

# Smart Blind Stick For Visually Impaired People With Live Monitoring

Shruti Desai <sup>1</sup>, Mrunali Bichukale <sup>2</sup>, Shraddha Kamthe <sup>3</sup>, Archana Borate <sup>4</sup>, A.G.Nadaph <sup>5</sup>.

<sup>1</sup>Shruti Desai, Dept. of Computer Engineering, TCOER Pune, Maharashtra, India.

<sup>2</sup>Mrunali Bichukale, Dept. of Computer Engineering, TCOER Pune, Maharashtra, India.

<sup>3</sup>Shraddha Kamthe, Dept. of Computer Engineering, TCOER Pune, Maharashtra, India.

<sup>4</sup>Archana Borate, Dept. of Computer Engineering, TCOER Pune, Maharashtra, India.

\*\*\*

**Abstract** -As we know that sense of vision to human being is an important thing in our life, but there is some people who have lack of mobility because of blindness. In this paper we propose a navigation system or device which is helpful for blind persons. They can detect obstacle in front of them, they can also travel in known as well as unknown location with the help of that blind stick, it can detect obstacle with the help of IR sensors & blind person get aware with it when mobile phone get vibrated, or give some voice message to him or her.

**Key Words:**Blind, IR sensor, Navigation system, Smart phone, object detection

## 1.INTRODUCTION

Mobility and freedom for visually impaired people can be defined as the ability to move with confidence, speed and safety through his surrounding environment independently, but it is not possible without technology. We implemented one system which is helpful for that blind person. Those people can detect obstacle in front of them and make secure to him/her and his familiar and non-familiar person can also track that blind person from home also and current location also for that we make on application for android phone or pc which is carried by blind person and admin with the help of GSM/GPS. We can track the location of blind person and one more feature is added which is live video capturing, we can grab the feed in front of blind person and admin can observe from its home location.

### 1.1 Literature survey

1. A Survey of Voice Aided Electronic Stick for Visually Impaired People.

Author Name- Young Ho, Sung Jae Kang.

Description- From this paper we got idea about latest technology like Graphics Positioning System (GPS) & Graphics System Messaging (GSM). Which will help for tracking the location & used for making module of smart stick for visually impaired people and it gives us idea about

Voice message get from Android Phone to that blind person. [1].

2. Blind Navigation System Using Image Processing and Embedded System

Author Name- Sacinah Jamaludin, Zul Azizi Hailani

Description- We got idea from this paper for Navigation system has been developed which help to enhance mobility of blindness. This paper gives us idea for capturing live video of that person & grab video feed in front of blind person & this live video can be observe by admin itself. [2]

3. Smart Cane: Assistive Cane for Visually-impaired People.

Author Name- Amirul A\_Talib, Mohd Helmy Wahab

Description- We got idea from this paper for Voice message & Vibration when person detect obstacle with help of smart stick then blind person get aware to it by understanding Vibration alert & Voice message which comes from smart phone. [3]

4. Electronic Path Guidance for Visually Impaired People

Author Name-Iwan Ulrich and Johann Borenstein

Description- From this paper we got idea about the how range which is required for detecting obstacle or object from location of smart stick specific range is their we need to set threshold value if obstacle comes into that threshold range then it can detect successfully otherwise cannot. [4]

5. Use of Ultrasonic Sensors in the Development of an Electronic Travel Aid

Author Name- Alex Harold and Chris Gearhart

Description- From this paper we got idea about for capturing video image processing is required by making use of some algorithm & method we make some processes on image for capturing it. and also live monitoring of that person is seen at admin side. All the processing data is stored on server side in serialized format. [5]

6. Automated Mobility & Orientation System for Blind or Partially Sighted people

Author Name- Abdel Ilah\_Nour Alshbatat

Description- From this paper we got idea about GSM, GPS of sensor like Integrated Ultrasonic sensor, Accelerometer

sensor & IR sensor. Which one is more suitable & how they are perform & how they detect obstacle. [6]

