



# International Journal of Innovative Research in Computer and Communication Engineering

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## Bus Alert System for Navigation of Blind People

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**ABSTRACT:** The blind and visually disabled people form a predominant group in the disabled society and hence, need greater attention. Most of the rehabilitation therapists, especially occupational therapists, do not focus on this group. The proposed system consists of different sensors placed on a bus like ultrasonic sensor, GPS sensor, RFID reader. Data from these sensors will be then uploaded to the cloud server through which user will be able to access the required information from anywhere. The sensors will able to provide critical data like current location of the bus by gps sensor, user can also check for the seat vacancy with the use of ultrasonic sensor. The system also keeps record of the passengers boarding on the bus through RFID reader for which passenger will have a card with a unique id. This id will be stored in the database through which user details can be accessed for the future use.

**KEYWORDS:** Blind Person, GPS, RFID, NodeMCU.

### I. INTRODUCTION

The world is loaded with risks and ponders which society accepts the utilization of vision to maintain a strategic distance from or appreciate. However the issues of route for the visually impaired are still exceptionally mind boggling and troublesome particularly when they strolled down in road furthermore explore to inaccessible spots by open transport framework. Visually challenged persons face constraints in independent mobility and navigation. Mobility means the possibility of liberally moving, without support of any supplementary person, at home and unfamiliar scenarios. People with visual impairment tackle enormous limitations in terms of mobility. This project is mainly developed to guide blind people while navigation. There are many techniques used. If blind persons are in bus station, they can't get the correct bus without others help. The blind people can give query regarding the available bus in that route.

Objectives of this project is using cloud storage and GPS in the bus and smartphone consist GPS. Admin will get the data from cloud storage .The blind takes the right bus parked in front of him/her and when the destination is reached it is announced by means of GPS. Audio output is generated by the voice synthesizer. If in case direct bus is not available for particular place, the general instructions must be provided to guide blind people. And also it must guide the people to find particular hotel, mall and other public places. It must guide the blind people while walking in the street by entering destination by giving turn by turn direction. User can swipe around the screen and the device will tell them what item they have selected. For opening an app we have to double tap it. This ensures that the user always knows where his finger is on the screen and so, he can open any app he wants. Voice brief is a feature that can also read emails and text messages out loud and with the use of a voice recognition app, the user can reply.

### II. LITERATURE SURVEY

1. Blind Navigation System for Visually Impaired Using Windowing-Based Mean on Microsoft Kinect Camera Ali Ali, Mohammad Abou Ali Lebanease International University, Department of Biomedical Engineering This paper presents an obstacle avoidance system for blind people using Kinetic depth camera. This assistive technology recognizes the



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medium in front of the user using Kinetic depth camera. The system receives the depth images from the Kinetic camera. When the system recognizes an obstacle, it sends a voice feedback to the user through earphones.

2.PERCEPT-II: Smartphone based Indoor Navigation System for the Blind Aura Ganz, Fellow, IEEE, James M. Schafer, Yang Tao, Carole Wilson, and Meg Robertson In this paper we introduce PERCEPT-II, a low cost and user friendly indoor navigation system for blind and visually impaired users. Using an Android Smartphone that runs PERCEPTII application with accessibility features, the blind user obtains navigation instructions to the chosen destination when touching specific landmarks tagged with Near Field Communication tags.

3.The Development of a Pedestrian Navigation Aid for the Blind Mounir BOUSBIA-SALAH, Mohamed FEZARI Badji Mokhtar University, Annaba Faculty of Engineering, Department of electronics Laboratory of Automatic and Signals-AnnabaBP.12 Annaba, 23000, ALGERIA An Electronic Travel Aid is a form of assistive technology having the purpose of enhancing mobility for blind individuals. This paper examines a pedestrian navigation system for the Blind, which is based on a microcontroller with synthetic speech output. This aid is a portable, self contained system that will allow blind people to travel without the assistance of guides. It is designed for a battery-powered portable model. In addition, it is focused on low power consumption, small size, lightweight, and easy manipulation.

4.Navigation Aid for Blind People Using Acoustic Signal Zehui Zheng<sup>†</sup>§, Weifeng Liu<sup>†</sup>, Rukhsana Ruby<sup>†</sup>, Yongpan Zou<sup>†</sup>, Kaishun Wu<sup>†</sup> <sup>†</sup>College of Computer Science and Software Engineering, Shenzhen University <sup>§</sup>College of Information Engineering, Shenzhen University Blind mobility aid is a primary part in the daily life of blind people. Although plenty of systems or devices are invented to make the navigation of blind people easier, those are generally expensive and hardly affordable for them. To solve these issues, we introduce AB Aid, a novel system designed for blind or visually impaired people to navigate, with commercial off-the-shelf (COTS) mobile devices.

