Microcontroller. This sign in the wake of hitting the snag will be gotten back. This reverberation signal gathered by the sensor collector and in view of processing flag accordingly cautioning the individual well ahead of time about the deterrent. In this task we are going to interface a deterrent sensors and a bell with the Microcontroller and the complete module will be appended with the visually impaired individual's stick. So at whatever point the visually impaired reason will recognize any deterrent up to a separation of 1 meter consequently a signal will show about it to the visually impaired individual and a declare will be created through earphones as Object Detected. What's more, in this venture we are going to interface GSM and GPS to identify the visually impaired individual area.

The proposed engineering comprises of a GPS signal beneficiary and GSM associated with ARM9. This complete setup will be settled to stick. The GPS will be sending the area data to the controller constantly. The same will be steered to the GSM modem through the controller. GSM will forward this data to the pre nourished portable nos. the client in the wake of accepting the message. In this venture we are utilizing well-disposed ARM9 microcontroller, which is having 512KB glimmer memory and 8 to 40 KB of SRAM and a few peripherals. Here we are utilizing Obstacle sensor, this will be interfacing with ADC. The GSM module and GPS will correspond utilizing RS232 convention with microcontroller. On the off chance that the individual needs to know the area of the visually impaired individual, he needs to send one message like LOCATION; instantly he will get the visually impaired individual area organizes.

II. RELATED WORK

A REVIEW ON OBSTACLE DETECTION AND VISION

From this paper we refer-

In general the research work carried out so far can be classified on the basis of

1. Ultrasonic Sensors used for detection of static and dynamic obstacle detection
2. Static and moving camera
3. Number of cameras used
4. Type of hardware used
5. Type of image transmission
6. Algorithm used detection of static and dynamic obstacle detection
7. Measures used for performance evaluation

There is a need to focus the research on static and moving obstacle detection using camera. The objective of research should be to develop specific algorithm to serve the need of visually impaired.

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1. SMART BLIND GUIDANCE SYSTEM FROM THIS PAPER WE REFER-

This paper has described a system to transform visual information for the obstacle details acquired by the ultrasonic sensors to voice information through earphone. A simple, cheap, configurable, easy to handle electronic guidance system is proposed to provide constructive assistant and support for blind and visually impaired people. The main functions of this system are clear path indication and environment recognition. The US sensors have been fully utilized in order to advance the mobility of blind and visual impaired people in safe and independent way. The system is designed, implemented, and tested. The results indicate that the system is efficient in specifying the details of the objects that may encounter the blind. The proposed system is a real-time system that monitors position of the blind and provides dual feedback making his/her navigation more safe and secure.

2. GSM BASED VOICE AND VIBRATION ALERT SYSTEM FOR BLIND FROM THIS PAPER WE REFER-

This system overcomes the limitations of the conventional sticks being used by the blind persons around the world. A stick of such type if made with the components described can prove to be a low cost solution for the problems faced by the blind in their day to day life. This stick can make the journey of the blind more comfortable and swifter. The stick also has the advantage keeping the blind just a click away from his family. This system can help the family of the blind to locate him and help him whenever he is in trouble. This whole system can is easy to use so there will be no problem for blind to adapt this technology.

3. ALLOCATION AND SHARING INFRASTRUCTURE RESOURCES VIA SOCIAL NETWORKS USING PREFERENCE BASED ON TRUST METHOD FROM THIS PAPER WE REFER

Allocation and sharing of resources can be done in many ways. But the way to do it using the trust formed by individuals in a social network is being shown here. Here a dynamic cloudlike platform is being created and utilized for sharing of resources. The users are given freedom to decide with whom they wish to share their resources by giving preferences. The problem identified in this paper is that this focuses only on one-one allocation system where one requesting user is matched with one providing user. This simple method cannot satisfy complex situations. So the many-many resource allocation should be done. Also the algorithms in the existing system consider only one-one matching. This should be extended for complex scenarios. Further expansion of the model can be done in order for batch allocations and for applying to a complex scenario.

4. DESIGN OF MICROCONTROLLER BASED VIRTUAL EYE FOR THE BLIND FROM THIS PAPER WE REFER

This project proposed the design and architecture of a new concept of Microcontroller based Virtual Eye for the blind people. A simple, cheap, configurable, easy to handle electronic guidance system is proposed to provide constructive assistant and support for blind and visually impaired persons. The system will be efficient and unique in its capability in specifying the source and distance of the objects that may encounter the blind. It is able to scan areas left, right, and in front of the blind person regardless of its height or depth. With the proposed architecture, if constructed with at most accuracy, the blind will be able to move from one place to another without others help.

