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A Survey on Smart App for Visually Impaired (SAVI)

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Abstract: This paper focuses on to develop an Android-based Intelligent Software Assistant application for visually challenged or blind people .The application is proposed to help people with visual limitations or blind people to access Android-based devices so that they can use library resources by using android devices.
In this Application we have call logs, call dialer, Notes, Battery level status, messaging features with inbox, sent items and Maps features enhanced through voice assistant to benefit the visually impaired.
Text to speech concepts is proven useful for blind people and in future making applications with built in features for navigation and this application also serves an secondary purpose of social media detoxification tool for the people who are addicted on using phones.
This application helps them control their urge for constant checking of phone and provides their life a purpose
Keywords: Android, Navigation, Voice assistant, Data Base, social media detoxification.

I. INTRODUCTION

The explosive growth of the Android platform has been a significant win for consumers with respect to competition and features. The purpose of this study is to discuss the development of Android-based Intelligent Software Assistant application for visually challenged or blind people.

The application is proposed to help people with visual limitations or blind people to access Android-based devices so that they can use library resources by using android devices. In the Application we have call logs, call dialer, Notes, Battery level status, messaging features with inbox, sent items and Maps.

The System helps the Blind person to also read out all the content of the message along with the sender details and the date and time, in whole everything. The system also allows the user to add notes or set remainder in their application. The System speaks out the number pressed on the screen and calls to the respect numbers. The System in all is a voice assistant for whatever action the user has performed through a custom app while taking the data from the default application. It also guides the user to travel from the current location to the destination place through voice assistant..The objective of the project is to provide visually impaired people with access to use technology which would make their life easier. This application provides user with specific set of features to call, message, navigate and battery percentage etc. The final output of each module is through the voice assistant which guides the blind people accordingly. Added additional feature is that it can also be used as a social media detoxification application. This paper also helps the people who are so much addicted to social media, were they can just disable the voice assistant and use this application as an launcher which helps them to detoxify their addiction.

II. PROPOSED SYSTEM

In our project we have developed an android application that benefits the visually impaired by enabling them to make calls, send and receive text messages, make notes and even identify their own location. We are deploying a dedicated voice assistant for the user, which assists them in performing afore mentioned actions.

When the user opens the application he / she will be greeted by a voice assistant who later on describes the functioning of the application and when selected an option the assistant tells the user about the function of the selected option. Each option is different and has different functions on their own.

The call option is accessed by the user talking to the mobile phone and providing the input, based in their input the application seeks the contact and calls the desired user. The same process is similar for messaging and making notes, where the user provides the input and the application does the remaining functions. The Map option is used to identify the current location of the user. We use Java as our base programming language for the application development with XML as the connector, for mapping between JAVA, JSP (frontend) and the Servlet. (JSP -for validation of the input from the user).

III. LITERATURE SURVEY

A. Simple Smartphone-Based Guiding System for Visually Impaired People

This paper proposes a smartphone based guiding system for visually impaired and achieving obstacle avoidance a computer image recognition system and smartphone application were integrated to form a simple assisted guiding system. This methodology uses a computer image recognition system and smartphone application were integrated to form a simple assisted guiding system. Outcome of the project is a Mobile based application for obstacle detection. The challenges to this paper are the usability of the application in real life and issues with walking around with your smart phone in front would be inconvenient. The future scope of this paper could be used in glasses and head bands for accuracy.

B. RF Based Talking Signage For Blind Navigation

This paper contains a user friendly and versatile method called "Talking Signage" that is implemented using android devices. The system uses an Android application in the mobile phone which could read the text with the help of the voice assistant inbuilt in the phone through the available cellular network. This works with the help of the RF device which communicates with the mobile phone . Challenge is to make them adapt and relay on technology without anyone help. Also increase the usability of the product.

C. Location based services for the blind supported by RFID Technology

These systems use the Global Positioning System (GPS) and only work well in outdoor environment since GPS signals cannot easily penetrate and are greatly degraded inside of buildings. Some hybrid systems have been proposed that use GPS as main information source and RFID for corrections and location error minimization. The outcome is that it uses RFID technology to provide an location based service for visually impaired people. This paper mainly works with the RFID technology which can be used for both indoor and outdoor navigation. Electronic white cane alert the safest area to the user with the help of the RFID and sends the data to the mobile application through the Bluetooth connectivity. Challenges Blind users rely very much on the hearing sense, and the system mustn't be an obstruction. In future it may lead to Creating a layer that covers large areas and increases the places that the user can safely navigate.