5.A Cloud-based Outdoor Assistive Navigation System for the Blind and Visually Impaired Anna N. Lapyko<sup>1</sup>,Li-Ping Tung<sup>2</sup>, Bao-Shuh Paul Lin<sup>3</sup>Intelligent Information and Communications Research Center National Chiao Tung University Hsinchu, Taiwan, R.O.C This work introduces a cloudbased outdoor assistive navigation system (COANS) for BVI people. The main goal of the system is to provide easy street navigation and help to make outdoor walk in non-familiar environment less stressful. Hardware part from the user-side includes an android- based mobile phone and an external low-cost L1 GPS receiver to improve position accuracy. Applying the technique known as Real Time Kinematic (RTK) ameliorates the issue of the user position estimation. Interaction between the application and the user is based on voice commands (user-side) and voice notifications (system-side), together with the user-friendly “shaking” and “swiping” commands.

6.“Smart Bus Alert System for Easy Navigation of Blind” AdarshHolikattiM.Tech student, Dr. S. Mohan Kumar Professor,Dept. of Mech., MCE Hassan, Karnataka, India Objective of the project is to provide a solution with the aid of wireless sensor networks (WSNs). ZigBee system is used for indicating the presence of blind person in the bus station. Voice module and APR9600 audio playback systems are used to update and inform the blind person about the bus arriving and reaching destinations and to guide him as to what he has to do next. Microcontroller analysis the information provided and generates the corresponding bus number. ZigBee transceiver sends the bus number and announced in the microphone attached with the system.

7.Voice and GPS Based Navigation System For Visually Impaired HarshaGawari\*<sup>1</sup>, Prof. MeetaBakuli <sup>1</sup>(E &TC department, GHRCEM Pune, India.) <sup>2</sup>(Prof E&TC Department, GHRCEM Pune, India) The paper represents the architecture and implementation of a system that will help to navigate the visually impaired people. The system designed uses GPS and voice recognition along with obstacle avoidance for the purpose of guiding visually impaired. The visually impaired person issues the command and receives the direction response using audio signals. The latitude and longitude values are received continuously from the GPS receiver. The directions are given to the user with the help of audio signals. An obstacle detector is used to help the user to avoid obstacles by sending an audio message.

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GPS receivers use NMEA standard. With the advancement in voice recognition it becomes easier to issue commands regarding directions to the visually impaired.

8.Design and Development of Blind Navigation System using GSM and RFID Technology S. Dhananjeyan<sup>1\*</sup>, Dr. K. Mohana Sundaram<sup>2</sup>, A. Kalaiyarasi<sup>3</sup>,and Dr. P. G. Kuppusamy<sup>4</sup> The main objective of this work is to provide a cost effective way to allow path planning for blind people. Methods: The Blind Audio guidance system hopes to allow the visually impaired users to simply press a button, speak the desired destination to the Blind customer care, and be guided there with the use of audio instructions. The system provides a portable unit that can be easily carried out and operated by a visually impaired user.. To implement a wrong path identification alert system for Blind and to provide blind to communicate with the customer care in a finger Tip. In this work ultrasonic and RFID are combined to navigate the blind.

9.Beacon-guided Structure from Motion for Smartphone-based Navigation Tatsuya Ishihara JayakornVongkulbhisal<sup>†‡</sup> Kris M. Kitani<sup>†</sup> Chieko Asakawa<sup>†</sup> IBM Research <sup>†</sup>Carnegie Mellon University Instituto Superior Tecnico We approach this problem from a systems perspective, where we are required to obtain accurate localization of blind travelers using a smartphones app for localization. In particular, we assume that the environment is already instrumented with Bluetooth low energy (BLE) signals to provide rough proximity information, and we propose to integrate it with visual information to perform efficient structure-from-motion and camera localization.

10.BlindDroid: An Information Tracking System for Real-time Guiding of Blind People José Cecílio\*, Karen Duarte, Pedro Furtado University of Coimbra, Coimbra, Portugal Among the activities affected by visual impairment, navigation plays a fundamental role, since it enables the person to independently move in safety. The heterogeneous environment, easily perceived by visually enabled people, is hardly known by partially sighted people. A challenging task for these people is independent navigation spaces/buildings/environments. The environment is usually signaled and labeled with visual marks and signs which are not appropriate for blind persons. With the purpose of balancing the access to services and spaces among all persons, this work proposes an innovative navigation and information system to help the navigation of blind people within new environments (e.g. shopping center, public office building).

