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Smart Navigation System for Blinds using Internet of Things

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Abstract

This research work presents the development of a smart navigation for blind people using Internet of Things. In this project we will be using Raspberry pi to which we will make smart stick for blink people which will be embedded with moisture and ultrasonic sensor to detect the real time hurdles while walking with the Google Maps cloud attached to the raspberry pi for perfect navigation for the low-vision or blind people. This will make a smart system which will be very useful for the blind people and also at the same time more accurate and safe. The blind people interact with the system in voice.. The proposed system can provide more abundant surrounding information and more accurate navigation, and verify the practicability of the newly proposed system

I. INTRODUCTION

According to the World Health Organization, there are around 4.8 million outwardly debilitated people in the year 2019. This people are totally dependent upon others. They even can't walk in isolation. Bigger piece of them are using ordinary white stick to assist with course. The obstruction in using white stick is that the information is obtained by reaching the articles by the tip of the stick. So we have made arranged and developed A Ultrasonic Blind Walking Stick contraption which will help surprise people to walk around basic openly. As a more direct variation, we have used

vibrating sound to alert them if anything erroneously happen and help them with dealing with this issue. The essential objective of this endeavor is to help with blinding people and moreover for nearly deaf to walk around straightforward and this system offers moves up to the current structure plan. It endeavors to make the current structure more capable, supportive and straightforward. The essential section used for this contraption is the Ultrasonic sensor. The Ultrasonic sensor sends a high repeat sound heartbeat and subsequently learns a chance to get the indications of the sound resonation to reflect back. The sensor has 2 circles. One of them goes probably as the transmitter and sends the Ultrasonic waves. The other one goes comparably recipient and gets the rehashed sound sign. The sensor is changed by the speed of the sound in air. With this changed data, the time qualification between the transmission and get-together of sound not settled forever to register the distance of the article.

LITERATURE SURVEY

EXISTING SYSTEM

In the current framework, the vast majority of the outwardly debilitated individuals are utilizing ordinary white stick to support route. The regular strolling stick utilized by them is exceptionally restricted in scope of discovery and it is utilized uniquely to recognize the article which is close to the client. The utilizing of white stick is that the data is

acquired by contacting the items by the tip of the stick. The hindrance of the traditional stick, notwithstanding, is its inability to recognize obstructions outside of its span.

PROPOSED SYSTEM

The examination of as of late made structures and assessment of it, let us to describe an as of late pre-arranged system which could beat the weights of the past structures. So as such using the current advances we offer a predominant response for the state issue. There have been very few devices developed so far to help the outwardly hindered people. The outwardly disabled stick is consolidated with ultrasonic sensor. Our proposed project first uses ultrasonic sensor to perceive obstacles without reaching it using ultrasonic waves. On distinguishing blocks the sensor passes this data to the microcontroller. The microcontroller then cycles this data and figures if the hindrance is adequately close. In case the obstacle is far the circuit sits inactive yet if the hindrance is close the microcontroller passes on a message to vibrate the vibrator. Ultrasonic sensor is used to recognize any tangle before shock person. It has Detection Distance of 19cm-60cm so whenever there is some check in this arrive at it will caution the outwardly debilitated person. One more part is that the GPS system which can use for following the outwardly weakened individual region. GPS structure gives the information with respect to his current region. ESP8266 WIFI Module helps with sending data to the laborer. The basic objective is to help apparently tried people with investigating effectively using advance development. In this development controlled world, where people attempt to live openly, this endeavor proposes a ultrasonic stick for amaze people to assist them with procuring singular self-governance. Since this is proficient and not awkward, one can use it with no issue. Not solely to help shock yet likewise help with dealing people and we are using vibrating motor.

SYSTEM DESIGN

System design refers to the core construction of the application; this specifies all the modules which make up the application and how they connect to one another.
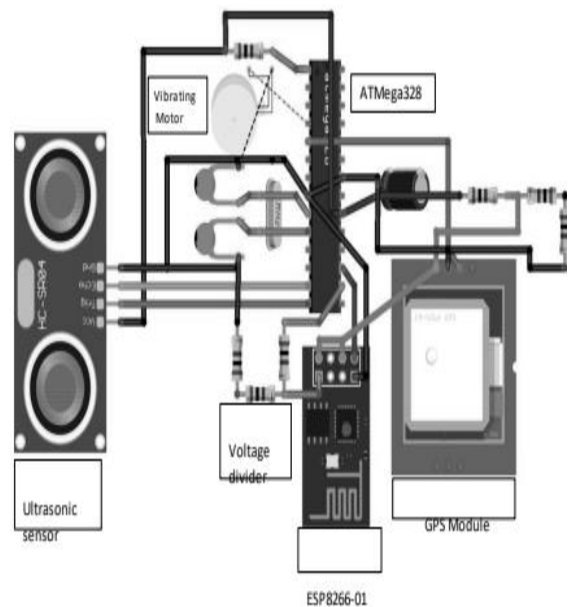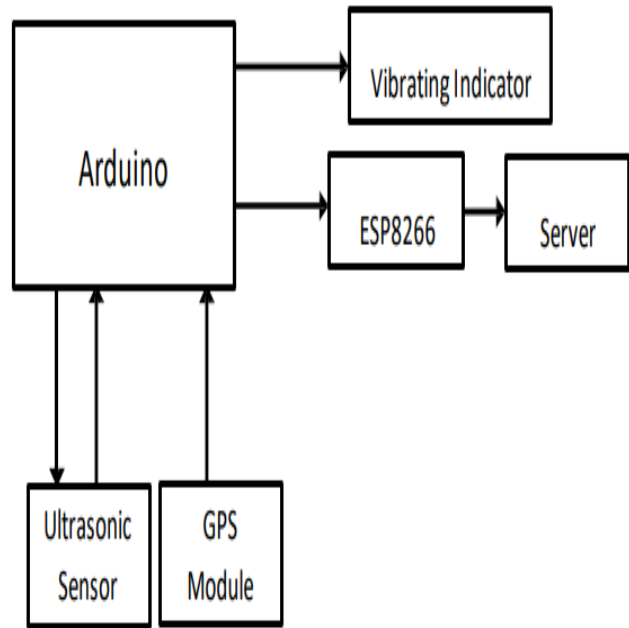

