

A Survey on Smart Goggle for Blind People

Neha Shinde¹, Tejashri Sawant², Priti Panchal³, Omkar Saswade⁴, Prof. Ashwini Pandagale⁵

^{1,2,3,4} Student, Department of Computer Engineering, Dr. D. Y. Patil School of Engineering, Lohegoan, Savitribai Phule Pune University, Pune, Maharashtra, India

⁵ Professor, Department of Computer Engineering, Dr. D. Y. Patil School of Engineering, Lohegoan, Savitribai Phule Pune University, Pune, Maharashtra, India

ABSTRACT

Now a days technology is growing up rapidly. We can make use of technology in our day to day life. If we use technology for blind people then they can perform their day to day activities with ease. We are preparing smart goggle which will improve the life of visually impaired people by helping them in moving from one position to another. We are using two technologies namely IOT and Machine Learning .We are making IOT device which has headphones. It will detect which object is present in front of blind person and the distance of that object from person. It will not only give information about object present in front of him/her but also it will detect the object present at depth like stairs and pot holes. It will calibrate height of person and depth of the obstacle present below the feet. This information will be collected and passed via headphones. We are using sensor, which will be placed on the Arduino UNO and NANO which has all application of machine learning over it. Machine Learning for processing the overall data and information about the obstacle present.

Keywords: Arduino Board, Ultrasonic Sensor, Gy-521 MPU-6050, Pit, Machine Learning.

I. INTRODUCTION

Physically impaired people are those people who are not able to identify the obstacle present in their way. They may be totally blind or partially blind. As they cannot see the obstacle, communication and day to day activities are highly affected. They cannot perform the work easily, so we are preparing a device that will help them to detect obstacle for proper movement.

According to 2011 survey, there are 285 million blind people all over the world out of which 39 million people are completely blind and 246 million are partially blind. The necessity of eye donation is 40000 but the availability is only 8000. So there is big difference in need and availability. In order to

overcome this problem, there is need to develop a modern technology like IOT and Machine Learning to improve the life of blind person by detecting obstacle presenting in the way. The project aim at implementing technologies like IOT and Machine Learning in preparing smart goggles. These goggles consists of sensors which detect the obstacles in direction like right, left, front, upward and downward (senses the pit) on the road. These goggles not only find the obstacles but also give the distance of that obstacle from person. The information about obstacles is provided to blind person as output in the form of voice through headphones. Thus, main objective is to prepare a goggle with low price, reduced size, reliable and it will improve the quality of life of visually impaired people.

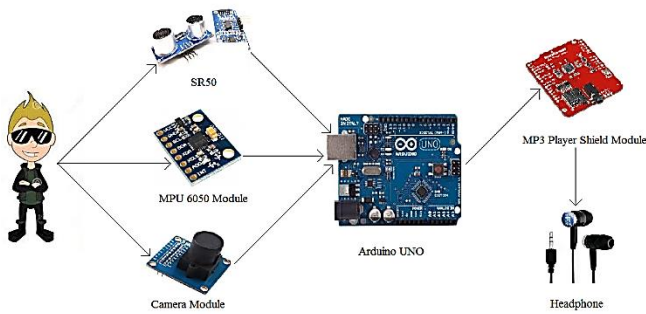


Fig 1 : Structure of Smart Goggle

II. LITERATURE SURVEY

Kote Shubham (2017) [2] have designed a smart glass whose objective is to give users the confidence to move around in unfamiliar environment. This system detects obstacle using Android App. The advantage about this system is it provides high detection rate on selected surrounding. The disadvantage about this system is, it is not having powerful camera to captured images. For using this system the basic knowledge about Android application is must, so use of this device has some limitations. This system could be advanced with GPS System and powerful camera.

Mohamedarif Regade (2019) [1] proposed the system that makes the effective product by using latest technology like supersonic waves, GSM, GPS which will help user to walk straight on corridor in an internal atmosphere. Visually impaired person can make use of this stick for making himself comfortable with surrounding. But disadvantage about the stick is it may not properly work in slippery floor and fireplace. It is not handy in nature. This system could be enhanced by using programmable wheels which will steer the stick off from the obstacle.

