REAL TIME OBJECT DETECTION FOR BLIND PEOPLE

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ABSTRACT

Blind people are often excluded from society because they feel that people and society are racist and may not be accepted for a long time. To improve the quality of life of the visually impaired, this work focuses on developing other public facilities. Therefore, this project wants to play a special role in providing as much information as possible so that blind and visually impaired people can travel comfortably. To create examples focused on users and their interests, this project aims to build programs to help people with disabilities.

Keywords: Machine Learning, Object Detection, Raspberry Pi, Real Time Object Detection, Blind People Assistant.

I.   INTRODUCTION

A. Overview

Blind people are often excluded from society because they feel that people and society are racist and may not be accepted for a long time. To improve the quality of life of the visually impaired, this work focuses on developing other public facilities. Therefore, this project wants to play a special role in providing as much information as possible so that visually impaired and blind people can travel comfortably. To create examples focused on users and their interests, the project aims to build programs to help people with disabilities.

B. Objective

• To Study detection of different object and its distance.

• To Study detection of level of temperature using moisture sensor.

• To Study communication establishment between sensors and RFID.

• To Study establishment of Wireless Sensor Network.

• To Study design of a real-time detection system.

II.   DESCRIPTION OF THE PROBLEM

A. Motivation

In order to improve the quality of life of visually impaired people, this paper focuses on developing new technologies that help them connect with the outside world, especially banks, hospitals, post offices and other public institutions. I guess. The project therefore wants to play a special role in this area by making as much information available as possible for the blind and visually impaired to travel comfortably. To create examples focused on users and their interests, this project aims to build programs to help people with disabilities. The program is designed to support them in providing information. In this program, the camera shows a barrier with ultrasonic and IR sensors.

B. Problem Statement

A navigation system for the visually impaired was designed, implemented, and evaluated in both indoor and outdoor environments. This research will help future developers reach out to his with a broad helping hand. The presented work helps visually impaired people navigate public transport easily and safely. Also, the proposed solution strongly justifies the use of hybrid technology, as not all sensors work in all environmental conditions (sunlight, rain, etc.).

III.   LITERATURE REVIEW

N O	Name Of Paper	Author	Publication	Year Of publication	Description	Advantages	Limitations
1	Low Cost Smart Navigation System for the Blind	BarathiKanna S, Ganesh Kumar T R, Niranjan C, Prashanth S, Rolant Gini J,M.E.Harikumar	IEEE	03-June-2021	The proposed solution works on the Internet of Things realm wherein the blind can "communicate" with the environment.	It is a cost-efficient and easily accessible.	It has complex Architecture.
2	The architectural design of smart blind assistant using IoT with deep learning paradigm.	Md. Wahidur Rahman, Saima Siddique Tashfia, Rahabul Islam.	ScienceDirect	30-Nov-2020	This paper reflects an architectural design of smart blind assistant using the mechanism of deep learning embedded with IoT.	The research paper is included with a set of development process to get an optimum solution for a blind person.	It has complex Architecture.
3	IoT Based Navigation System for Visually Impaired People	Shabnam Chodhary,VaishaliBhatia,K.R Ramkumar	IEEE	15 –Sep-2020	This paper presents an RFID based electronic model, which will help a blind person to use public transport very quickly and safely in his daily life without any external help	User can interact with machine with voice commands.	Speech recognition feature not available. The existing modles are too expansive to implement.
4	IoT Based Smart	Md. Wahidur Rahman , Rahabul Islam1 , Md.	SpringerLink	12-Sep-2020	This research	The users can easily	In this system

|				reflects an Internet of Things (IoT) based smart solution, especially for the people who have a Blind.	aford this solution in their regular activities.	only use Bengali voice command for blind people.
Assistant for Blind Person and Smart Home	Mahmodul Hasan1 , Shisir Mia, Mohammad Motiur Rahman1.					