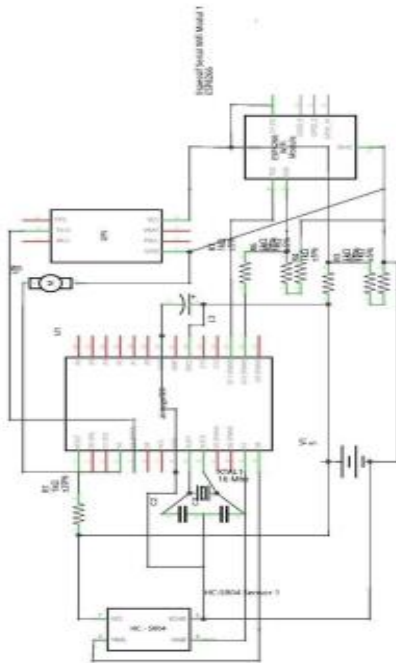Fig 6.5.1: Graphical view of circuit diagram

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Fig 6.5.2: Circuit diagram in wire frame mode

Fig 10.2: Back side of printed circuit board with components for Guidance System for Blinds
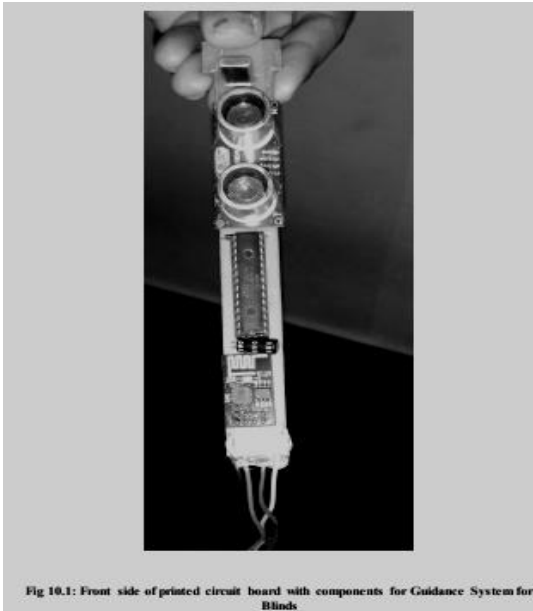
IMPLEMENTATION

Screenshots:

Fig 10.1: Front side of printed circuit board with components for Guidance System for Blinds
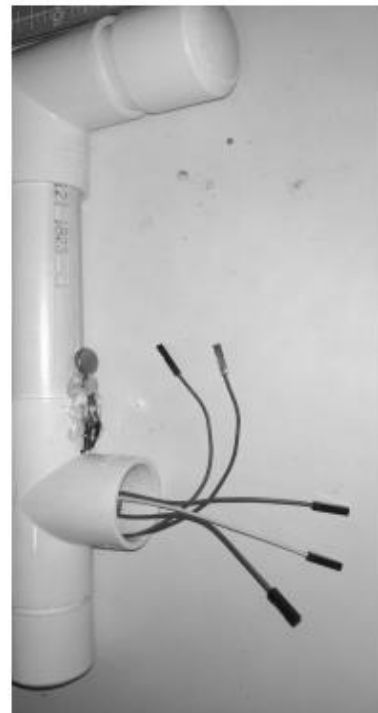

Fig 10.3: Holding handle of Guidance System for Blinds with GPS module and button vibrator embedded with in

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International Journal of Computational Intelligence in Control

3

213

Fig 10.5: Assembled unit on Guidance System for Blinds

Fib 10.8: Detecting current location from device

Fib 10.9: Showing time-line of current or previous dates taken by the blind using guidance system for blinds

Fig 10.6: Home page of server side

Fig 10.7: Login authentication to access Geo-monitoring

Fig 10.10: An UI of user's well-wishers to check the route map of two given geo-locations

