IOT Based Blind Navigation System

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Abstract: **Blind people are liable to get in contact with whatever obstacle which pass before them during walking, subjecting them to risk of injury caused from fall and it could also cause great damage to them. The aim of this project is to develop a smart system with distance measurement system. The system is made up of an ultrasonic sensor as input and earphone as the output. Ultrasonic sensor is used to measure distance from the obstacle. Data is then sent to National Instrument myRIO-1900 controller for processing which later produce beeping sound as the output. The process was graphically programmed using LabVIEW with FPGA as the intended target. Performance of the system has been ascertained through several verification tests. In general, the device will alert blind people of the obstacles through the audio output through which they can walk safely without any problem.**

Keywords: **Authentication, java; JavaScript; Jdk1.8; MySQL; Xampp, Security, Verifiability**

INTRODUCTION

We being normal people can see and judge all the aspects of the environment it could be hurdle, obstacles, hole or pit. This is not possible in case of physically disabled people but they are given god gifted some great sensing ability. So for this we are creating a new IoT based Smart Stick / Blind which will help the blind people to get known about the hurdles, obstacles and holes or any moving objects beside them. It will be very beneficial for them as it will alert them for each and every aspect which they are going to face in their day to day life with the help of buzzer or Assistant.

MOTIVATION

• Our main motivation are they blind who need to suffer a lot while travelling from place to place.

• We noticed that normal blind Blinds used by blinds have certain limitations like detecting pot-holes, stairs, distant objects, above knee obstacles, etc

• We feel very bad about the blind and disabled people so we came up with the idea of developing a economical sensor equipped Blind capable of assisting blind to navigate easily.

LITRATURE SURVEY

M.F. Saaid, 2016, "smart system with Range Notification for Blind People." [1]

In this paper Blind people are prone to sweep or knock whatever obstacle which pass before them during walking, subjecting them to risk of injury caused from fall. The aim of this project is to develop a smart system with distance measurement system. The system comprise of an ultrasonic sensor as input and earphone as the output. Ultrasonic sensor is used to measure distance from the obstacle. Data is then sent to National Instrument myRIO- 1900 controller for processing which later produce beeping sound as the output. The process was graphically programmed using LabVIEW with FPGA as the intended target. Performance of the system has been ascertained through several verification tests. In general, the device will alert blind people of the obstacles through the audio output.

P.Bhavishya, 2018, "IoT based route assistance for visually challenged" [2]

In this paper, The intelligent devices have taken us to a convenient and fashionable era, however while we use a pedometer to calculate the number of steps, the blind even do not have the ability to walk independently. There is no doubt that they are eager for convenience and freedom based on this, we propose an intelligent system that assists the blind in walking. The system consists of three ultrasonic sensors (attached to a Blind) which are not used to just detect the obstacles but the visually challenged will be directed in the direction (front/right/left) which has no obstacles, when other two directions are blocked by an obstacle. Or when there is an obstacle in only one direction then the distance of other two directions will be calculated and he/she will be directed to go in a direction at which the distance is longer. The Mq2 gas sensor is also appended to the system to warn the user in case he/she is too drunk and make them wary

Ayat A. Nada, 2018, ”Assistive infrared sensor based smart stick for blind people” [3]

Blind people need some aid to feel safe while moving. Smart stick comes as a proposed solution to improve the mobility of both blind and visually impaired people. Stick solution use different technologies like ultrasonic, infrared and laser but they still have drawbacks. In this paper we propose, light weight, cheap, user friendly, fast response and low power consumption, smart stick based on infrared technology. A pair of infrared sensors can detect staircases and other obstacles presence in the user path, within a range of two meters. The experimental results achieve good accuracy and the stick is able to detect all of obstacles.

LIMITATION OF EXISTING SYSTEM

• Costing: The Existing system is high cost and this is main reason most of the system is failed.

• Technology Complexity: Most of system is the complex to understand, Not user friendly as compare to our proposed system

• Time Consuming Feature: In existing system, the performance is low and most of the time system gets hanged due to load.

• Not Easy to Understand: Systems are complex to understand and they were not user friendly

EXPERIMENTAL SETUP

This section describes the various features of the system and also describes the implementation methods. Following are some of the features explained with their implementation details:

• Pattern Recognition: Pattern recognition is the automated recognition of patterns and regularities in data. It has applications in statistical data analysis, signal processing, image analysis, information retrieval, bio informatics, data compression, computer graphics and machine learning.

