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A Survey on IOT Enabled Smart Vision Assistant Using Pir Sensor

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ABSTRACT

Internet of Things (IoT) has become an emerging technology in recent days. With an inherent support of high end process and communication enhances many real time applications like environmnetal detection, smary home, smart agriculture and so on. In other side, human do not have control over many issues. In this aspect vision is one among them. Visually challenged people are restricted from seeing the objects around them and navigate. Conventionally, visually challenged people use some form of assistance to move around. They have many problems in their life and one among them is seeking aid. They feel inferior and sometimes do not seek aid and it leads to a problem. Conventionally cane sticks are being used. There are many obstacles in their path when walking in public places. The stick is used to feel the presence of an obstacle. But this is not the solution, as itis difficult to feel if a person/ animal is passing nearby. The problems faced by them can besolved by the intervention of technology. Internet of Technologies (IoT) is implemented for making a bridge between the person and the environment. The idea is making a 'Smart Stick with PIR Sensor. This device helps the person in navigation by altering them about the upcoming obstacle in their path. Water sensor, ultrasonic sensor, GPS/GSM, vibration motor is used to find the obstacles in the range of the stick. The main aim of this is to supply an efficient, low-cost, lightweight device to make the life of the visually impaired better.

***keywords*: -** Smart Stick, PIR Sensor, Ultrasonic Sensor, GPS/GSM, Vibration Motor,Arduino

I. INTRODUCTION

According to theWorld Health Organization (WHO), people who are having a near or distance visual impairment are 2.2 billion globally. At least 1 billion or half of their vision could have been prevented or not yet addressed. These 1 billion covers moderate or severe distance vision impairment or blindness due to unaddressed refractive error (88.4 million), cataract (94 million), glaucoma (7.7 million), corneal opacities (4.2 million), diabetic retinopathy (3.9 million), and trachoma (2 million) and near visual impairment caused by unaddressed presbyopia (826 billion). People who are visually impaired are being aided for their work. This makes them unconfident.

According to National Center of Biotechnology Information (NCBI) the number of blind people in India from 2000is estimated be 18.7 million of which 9.5 million were cataract-related and 3 million refractive error-related. In 2010 it increased to 24.1 million and 31.6 million in 2020 When we look into above data, we get to know that the numbers of blind people are increasing. It is difficult for them to walk in the road without aid. People who are visually impaired are been assisted for their work. This makes them unconfident.

We are using Internet of Things (IoT) and this can be generalized as the process of connecting everyday devices to the internet from microwave to medical devices to, smart cities. IoT had gained more value since the 21st century.This technology was given by Kevin Ashton known as the father of IoT. It is a colossal network of connected things and people - that collect and share data around them. These pinpoint the useful information and that can be safely ignored. This information is further used to detect possible problems before their occurrence.

The two types of IoT are the Consumer Internet of Things and Industrial Internet of Things. Consumer Internet of Things refersto the use of IoT for consumer applications and devices. Products include smartphones, smart assistants, home appliances and many more. The solutions leverage Wi-Fi, Bluetooth, and facilitate connectivity. This technology offers short-range communication suitable for classification insmaller venues, in homes and offices. The Industrial Internet of Things is the most powerful wing of the IoT industry. It focuses on augmenting existing industrial systems, making them more productive and efficient. Its deployments are found in factories and manufacturing plants and are mostly associated with industries like healthcare, agriculture and automotive.

II. LITERATURE REVIEW

s.no	TITLE	DESCRIPTION	AUTHOR	LIMATATION
1	**Smart stick for blind people**	In this paper, they designed a blind stickthat has vibration motor which helps indetecting an obstacle and also has a wrist band to locate misplaced stick.	N LoganathanK Lakshmi N chandrasekaranS R Cibisakaravathi K Harsha VarthiniR Hari priyanga	There is no sensorthat would help sensing water on the way
2	**Motion detection using PIR sensor**	This paper has mentioned about various types of motion sensor in detailwith their working and applications	Yogesh Pawar Abhay Chopde Mandar Nandre	-
3	**Smart blind stick design and implementation**	In this paper, a blind stick is designed usingultrasonic sensor and water sensor to detect obstacles and presenceof water.	Amira A Elsonbaty	In this paper, thestick is to be charged
4	**Implementation and designof smart blind stick for obstacle detection and navigation system**	In this , they have designed a blind stick that has GPS and GSM modem that send SMS to saved numbers to get location.	K S ManikantaA Pravin T S S Phani	This paper doesnot contain aurdino uno,ultrasonic sensor and vibrator for convenience.
5	**Smart walking stick for blind integerated with SOSnavigation system**	They have made a stick with embeddede-SOS system that makes a video call tothe persons family when he is distressed and presses the button	Saurav Mohapatra Subham Rout Varun Tripathi Tanish Saxena Yepuganti Karuna	It requires charged power bank and mobile applicationto make calls

III. HARDWARE COMPONENTS

Arduino Uno:

Arduino Uno R3 is a microcontroller board with an open-source electronicplatform. It is based on an 8-bitATmega328P microcontrollerand has a crystal oscillator, voltage regulator, etc. It comeswith a USB interface and can beprogrammed using C / C++.

PIR Motion Sensor:

PIR motion sensor is an automatic control module basedon infrared technology. It has high sensitivity, high reliability, and has a sensing range of about 7m.

Ultrasonic sensor:

It is a sensor that uses ultrasoundto measure the distance. It has a working range of about 2cm- 400cm(4m).

Water sensor:

The water sensor is designed for water detection. This works with digital I/O pins of Arduinoand can also be used with

IV. PROPOSED WORK

This stick detects the presence of obstaclesby using ultrasonic and PIR sensors. The ultrasonic sensor has a transmitter module that transmits ultrasonic waves for detecting obstacles. The receiver module receives the transmitted wave and sends

the signal to the vibrator motor to vibrate.PIR sensor helps in the detection of moving objects by the temperature of the body. When a warm body passes by, it causes a positive differential change.

When the body leaves, the action happens. These change pulses are that which is detected.

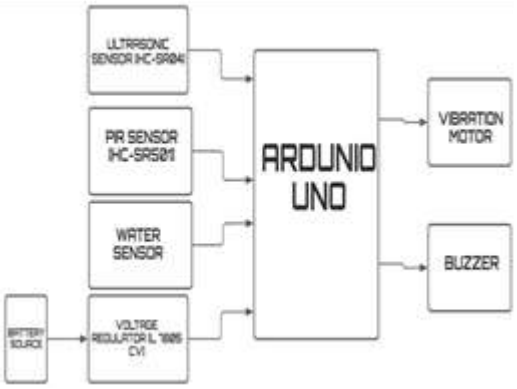

Figure. 1 Block diagram

V. CONCLUSION

The surevy describes the existing prototype which is an attempt towards reducing visually impaired public by providing mobility as well as safety without dependency. Visually impaired people can move as they wish naturally using this visual assistant. This idea can be improved further by additional sensors and the use of AI technology for convenience. In future this research work helps to promote researchers and academician.

REFERENCE

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[2] The authorKavitha developed an electronic stick [1], thefundamental goal of this venture was to buildup a basic direction framework for the visuallyimpaired clients, utilizing sensors, and todecide if the visually impaired can movessecurely or not.

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