III. ARCHITECTURE AND PROPOSED MECHANISM

The proposed design for smart stick distinctly consists of three units:

1. The GPS Unit.

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2. The Obstacle Detection Unit.

3. GSM Unit

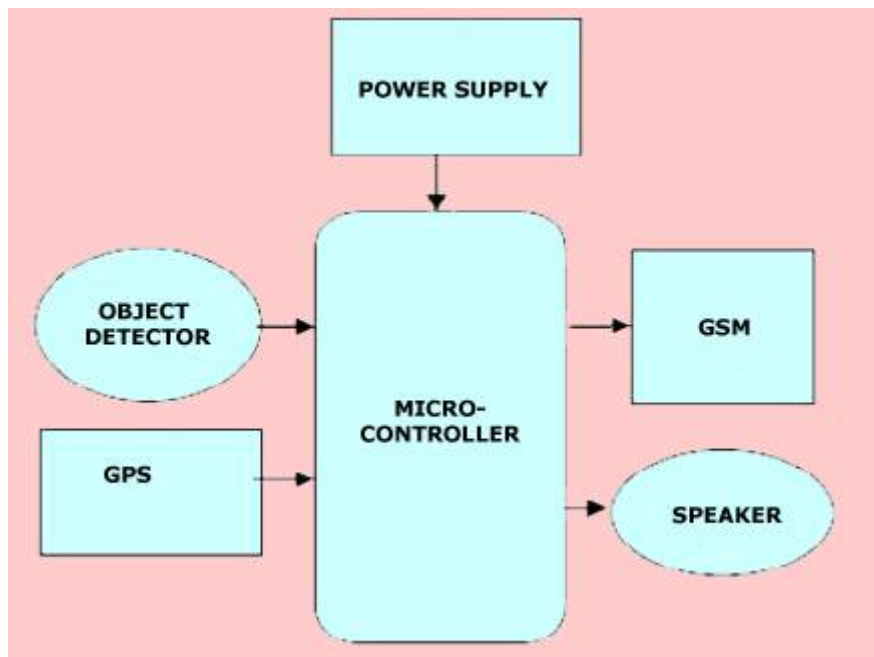


Fig1. Proposed Smart Stick System.

Explanation-

The figure above depicts the proposed design of an embedded smart stick. The elements of the system consist of various subsystems. The object detector circuitry consisting of sensors such as ultrasonic sensors and Led sensors. Vibratory circuitry consists of an array of mobile vibrators with logic designed to obtain different vibratory patterns. The GPS system, microcontroller and power circuitry (preferably battery-based) are the crucial systems. The proposed system can be designed to a detachable and portable device, which can be mounted on a simple white cane or blind stick. This requires a clear vision of the desired system goals. Various system parameters are thus needed to be evaluated based on the design to be practically implementable.

A. Microcontroller

The microcontroller used in this GPS and GSM based device with user input interface can be preferably ARM7TDMI based LPC2148 microcontroller, which is having 512KB flash memory and 8 to 40 KB of SRAM and several peripherals. The ARM7TDMI-S is a general purpose 32-bit microprocessor. Unique accelerator architecture and a 128-bit wide memory interface enable 32-bit code execution at the maximum clock rate. The GSM module and GPS will communicate using RS232 protocol with microcontroller.

B. GSM and GPS Modules

The Global Positioning System (GPS)[2] and Global System for Mobile communications (GSM)[3] are interfaced to the microcontroller to detect the blind person location. The proposed architecture consists of a GPS signal receiver and GSM, vibratory circuitry connected to ARM7. This complete setup will be fixed to stick. The GPS will be sending the location information to the controller continuously. The same will be routed to the GSM modem through the controller.

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Hardware requirements:

1. ARM9 microcontroller board
2. GSM module
3. GPS module
4. Sensors
5. Speaker

Software requirements

1. Keil 4 cross compiler
2. Flash magic tool
3. Terminal software

IV. CONCLUSION

This paper proposed the outline and engineering of another idea of Smart Electronic Travel Aid Stick for visually impaired individuals. The upside of the framework lies in the way that it can turn out to be an ease answer for a large number of visually impaired individual around the world. The proposed mix of different working units makes a continuous framework that screens position of the client and gives double criticism making route more protected and secure.

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