e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:05/Issue:05/May-2023 Impact Factor- 7.868 www.irjmets.com

IOT BASED NAVIGATION SYSTEM FOR VISUALLY IMPAIRED PEOPLE

Chaitra Mahantesh Lokannavar*1, Kavya CK*2, Kavya SM*3, Priya G R*4, Vijayananda V Madlur*5

*1,2,3,4Student, Department Of Information Science And Engineering, Vidya Vikas Institute Of Engineering And Technology, Mysuru, Karnataka, India.

*5Assistant Professor, Department Of Information Science And Engineering, Vidya Vikas Institute Of Engineering And Technology, Mysuru, Karnataka, India

DOI : https://www.doi.org/10.56726/IRJMETS38465

ABSTRACT

By utilizing this smart blind stick, blind persons can readily engage with the physical environment, which is the project's goal. If we pay attention, we will quickly see that they require assistance to walk. With the aid of this clever blind stick, one may confidently go about. Blind individuals now utilize a conventional cane to guide them as they walk from one area to another. Although the standard cane is the most common aid used by visually impaired persons today, it is unable to assist them in recognizing risks from all tiers of barriers. In this regard, we suggest a brand-new intelligent method for assisting blind or partially sighted people. The technique is used to provide blind individuals the same mobility and self-assurance as sighted people. Additionally, it offers guidance and information on how to avoid impediments including humans, water, and sensors-based obstructions. The technology is connected to a GPS navigation so that the blind person's location may be pinpointed and updated in the cloud.

Keywords: Iot, Navigation System, Visually Impaired, Sensors.

I. INTRODUCTION

This project having the ability to see is crucial to human existence, yet some people are rendered immobile by their blindness. In this essay, we suggest a navigation method or tool that is useful to blind people. With the use of that blind stick, people can see obstacles in front of them, as well as move in both known and uncharted territory. It uses IR sensors to identify obstacles, and the blind person is alerted to them when their phone vibrates or plays an audio message. The capacity to move confidently, swiftly, and safely around his immediate area independently is referred to as mobility and independence for visually impaired persons, however it is not achievable without technology. One method that we put into place helps that blind individual. With the aid of GSM/GPS, those individuals who use an telegram application in Android phone or computer that is carried by the blind person and administrator to identify obstacles in front of them, safeguard the blind person, and monitor both the blind person's home location and present position. In addition to being able to monitor a blind person's whereabouts, a new tool called live video capture has been added. By capturing the stream in front of a blind person, an administrator may watch from their home.

II. METHODOLOGY

• It serves as an example of the proposed paradigm in this situation. A microprocessor called the raspberry pi will be used to collect all the data.

• A buzzer will alert the user if there is an impediment in front of the stick before the web camera starts to record video using tensor flow object detection. Finds the object, and then use the speaker to say it. • The GPS module determines the user's location every 30 seconds.

• A fire sensor's job is to locate any nearby flames.

• Water will be located nearby using a water sensor.

• The user may determine whether it is day or night using a light sensor by listening to the speaker.