• Authentication: Authentication is the act of proving an assertion, such as the identity of a computer system user. In contrast with identification, the act of indicating a person or thing's identity, authentication is the process of verifying that identity.

Hardware and Software Requirements

Hardware Requirements

1. Android Mobile

2. Processor: Intel (R) Core (TM) i3 CPU

3. Installed RAM: 1 GB

4. Hard Disk: 60 GB

5. Keyboard: Standard Windows Keyboard

6. Mouse: Two or three button mouse

7. Monitor: SVGA

Software Requirement
1. Back end : Firebase
2. Operating System : Windows 2000/XP/7/8
3. Front end : Android Studio/ IDE

• Android : Android is a mobile operating system developed by Google, based on the Linux kernel and designed primarily for touchscreen mobile devices such as smartphones and tablets. Android is an open source mobile operating system with massive user base and simplified mobile app development process. Enterprises are leveraging Android and creating custom mobile apps that solves customer problems and increase value for their business. Android is free and an open platform built on Linux. It is also an open source solution for mobile devices offering a complete software stack including operating LGNSCOE, Department of Computer Engineering 2016 30 system, middle-ware and key mobile applications. User acceptance to Android was very low when it was launched in 2007, as it was still in its early development cycle. But after Googles acquisition and development efforts, visibility for Android mobile technology grew.

SCOPE:

• Some more applications like vehicle detection, slippery floor, on-coming vehicle detection and fire or smoke alarm can also be included.

• One more application is for the family members to gain access to the blind person's location through the server whenever needed.

• Also, use .

PROBLEM STATEMENT:

• To make a smart system which can help blind people in navigation.

• To make it available at much cheaper prices without compromising with the functionalities

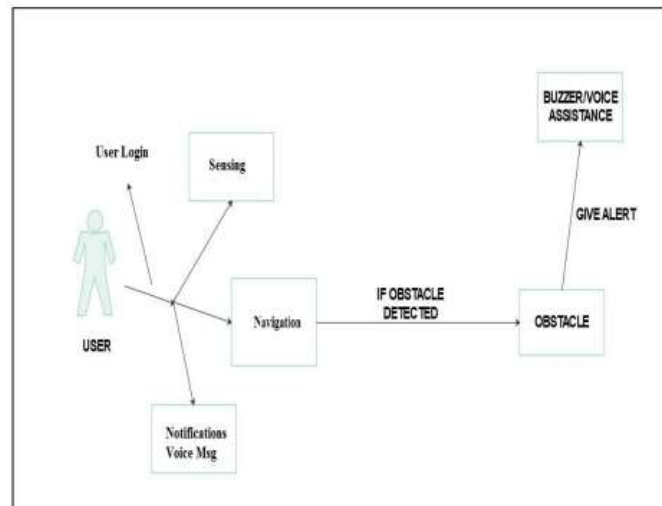• Minimizing its maintenance and operating cost

SYSTEM ARCHITECTURE

Fig -1: System Architecture Diagram

ADVANTAGES

1. Easy to use
2. High Performance
3. Scalable

METHODOLOGY

The single problem can be solved by different solutions. This considers the performance parameters for each approach. Thus considers the efficiency issues.

- Problem Solving Methods are concerned with efficient realization of functionality. This is an important characteristics of Problem Solving Methods and should be deal with it explicitly.

- Problem Solving Methods achieve this efficiency by making assumptions about resources provided by their context (such as domain knowledge) and by assumptions about the precise definition of the task. It is important to make these assumptions explicit as it give the reason about Problem Solving Methods.

- The process of constructing Problem Solving Methods is assumption based. During this process assumptions are added that facilitate efficient operationalization of the desired functionality

CONCLUSION

To sum up, this smart system can act as a complete guide for blind people to walk with the help of a single stick without any complex hardware or software incorporated into it. This simple Blind, is not used to just detect obstacles present in any direction and alert the person , but uses the distance calculation to give the optimum direction(by detecting obstacles) in which the person can proceed. There is only use of one buzzer for every direction that makes different sounds for left, right, front instead of using three different buzzers. A battery powers the Blind. This Blind not only shows the direction, but can also indicates the person if he/she is blocked on three sides.In this system it includes GPS module trough which live location of the person can be traced

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