### III. SYSTEM ARCHITECTURE

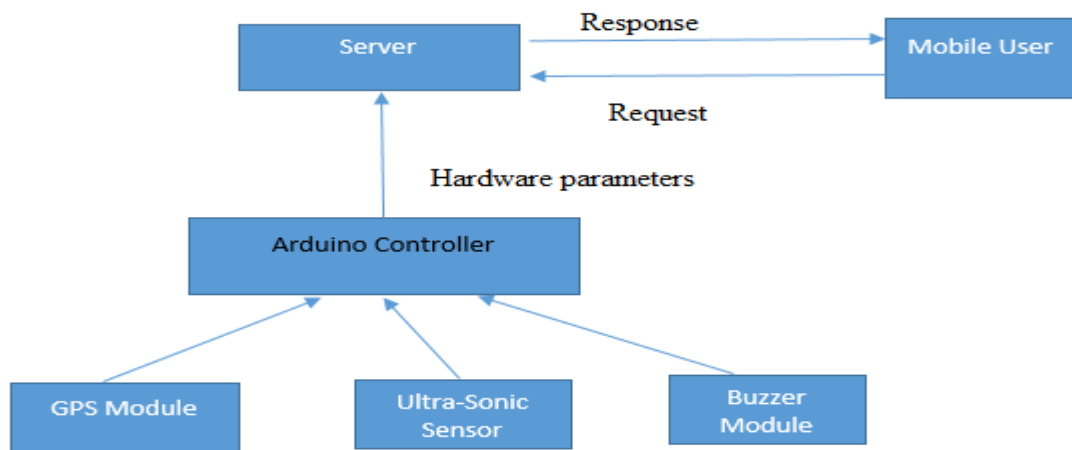


Fig. System Architecture



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## III. CONCLUSION

In the previous system, the blind person used to carry a bus stop unit but according to the system proposed, the bus stop unit is made stationary at the bus stop. The aim of the proposed system is to provide a helping hand to the visually impaired for convenient navigation is fulfilled. With the help of GPS tracker connected with audio output the destination chosen by the blind is intimated when the bus reaches the correct location.

## REFERENCES

1. SakmongkonChumkamon, PeranittiTuvaphanthaphiphat, PhongsakKeeratiwintakorn "A Blind Navigation System Using RFID for Indoor Environments" Proceedings of ECTI-CON 2008
2. 2. RachidSammouda, Ahmad AlRjoub" Mobile Blind Navigation System Using RFID"conference 2015
3. 3. S. Sai Santhosh1 , T. Sasiprabha2 , R. Jeberson3" BLI – NAV Embedded Navigation System for Blind People"conference 2011
4. 4. AdarshHolikatti, Dr. S. Mohan Kumar" Smart Bus Alert System for Easy Navigation of Blind" ISSN:2008
5. 5. DheerajMehra, Deepak Gupta, Vishwarath.T, Neil Shah, PiyushChanana, Siddharth, Rohan Paul, Balakrishnan.M, P.V.M. Rao." BUS IDENTIFICATION SYSTEM FOR THE VISUALLY IMPAIRED: EVALUATION AND LEARNING FROM PILOT TRIALS ON PUBLIC BUSES IN DELHI",transed 2015
6. 6. Hsiao-Lan Wang 1 ,Ya-Ping Chen 2 , Chi-Lun Rau 2,†,\* and Chung-Huang Yu 1," An Interactive Wireless Communication System for Visually Impaired People Using City Bus Transport", ISSN 1660-4601 ,2015
7. 7. SwapnilGholap\* ,GovindEkshinge\*\* , Parag Naik\*\* , Prof.S.D.Chavan\*\*,"Navigation of Blind People Using Passenger Bus Alert System", ISSN 2250- 3153,2015.
8. G. Sandeep Goud1 Mr. Y.Raghavender Rao2 Mr. G.Krishnaiah3 Dr. D.N Rao4, "PASSANGER BUS ALERT SYSTEM FOR EASY NAVIGATION OF BLIND PEOPLE ", ISSN 2048 – 1069,2012
9. Shradhav.bhende1 , Vikas s. meshram2 , Ashwinee s. mundafale3 ,prashant c. mandhare4 , vivek r.deodhare5" BUS RECOGNITION SYSTEM FOR VIP PERSON USING ZIGBEE TECHNOLOGY" ISSN: 2321-8134,2015
10. Jiangang Ma, Jianghua Zheng "High Precision Blind Navigation System Based on Haptic and Spatial Cognition,IEEE conference 2017
11. Syed Rizal Alfam Wan Alwi, Mohamad Noh Ahmad" Survey on Outdoor Navigation System Needs for Blind People"IEEE conference 2013
12. RuxandraTapu, Bogdan Mocanu, Titus Zaharia" A Computer Vision System that Ensure the Autonomous Navigation of Blind People" EHB 2013
13. IYAD ABU DOUSH1,\* , SAWSAN ALSHATNAWI1 , ABDEL-KARIM AL-TAMIMI2 , BUSHRA ALHASANI AND SAFAA HAMASHA" ISAB: Integrated Indoor Navigation System for the Blind"IEEE conference 2016
14. Miguel Reyes Adame, Jing Yu, Knut Möller, Edgar Seemann" A Wearable Navigation Aid for Blind People Using a Vibrotactile Information Transfer System" 2013 ,ICME