IV.   SYSTEM DESIGN AND FLOW

A. Raspberry Pi

It's a small device that people of all ages can use to scan their computers and learn how to edit in languages like Scratch and Python. The Raspberry Pi 3 device was designed in several formats that emphasize memory limit type and limited gadget support. Raspberry Pi square capacity v01. This square frame shows models B and B+. The An, A+ and Pi Zero models are equivalent but lack the Ethernet and USB center point components. Ethernet connector connects to an additional USB port. The Raspberry Pi 3 Model B is the third generation Raspberry Pi. This powerful credit-card sized single board computer can be used for many applications and supersedes the original Raspberry Pi Model B+ and Raspberry Pi 2 Model B. Whilst maintaining the popular board format the Raspberry Pi 3 Model B brings you a more powerful processer, 10x faster than the first generation Raspberry Pi. Additionally it adds wireless LAN & Bluetooth connectivity making it the ideal solution for powerful connected designs.

B. IR Sensor

Sensor Image Effect Infrared sensors (IR sensors) are optoelectronic components for spectrally sensitive radiation with an infrared wavelength of 780 nm. . 50 microns. IR sensors are now commonly used in motion detectors used in construction programs to turn on lights and alarms to detect unwanted visitors. Infrared Raspberry Pi Connect VCC and GND pins Connect the IR sensor to the +5V and GND Raspberry Pi pins. Next, connect the IR sensor data PIN to GPIO23, which is physical pin 16 on the Raspberry Pi. I used a simple 5V buzzer to signal the alarm. The IR sensor is a digital sensor, thus, the output received from it will either be 1or0.

C. Sonar Sensor
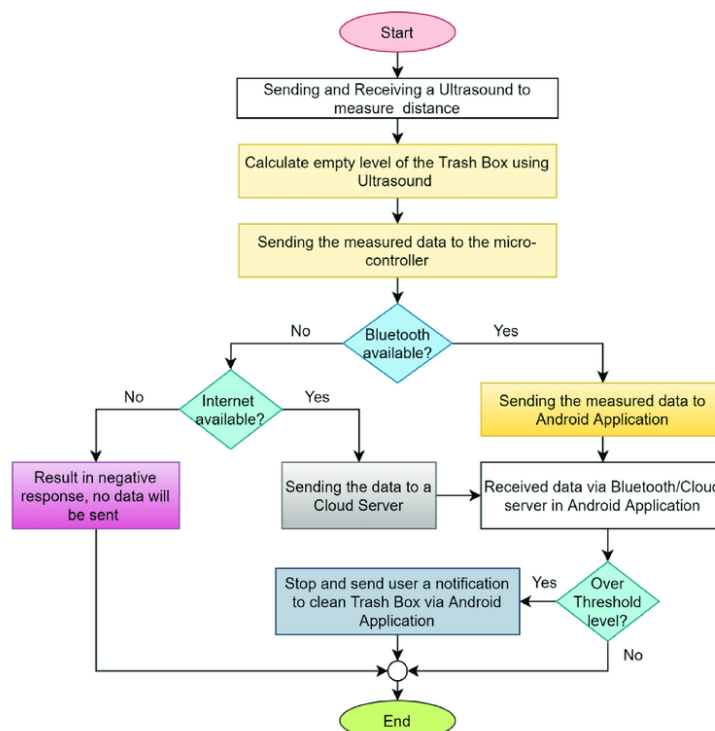
Ultrasonic sensors work by emitting sound waves at frequencies above the human audible range. The sensor transducer acts as a microphone that sends and receives ultrasonic waves. Our ultrasonic sensor, like many others, uses a single transducer to transmit heart rate and echoes. Sonar is a common sensor in robots that uses acoustic pulses and their echoes to measure the width of an object. Since the speed of sound is well known, the width of the object is equal to the travel time of the echo.

