Design of Smart Shoe for the Blind with Cordless Load

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***Abstract*:- Vision is considered to be the most important sensation, and visually impaired people are viewed with compassion by others. Technology helps the visually impaired to communicate with the environment, the process of communication and the dissemination of information are very fast and include all parts of the world, which has a major impact on human life, Because blind people are part of this world, technology must have a major impact on their lives in order for them to be able to take advantage of what was impossible for them. IOT based smart shoe system for the blind people is designed using ultrasonic sensors paired to a Raspberry Pi board. We are provided assistance to the visually impaired included specific hardware devices such as conversational OCR products, color recognition, and barcode scanners, obstacle detector, water sensing, GPS tracking and wireless charging. This is a way to use technology to reach out to the visually impaired and solve some of the problems. The main problem with blind people is loss self-confidence due to their physical integrity. The proposed system helps us in prediction of accidents for blind people, promotes confidence among visually impaired person and It helps to detect obstacles for visually impaired during walking. The main aim is to improving self-confidence of the visually impaired people to live independently in their daily lives.**

Keywords: Computer vision, Raspberry Pi, IOT, Object Detection, Navigation, Wireless Charging, Water Sensor.

I. Introduction

There are about 40 million people in our country Blind people including 1.6 million children. Blind People need to rely on others for many aspects of their lives life. The main problem is when they walk down the street. With In their hands they can't see all the obstacles Get in the way of them. The design of smart shoes provides a long-term solution for the visually impaired to walk independently on the street. Smart shoes help blind people reach him Independent travel destination. Based on IOT technology Various sensors are embedded in the shoes, Microprocessor and Bluetooth. Shoes warn the user Make a voice assist with the Bluetooth when walking in front of the Obstacle. This device has an ultrasonic sensor combined Raspberry Pi and Pi Camera. Ultrasonic sensor Recognize obstacles and Water Sensor Sense the presence of water. Smart shoes are equipped with wireless charging under the sole, it helps the user to create Walking current that you can get used to Charge the battery. Data collected by Ultrasonic sensors are sent to the cloud for further analysis, allowing machine learning-based algorithms to be developed in the cloud. The future of automating systems when users are present Inside. Parents can monitor the graphics By logging in, each person's visuals in real time Cloud. For future development and addition of others The sensor leaves many test run ports empty.

II. BACKGROUND STUDY (LITERATURE)

The current structures incorporates buzzer which consumes greater energy and they're the use of a separate software for steering the blind person. The blind can not have accurate get right of entry to to touch display smart phone so the blind the use of a clever smart phone is impossible. one of the current gadget incorporates 2 fashions that is one of the disadvantage.For item detection they're the use of a ultrasonic sensor so that you can hit upon gadgets that is a long way than the given distance and digital digicam can not seize a long way distance gadgets. In the prevailing venture they've used Arduino because the controller, right here the item detection is made the use of IR or ultrasonic sensor however the item detection is made now no longer what the item it is. To recognize what the item is Arduino can not seize snap shots because it does not have a digital digicam function as in raspberry pi.

III. METHODOLOGY

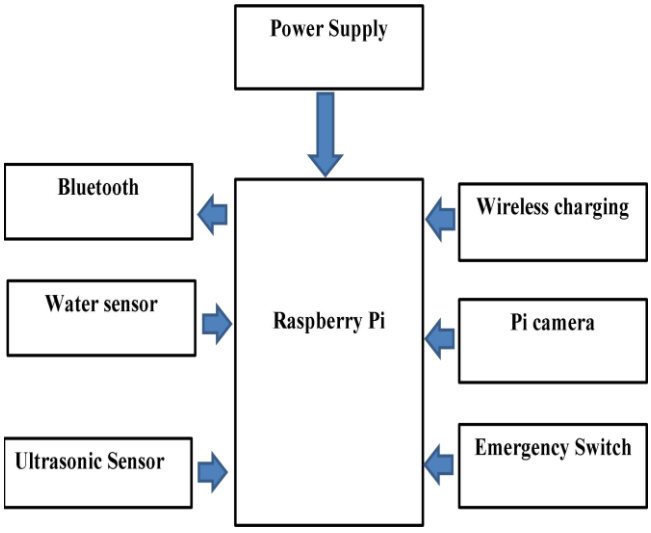

Figure 1 : Block Diagram of Proposed System

The shoe module in prototype consists of a Raspberry Pi, ultrasonic sensor, moisture sensor, Bluetooth module