## 2. PROPOSED SYSTEM ARCHITECTURE

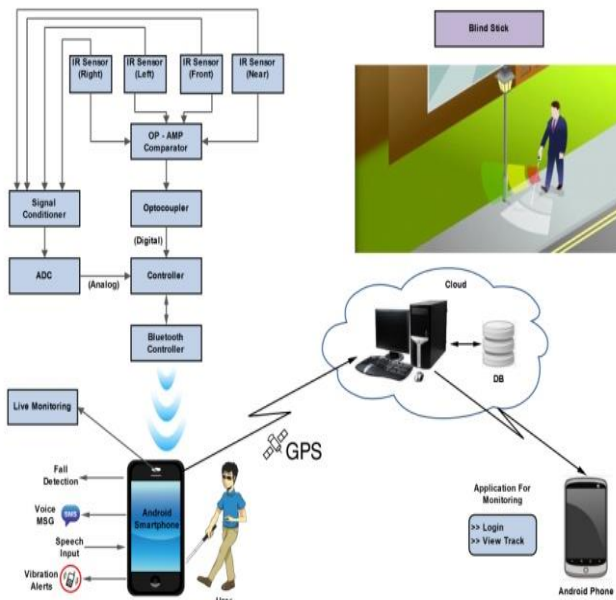


Fig -1: Block Diagram Of Blind Stick

### 2.1 Description

In this architecture, the main 4 components are as follows:

#### A. Hardware unit:

The first is Bluetooth controller which is used for establish connection between hardware and android phone. 89C51 Micro- controller used for controlling all operation perform on hardware unit. Signal conditional will transform electronic signal from one circuit to another.

OP-AMP Comparator will compare voltage level value to set voltage value and after comparing this value, generate the result.

#### B. Smart phone:

In second part of system is smart phone which is carried by blind person and which contain fast speed internet, accelometer sensor and camera.

This device plan an important role, this phone can carried by blind person when any obstacle is get detected, Then it gives alert to the user through vibration and voice message.

If the camera of smart phone is on, through it live video capturing is done by admin machine.

#### C. Server:

Server is the third part of the system. In this, Connection should establish between smart phone and server through WI-FI, Because we use it only in local area network. So that we make the use of WI-FI. All activity which processing are stored in database.

The database containing data is in the serialized format and read & write operations are performed.

#### D. Admin:

Admin can track that blind person current location through GPS and GSM and also can see that blind person through live video capturing. If the mobile fall down by blind person, then it will automatically send emergency message at admin side.

## 3. CONCLUSIONS

The main objective behind this paper to design one system which becomes helpful to the visually impaired people by providing one stick, which detect obstacle in front of the person, due to these feature, one smart equipment for visually impaired people for walking on the road or surrounding environment through it we can give them somewhat sense of vision. Tracking, live video capturing and live video monitoring is also implemented for the security or safety purpose of the blind person.

## 4. FUTURE SCOPE

GPS can help to find the shortest path from current location of blind person. This project implemented for blind people they can detect obstacle in local area network only, means only within range by purchasing IP address for particular machine. Admin can locate or track that blind person from any location in the world.

## 5. ACKNOWLEDGMENT

We have taken lots of effort on this paper but if is not possible without support and help of individual and respective organizations. We are very grateful in presenting the paper on "Smart blind stick for visually impaired with live monitoring" under the guidance of Prof. A.G.Nadaph. We are very thankful for her valuable guidance. We would like express our gratitude to Prof.Dr.S.B.Chaudhari, Head of department of computer engineer. Finally, we express our sincere thanks to our parents which give help directly or indirectly to completion of this paper.

## 6. REFERENCES

- [1] Sung Jae Kang, Young Ho, Kim, In Hyuk Moon, "Development Of An Intelligent Guide-Stick For The Blind", IEEE International Conference on Robotics & Automation Seoul, Korea, May 21-26, 2001.
- [2] Zul Azizi Hailani, Sakinah Jamaludin, "An Electronically Guided Walking Stick For The Blind" University Tenaga Nasional, Malaysia.
- [3] Mohd Helmy Wahab, Amirul A. Talib, Herdawatie A. Kadir, A.Noraziah, Roslina M. Sidek, "Smart Cane: Assistive Cane For Visually-Impaired People",IJCSI International Journal of Computer Science Issues, Vol. 8, Issue 4, No 2, July 2011.
- [4] Johann Borenstein and Iwan Ulrich, "The Guide Cane- A Computerized Travel Aidfor The Active Guidance Of Blind Pedestrians", IEEE International Conference on Robotics and Automation, Albuquerque, NM, Apr. 21-27, 1997.
- [5] Chris Gearhart, Alex Herold, Dr. Brian Self, Dr. Charles Birdsong, Dr. Lynne Slivovsky, "Use Of Ultrasonic Sensors In The Development Of An Electronic Travel Aid",IEEE Sensors Applications Symposium New Orleans, LA, USA - February 17-19, 2009.
- [6] Abdel Ilah Nour Alshbatat, "Automated Mobility And Orientation System For Blind Or Partially Sighted People",International Journal on Smart Sensing and Intelliegent System.