R Mohanapriya (2016) [5] worked on development of a glass which involves technique like image acquisition, feature extraction, feature matching, pattern recognition and template matching. It will result in detecting moving vehicle on the road and

traffic signal and informing user through audio commands. The advantage about this system is, it is capable of detecting vehicles on the road in order to make person aware about the vehicles on the road in the traffic area. The disadvantage of this system is that is not having any module for depth detection, so the depth will not be calculated properly. In future, we can add GPS module to detect the place.

Jingiang Bai (2015) [6] has developed a glass to overcome the travelling difficulty for visually impaired people. They use depth sensor and ultrasonic sensor for detecting obstacles. The advantage about this system is it will help them to move safely and efficiently in complicated indoor environment. Sensor used in this device are simple and with low cost. They have used depth camera for calculating depth. But the disadvantage is depth will not be calculated properly if the image captured is not clear.

Ankita Bhuniya (2017) [3] developed a system which can detect obstacles in five direction (front, right, left, back , below). The advantage about this system is having multilingual audio feedback system which uses 10 language based audio feedback system so that it can be comfortably used by people all over the globe. The disadvantage about this system is it will be not be useful for deaf person.

Esra Ali Hassan el At (2017) [4] developed a glass for visually impaired people using low cost bard raspberry pi 2 and camera. The advantage about this system is it is chip as compared to other device. These glasses are designed for recognition of text. It is especially designed for the enhancing the reading capability of a blind person. The disadvantage- it is not able to find the distance of obstacle from a person. However if we add different modules to the system then more features can be added to it.

III. CONCLUSION

This paper presents a survey on device for visually impaired people, which will enhance their life by helping them for movement in surrounding. We have made survey about different devices which are used for physically impaired people. Many devices are available which will improve the life of blind person. This paper contains survey about different devices like smart glasses, smart assistances system, smart stick which will provide functionalities like obstacle detection, image capturing, depth measurement, vehicle detection, multilingual audio feedback system, text recognition etc. We are studying all the features of available devices to produce a device which will provide multiple functionalities at same place.

IV. REFERENCES

- [1]. Mohamedarif Regade, S Bibi Ayesha Khazi, Sushmita Sunkad, "Smart Sticks for Blind using Machine learning ", International Journal of Innovativ Science and Research Technology, May 2019.
- [2]. Prof. Priya U.Thakare, Kote Shubham, Pawale Ankit, Rajguru Ajinkya, Shelke Om , "Smart Assistance System For the Visually Impaired", International Journal of Scientific and Research Publications, Volume 7, Issue 12, December 2017 ISSN 2250-3153.
- [3]. Ankita Bhuniya, Sumanta Laha, Abhishek Sarkar, "Smart Glass For Blind People", AMSE Journal- AMSE IIETA Publication 2017.
- [4]. Esra Ali Hassan and Tong boon Tang, "Smart Glasses For The Visually Impaired People", Department of Electrical and Electronics Engineering, Oct 2017.
- [5]. R.Mohanpriya, U.Niramala, C.Pearlin Priscilla, "Smart vision for blind people", International Journal of advance Research in Electronics and Communication Engineering Volume 5, Issue 7, July 2016.
- [6]. Jinqiang Bai, Shiguo Lian, "Smart Guiding Glasses For Visually Impaired People in Indoor Environment" ,IEEE, Zhaoxiang Liu, Kai Wang, 2015.

Cite this article as :

Neha Shinde, Tejashri Sawant, Priti Panchal, Omkar Saswade, Prof. Ashwini Pandagale, "A Survey on Smart Goggle for Blind People", International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), ISSN : 2456-3307, Volume 4 Issue 8, pp. 102-104, September-October 2019.
Journal URL : <http://ijsrcseit.com/CSEIT194824>