and an Wireless Charging. The raspberry pi in the shoe module is attached with a Bluetooth transceiver which syncs to a smart phone app that uses Google maps to notify the user turn-by-turn information. Moisture sensor detects humidity. Bluetooth module acts as two way communication, commands and information is exchanged between controller and mobile. When you set a destination, the direction is constantly updated, allowing the user to walk according to the pattern without dynamically adjusting for false deviations from the planned direction path. As soon as an obstacle is detected by the ultrasonic sensor, the device emits audio output. The ultrasonic sensor continuously emits ultrasonic waves, so when an obstacle is encountered, the receiver receives a reflected signal to notify the user. The phone module needs to be a smartphone with GPS and you need to install an app to control and communicate with the shoe module.

IV. IMPLEMENTATION

Initialize the main server and Raspberry Pi. The Raspberry Pi connects to the main server.The main server receives the input as a real-time video feed and ultrasonic sensor datasheet Frozen graph loaded into the program from the Inception v2 architecture. The label mapper is loaded. A session is created. Various tensors have been initialized. Get a real-time video feed per frame. Defines the region of interest (ROI) for each frame. The session is triggered using a frame as the input tensor, which produces the output as a value tuple of the output tensor. The tuple value is interpolated at the current frame. Appropriate feedback on motion is provided to the user in audio format, depending on which side of the frame the object was detected.

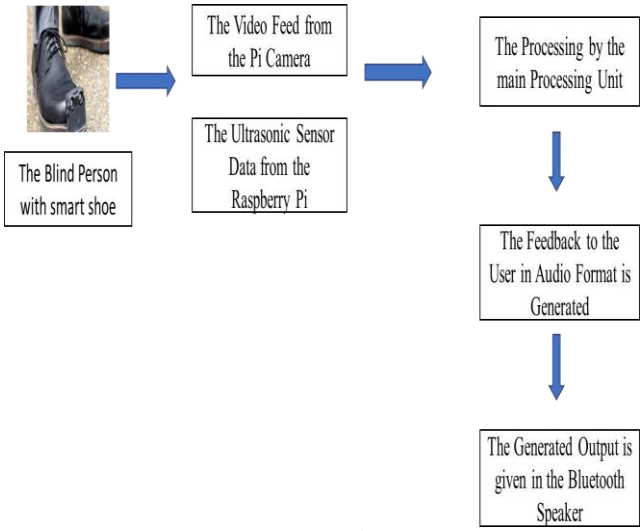

Figure 2: Architecture of the System

V. CONCLUSION

The proposed system is based on an embedded system Where hardware and software are integrated This will create the developed navigation assistance system. Or This system is mainly used by the visually impaired and the visually impaired Detects obstacles, wet ground and determines their location If a fall occurs due to the development of an installed phone application Call your parents. In this way, it follows a set of technical standards. Those who ensure the safety of electrical equipment and systems, We were able to develop independent, cost-effective smart shoes for the visually impaired. Ensuring secure and reliable navigation that provides assistance When a fall or an unnecessary collision occurs. One of the strengths of our product is that it's depending on voice commands. Since we are dealing with visually impaired users, this gives our product a strong advantage. the mobile application by Bluetooth technology, and also saving the current location and translating the voice commands. Another improvement is enhancing the mobile application by growing the database which allows the user to save more than one location to visit in the near future, also creating a community for visually impaired users, which allows them to interact with volunteers and arrange possible meetings.

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