D. Enhanced Portable Text To Speech Converter For Visually Impaired

The text reader is designed to help the visually impaired listen to an audio read-back of printed and handwritten scanned text. The image from the scanner is sent to the application in the paired Android phone over Bluetooth. An open source optical character recognition (OCR) engine, Tesseract is used to extract the text from the image, and this extracted text is converted to speech. First image is recognized and text is get and then converted to binary code. It recognize both printed and handwritten document. OCR engine is used recognize handwritten documents. Vocal tract is used to produce voice output. Document scanner is used to scan the entire document and send it to the android application so that it can be read back to the user, it can be send through the Bluetooth. It supports languages like Bengali and Hindi. Only the text in the scanned messages it read to the user. The main advantage is that it is low cost and user interface is very friendly. Challenge is to make them adapt and relay on technology without anyone help. Text to speech concepts is proven useful for blind people and in future making applications with built in features for image reading is possible.

E. GPS Based Smart Navigation for Visually Impaired Using Bluetooth 3.0

This paper help the visually impaired people to navigate in new environment, finding new route. The objective of the project is to create a portal, self-contained, user-friendly system that will allow the visually impaired Individuals to navigate in both familiar and un-familiar environment without any human guidance. A user-friendly guidance system for visually impaired people that involves a smartphone and server. For indoor navigation Bluetooth receiver is used . Google map in the smart watch help in finding the route. Voice command is matched with library files and matched with the input to the given engine.

F. Towards Efficient Mobile Image-Guided Navigation Through Removal Of Outliers

This approach for positioning using smartphones and image processing techniques is developed. 3D image of given object are created and stored in sparse point clouds. New model positions of test images were identified and compared to the according positions in the reference model. Future model is outlier removal. Another is the localization time is decreased . This will reduce the points in the unwanted area in the image . The direction of the points can be used to position the unwanted points in the image.

G. A Navigation System For The Visually Impaired

1) A Fusion of Vision and Depth Sensor: A navigation system for a person with visual impairment involves identifying the layout of the 3D space around them and then helping them negotiate their way around obstacles en route to their destination. Local image feature detectors that can be used to develop a vision-based navigation system. The proposed system aims to provide navigation assistance to visually impaired people, so testing by its probable users was crucial. Sonar and laser strippers are used to get the distance of the object. Kinect sensor is used to detect the first step of the distance and located in the small distance. It is used to find obstacles in a reasonable distance. In future laser strippers are used to get accurate response. Hybrid technologies used to work in all environments.

H. Smart Android Application for blind people based on object Detection

We are detecting an object using the mobile camera and giving voice instructions about the direction of an object.

User must have to train the system first regarding the object information. An Android application that warns the smartphone user from obstacles way. The objects are detected using image processing. The frame is converted to gray scale with HSV. The object is detected using key matching technique and sent to the database to check for the obstacle. The object is read to the user with voice over. In future the quality and video improvement would be made.

I. Vocal Vision Android Application for Visually Impaired Person

The main aim of this paper is to recognize and match scanned objects stored in file of mobile application using Image Processing and Artificial Neural Network algorithm. This application is mainly used for edge detection, Sobel edge detection and for training Back Propagation Neural Network algorithm is used. Recognized object in image is communicated to blind user by text to speech. In this paper , object training and detection for color feature system is obtained and further used to remove the noise from the image. The image is blurred by using color blur technique. The RGB image is converted to gray scale to get each pixel value and also RGB image is converted into HSV image for further use. Artificial neural network used to detect the objects in front of the people. Edge detection is used to reduce amount of data in the object. It is used and checked only for indoor activities. In future induction headphones to hear both indoor and outdoor sounds.

J. VisualPal : A Mobile App for Object Recognition for the Visually Impaired

In this paper object detection is main factor discussed. There are software applications for computers and touch screen devices equipped with speech synthesizers. The major module of the project scans and detects the object in the image captured by the camera of an in built camera of a smartphone for the visually impaired. It is a dedicated image recognition application running on an Android system smartphone with the use of hybrid algorithm the computation time is reduced and the correct object is detected very fast. Hybrid algorithm used to check the correctness and the accuracy of the object. Image is captured with the help of the camera in the phone and sent to the application to read to the user. The brightness and the color of the object is detected at accuracy. Color is detected and read to the user. The intensity of the color is identified and shadows are improved. Future is worked to be touch free.

K. A Monitoring Device for Blind

This paper proposes a design for a device which will help overcome the problems i.e, obstacle detection and aid in navigation. The device is a pair of wristbands that when worn on the wrists helps the visually impaired to navigate to the destination through different tactile stimuli. The proposed device will be connected to an android application via Bluetooth connection which will help the person set the source and destination. A GPS enabled system will be used combined with a system enabled for voice inputs to guide a visually impaired person to any place he/she wants to travel to. Bluetooth used for getting the source and destination. Haptic feedback and proximity sensor used for object detection. Ultra sonic sensor waves used to detect the obstacles. This device can also be used at outdoor. The application can be opened by long pressing the home button.

Obstacle can be detected by vibration. Image processing could be used to detect the face .

L. Smartphone Application To Assist Visually Impaired People

this paper illustrates a portable device based android application which can be used in helping the visually impaired people on daily bases.by using MEMS (micro electron mechanical system)sensor to gather information and process it using few external sensorial modules. Communication between smart phone and external modules is made possible via Bluetooth and Wi-Fi. The communication between the smart phone and the user is made possible by text-to speech software module. This android application proves to be useful in terms of efficiency, portability, cost-effective and user friendly. Communication between smartphone and external modules is made via Bluetooth and Wi-Fi.