D. Environmental Sensors

Environmental sensors measure the environmental conditions of the data center such as the temperature and humidity. Real-time data from environmental sensors is collected, monitored, and reported on by Data Center Infrastructure Management (DCIM) software to help data center managers see trends, get alerts, save energy, and increase uptime. The types of environmental sensors, and the benefits of environmental monitoring with DCIM software, are Temperature sensors, Humidity sensors, Vibration sensors. Environmental sensors can be deployed as plug-and-play devices that connect to certain models of intelligent rack PDUs, rack controllers, inline meters, branch circuit monitors, and gateway devices. From there, the sensor data can be collected, analyzed, and reported on by your DCIM software or other analytics application.

V.   DATA FLOW DIAGRAM

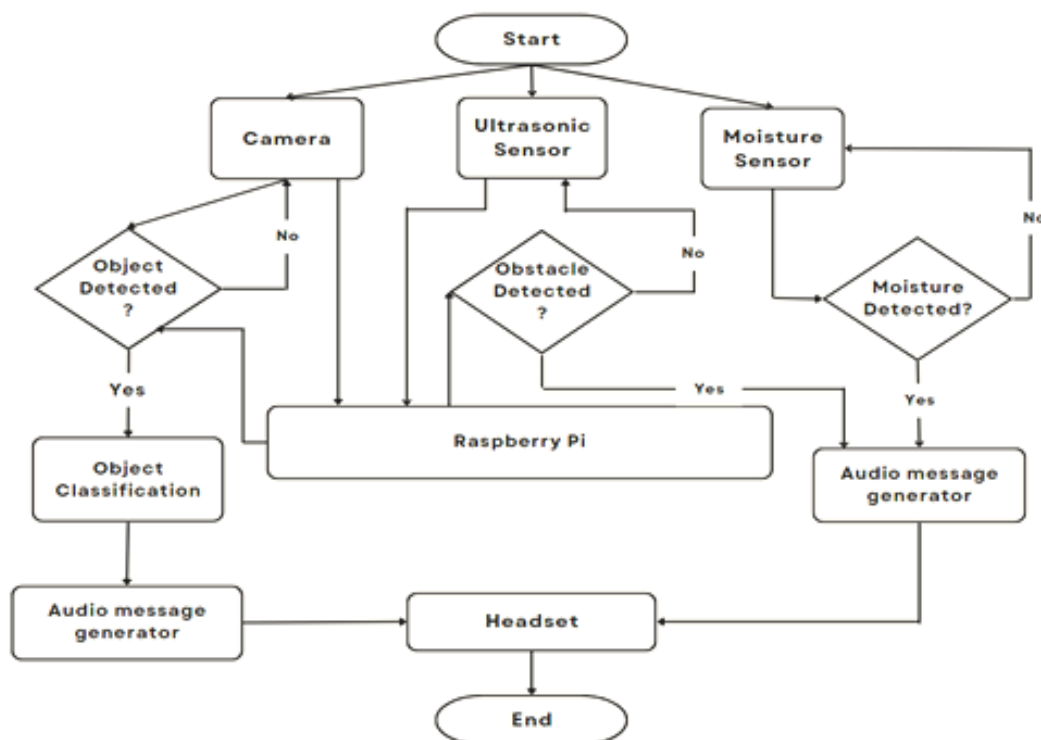In this Data Flow Diagram, we Show the flow of data in our system.

Fig. Flowchart of Real Time Object Detection For Blind People.

VI.   FUTURE SCOPE

• The future scope of this project is to improve the functionality of this system by incorporating landmarks as saved targets.

• We also want to develop position and velocity algorithms so that we can accurately implement other navigation methods such as dead reckoning.

• Use Online Directions to retrieve directions from Google Maps, allowing blind people to navigate to locations not stored in the database.

VII.   CONCLUSION

A navigation system for visually impaired people has been designed, implemented, and assessed in both indoor and outdoor environments This research would help future developers in giving an extended helping hand. The work presented would help blind people to easily and safely navigate using public transport. The proposed

solution also provides strong justification for using hybrid technologies, because of the inability of all sensors to work under all environmental conditions (sunlight, rain, etc.).

VIII.   REFERENCES

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