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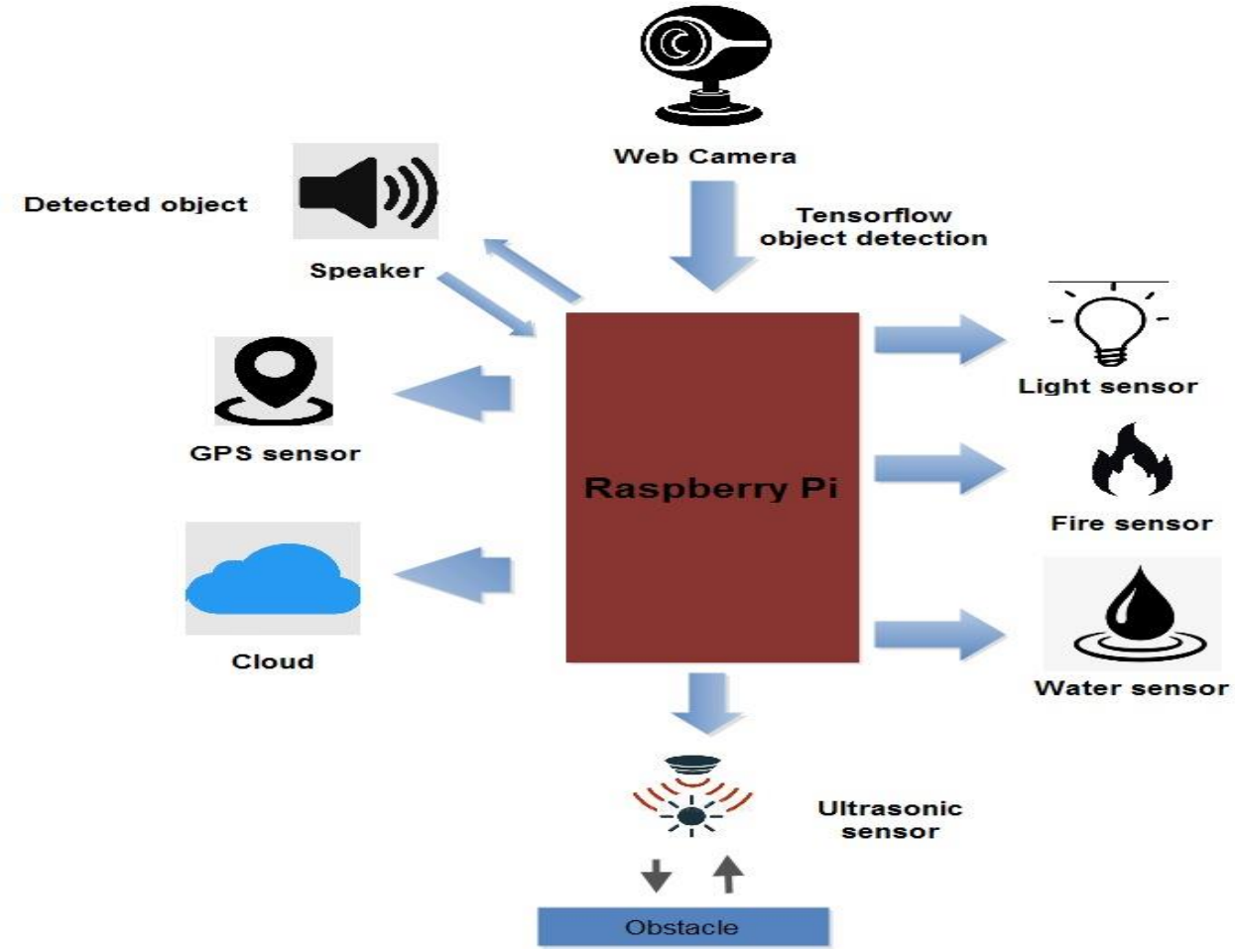

III. MODELING AND ANALYSIS

•GPS: It is a global navigation satellite system that provides geolocation and time information to a GPS receiver anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.

• Ultrasonic sensors: Ultrasonic / level sensors use ultrasonic waves to detect distance, as the name suggests. An ultrasonic wave is sent by the sensor head, which then picks up the wave that the target reflects to it. Ultrasonic and level sensors gauge a target's distance by timing the interval between emission and reception.

• Buzzer: A buzzer or beeper is a mechanical, electromechanical, or piezoelectric audio signaling device (piezo for short). Buzzers and beepers are frequently used as alarm clocks, timers, train horns, and to validate human input such a mouse click or keyboard.

• Fire sensor: Using a variety of technologies, smoke alarms can sense minute airborne particles to identify fires. They signal the alarm to sound once they notice those particles are above a certain threshold so that you and your family can escape.

• Water sensor: When installed in places where water should not be present, water sensors can also identify leaks. The sensor can send a notification to the homeowner via a smartphone app when Wi-Fi is enabled.

• Light sensor: Light sensors pick up on the presence of light and translate that energy into an electrical signal. The radiant energy contained within the infrared to ultraviolet light frequency spectrum source can then be measured after being transformed into electrical energy.

• Raspberry Pi: The Raspberry Pi is a small, inexpensive computer the size of a credit card that connects to a computer monitor or TV and operates with a regular keyboard and mouse. With the help of this capable little gadget, people of all ages can learn about computing and how to program in languages like Scratch and Python.

• Speaker: The Speaker serves as the House's representative, delivering messages and addresses to the Governor, for instance. The Speaker is also responsible for defending the privileges and rights of the House and the members.

• Webcam: A webcam is a ubiquitous digital video device included in computers. Its primary purpose is to send images via the Internet. It is frequently used for picture recording and with instant messaging applications.

• TensorFlow Object detection: TensorFlow object detection is a computer vision method. As the name implies, it aids in the identification, localization, and tracking of an object in an image or video.

IV. RESULTS AND DISCUSSION

The development of an IoT-based navigational system for visually impaired people is a promising application of technology that has the potential to improve the quality of life for many individuals with visual impairments. This system uses a combination of sensors, GPS technology, and machine learning algorithms to provide users with real-time information about their surroundings and navigate them to their desired destination.

V. CONCLUSION

The Blind Stick acts as a versatile interface for easy and comfortable internal and external mobility for visually impaired people in the next phase of more supportive apps. It's safe and affordable. This results in effective obstacle detection along the user's direction. It offers low cost, reliable, lightweight, low power and efficient navigation with fast, quick response times. Wireless connectivity between components of the device will enhance the additional features of this instrument and increase the range of ultrasound sensors and incorporate technologies to measure the intensity of obstacles approaching. With this approach, our targets in all of the developing countries were particularly addressed towards visually impaired and blind people. For easy use and flexibility, a vibrator can also be attached. This include an system for locating the individual via the GPS and GSM systems in order to reach the parent or caregiver venue.

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