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CONCLUSION

This research work presents the development of a smart navigation for blind people using Internet of Things. In this project we will be using Raspberry pi to which we will make smart stick for blink people which will be embedded with moisture and ultrasonic sensor to detect the real time hurdles while walking with the Google Maps cloud attached to the raspberry pi for perfect navigation for the low-vision or blind people. This will make a smart system which will be very useful for the blind people and also at the same time more accurate and safe. The blind people interact with the system in voice.. The proposed system can provide more abundant surrounding information and more accurate navigation, and verify the practicability of the newly proposed system

REFERENCE

- Balachandar S., Chinnaiyan R. (2019) Centralized Reliability and Security Management of Data in Internet of Things (IoT) with Rule Builder. In: Smys S., Bestak R., Chen JZ., Kotuliak I. (eds) International Conference on Computer Networks and Communication Technologies. Lecture Notes on Data Engineering and Communications Technologies, vol 15. Springer, Singapore

- Balachandar S., Chinnaiyan R. (2019) Reliable Digital Twin for Connected Footballer. In: Smys S., Bestak R., Chen JZ., Kotuliak I. (eds) International Conference on Computer Networks and Communication Technologies. Lecture Notes on Data Engineering and Communications Technologies, vol 15. Springer, Singapore

- Druv patel , Rahul seth, vikas Mishra" real -time bus tracking sysyem " international research journal of engineering and technology volume: 04 issue :03 – march -2017.

- G Sabarmathi, R Chinnaiyan (2019), Envisagation and Analysis of Mosquito Borne Fevers: A Health Monitoring System by Envisagative Computing Using Big Data Analytics, Lecture Notes on Data Engineering and Communications Technologies book series (LNDECT, volume 31), 630-636. Springer, Cham

- G. Sabarmathi and R. Chinnaiyan, "Investigations on big data features research challenges and applications," *2017 International Conference on Intelligent Computing and Control Systems (ICICCS)*, Madurai, 2017, pp. 782-786.

- G. Sabarmathi and R. Chinnaiyan, "Reliable Machine Learning Approach to Predict Patient Satisfaction for Optimal Decision Making and Quality Health Care," *2019 International Conference on Communication and Electronics Systems (ICCES)*, Coimbatore, India, 2019, pp. 1489-1493

- Hari Pranav A;M. Senthilmurugan;Pradyumna Rahul K;R. Chinnaiyan , "iot and Machine Learning based Peer to Peer Platform for Crop Growth and Disease Monitoring System using Blockchain," 2021 International Conference on Computer Communication and Informatics (ICCCI), 2021, pp. 1-5, doi:

- M Swarnamugi, R Chinnaiyan (2019), IoT Hybrid Computing Model for Intelligent Transportation System (ITS), Proceedings of the Second International Conference on Computing Methodologies and Communication (ICCMC 2018), 802-806.

- M. Swarnamugi ; R. Chinnaiyan, "IoT Hybrid Computing Model for Intelligent Transportation System (ITS)", IEEE Second International Conference on Computing Methodologies and Communication (ICCMC), 15-16 Feb. 2018.

- M. Swarnamugi; R. Chinnaiyan, "Cloud and Fog Computing Models for Internet of Things", International Journal for Research in Applied Science & Engineering Technology, December 2017.

- Mohammed F. Alrifaie, Norharyati Harum, MohdFairuzIskandar Othman, IrdaRoslan, Methaq Abdullah Shyaa,"vehical detection and tracking system iot based", International research journal of engineering and techanology volume:05 isuue: 08 – aug 2018

- Preetika B, ; M. Latha; M. Senthilmurugan; R. Chinnaiyan, , "MRI Image based Brain Tumour Segmentation using Machine Learning Classifiers," 2021 International Conference on Computer Communication and Informatics (ICCCI), 2021, pp. 1-9, doi: 10.1109/ICCCI50826.2021.9402508.

- S G vijaykumari ,Reshma r, b kirthna "Transport tracking using raspberry pi ",international journal of pune and ap-used mathematic volum 119 no.15 june 2018.

- S. Balachandar, R. Chinnaiyan (2019), Internet of Things Based Reliable Real-Time Disease Monitoring of Poultry Farming Imagery Analytics, Lecture Notes on Data Engineering and Communications Technologies book series (LNDECT, volume 31), 615- 620. Springer, Cham

- S.Balachandar , R.Chinnaiyan (2018), A Reliable Troubleshooting Model for IoT Devices with Sensors and Voice Based Chatbot Application, International Journal for Research in Applied Science & Engineering Technology,Vol.6,Iss.2, 1406-1409.

- S.Balachandar , R.Chinnaiyan (2018), Centralized Reliability and Security Management of Data in Internet of Things (IoT) with Rule Builder, Lecture Notes on Data Engineering and Communications Technologies 15, 193-201.

- S.Balachandar , R.Chinnaiyan (2018), Reliable Digital Twin for Connected Footballer, Lecture Notes on Data Engineering and Communications Technologies 15, 185-191.

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5

215