The communication between smartphone and its user is made through a text-to-speech software. Ultrasonic sensors uses three levels to detect obstacles.

M. Vision Substitution System Analysis and Evaluation For Visually Impaired

visual substitution system helps visually impaired people with navigation and also helps in day to day life by helping them to access their documents.it separates the object from the image which is obtained from the camera and localization and identification are conducted from the image and videos.

The recognized tags are output to the visually impaired people. It uses text to speech for communication between the device and the user. Information are gathered in order to be processed by the device and information of the surrounding is given to the user by text to speech software module.

This paper uses OCR (optical character recognition)software to differentiate the character from the image. This paper proposes an alternative for vision less people as an vision substitution system. This paper deals with number of factors such as preprocessing ,image acquisition, location and segmentation, feature extraction, classification and post processing. Visual substitution system uses RFID (radio-frequency identification) to automatically recognize and trail tags attached to the objects. Automatic identification and data capture(AIDC)also helps in data capturing and processing.

N. Substitute Eyes for Blind using Android

This paper can be used to detect local obstacles such as walls/cars/etc. Ultrasonic sensor is used to detect the obstacles and vibrator motors to give tactile feedback to the blind.

This will warn blind person if there is any step or pothole in the path. This paper proposes a design for a device which will help overcome the problems i.e, obstacle detection and aid in navigation. helps visually impaired people with navigation and also helps in day to day life by helping them to access their documents.it separates the object from the image which is obtained from the camera and localization and identification are conducted from the image and videos The embedded device detects the local obstacles from two ultrasonic sensors which overcomes the drawback of smaller range of ultrasonic sensors. The embedded device gives a feedback to the blind person using vibrator motors (used in cell-phones) instead of solenoids to give tactile feedback. The information is given to the blind person by means of three vibrator motors which will be placed on three finger tips of the blind person.it is basically a light weight, comfortable and accurate device which can be used to navigate by blind people.

O. Smart Voice Assistant A Universal Voice Control Solution For Non-Visual Access To The Android Operating System

This paper uses Voice Command Device (VCD), a universal voice control solution for non-visual access to the Android operating system.

It provides the Navigation Reader for walking and riding, which is based on Google Maps and supports more detailed voice guidance for the distance to a destination. It provides the Navigation Reader for walking and riding, with the help of Google Maps. we introduce Voice Command Device (VCD), a universal voice control solution for non-visual access to the Android operating system. graphical user interfaces (GUI), objects, such as buttons, menus and documents, are presented for users to manipulate in ways that are similar to the way they are manipulated in the real work space, only that they are displayed on the screen as icons. The reader, which transforms digital information to text and then to voice by TTS (Text-To-Speech), is widely used to help visually impaired persons to operate devices.
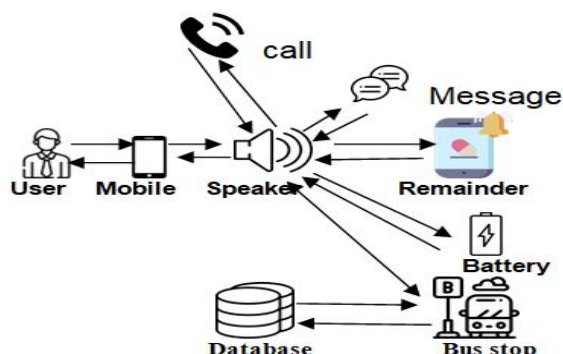
It includes message reader, text file reader, OCR reader, voice dialer in order to help the user with routes and message reading. In addition, it provides the Navigation for walking from one place to another without anyone help which is based on Google Maps and supports more detailed voice guidance for the distance to a destination and directions of moving. In this application user is able to access the services of smart phone with their voice command.

User can easily send a message to the recipient in their contact list as well as to the mobile number by voice command which uses text to speech to convert the user voice into the desired text form.

In this Project visually impaired person or the person having less knowledge about smart devices or phone or how to access the smart phone can easily access the phone with their voice or speech command. This provides ease of operation to the user .As the system uses Smart phone so that the accuracy is increased. The Reading of SMS, E-mail, and News can be possible by the blind people also.

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IV. CONCLUSION

More applications can be developed on android platform to help who are in need and to make their lives easier. Outcome is to provide visually impaired people with technology which can make their life much easier. In future it may lead to Creating a layer that covers large areas and increases the places that the user can safely navigate. Text to speech concepts is proven useful for blind people and in future making applications with built in features for navigation and using smart phone is possible. this application mainly focuses on visually impaired people and helps them to live their lives easier by bringing an initiative on android based platform. this application also serves an secondary purpose of social media detoxification tool for the people who are addicted on using phones. This application helps them control their urge for constant checking of phone and provides their life a purpose.

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