

SMART BLIND STICK FOR OBSTACLES DETECTION AND NAVIGATION FOR BLIND PEOPLES

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1. ABSTRACT

Smart phones provide a great choice of features that facilitate the life for the users. The features and capabilities of mobiles are increasing every day and almost everyone might have experienced misplacing or losing their mobile phones. The existing system provides some features in helping the user to trace the android phones by sending messages and mails. But, in real time every individual owns more than one SIM card and hence the users find it annoying when the application sends notification messages for the SIM card changes made by them (the real owners). The proposed intelligent android Anti-theft application provides the safe and alert mode options (to avoid unwanted notifications). It is embedded with a lot of features such as SIM tracking based on location, detecting change in SIM card, application enabling at the time message sending and also delete important data from mobile phone. Thus, proves to be different from the existing mobile tracker applications. Smart phones provide a great choice of features that facilitate the life for the users. The features and capabilities of mobiles are increasing every day and almost everyone might have experienced misplacing or losing their mobile phones. The existing system provides some features in helping the user to trace the android phones by sending messages and mails. But, in real time every individual owns more than one SIM card and hence the users find it annoying when the

application sends notification messages for the SIM card changes made by them (the real owners). The proposed intelligent android Anti-theft application provides the safe and alert mode options (to avoid unwanted notifications).

2. INTRODUCTION

The mobile cellular communication has been appreciated since its birth in the early 70's and the advancement in the field of VLSI has helped in designing less power, smaller size but efficient transceiver for the purpose of communication. But however, the technology has not yet answered the loss or misplacement of the lost mobile phone which is significantly increasing. The mobile phone is lost there is possibilities for misuse of data stored in it. As there is no mechanism in place which can help the owner to recover his mobile phone. Mobile tracker which is autonomous and intimates with the owner via SMS and Email when it detects SIM change. Geo code technique is used for detection of the theft mobile and it can be done in efficient manner. The IMEI number is a unique number that is embedded in the mobile phone. While the Apple iPhone single headedly redefined the term "smart phone" during its first two years of release, Google's Android platform for mobiles.

3. LITERATURE SURVEY

IN[1] **Piotr Kardyś; Adam Dąbrowski; Marcin Iwanowski; Damian Huderek (2019)**, in their paper, explained A new Android application for blind and visually impaired people This article describes a new Android application supporting blind and partially sighted people in smartphone use. It enables them to call, send and receive text messages, make use of a “phone book” as well as of additional options such as positioning or battery monitoring, through voice commands. The software concept together of the structure of the respective application has been presented in detail.

IN[2] **Krzysztof Dobosz (2019)**, Designing Mobile Applications for Visually Impaired People The rapidly growing development of mobile technology initially adversely affected the accessibility of device functionalities for visually disabled persons increasing their digital exclusion. But now, thanks to the support of the mobile device manufacturers, mobile operating systems, software developers and international organizations (e.g., W3C) the use of modern portable devices (smartphones, tablets) with touch screens becomes more and more accessible for all. This paper describes the present state of mobile technologies development taking into consideration the point of view of visually impaired people. It enumerates and assesses the suitability of various functions that are available in modern devices, it also indicates the various innovative solutions facilitating the use of mobile devices by people with special needs. First of all, the article describes specific problems of persons with disabilities related to the use of applications prepared for mobile devices, and indicates the ways of solving them. The paper presents both the use of basic assistive tools that come with mobile operating systems like voice reading labels, voice commands, high contrast mode or zoom of a selected part of the screen, and the possibility of effective use of the main sensor, which is the touch screen as well. The conclusions obtained from the analysis of the problem of the mobile applications accessibility is used to the development of own original concept of universal, sound, and tactile interface design. This idea assumes primarily the ability to personalize the interface. Visually disabled person through touch, gestures, voice commands and audio feedback can freely configure and run a set of applications available on a mobile device. Ease of use and

universality of the proposed interface template cause, that any mobile desktop application using it, can be a useful solution for all users, regardless of their visual disability.

IN[3] **Nora Griffin-Shirley, Devender Banda (2018)**, Introduction The literature indicates that few studies have been conducted with persons with visual impairments (that is, those who are blind or have low vision) concerning mobile application or “app” usage. The current study explores the use of mobile apps with this population globally. Methods A total of 259 participants with visual impairments completed an online survey. Descriptive statistics and bivariate tests were used to examine associations between demographic characteristics and mobile app use. Results The participants rated special apps as useful (95.4%) and accessible (91.1%) tools for individuals with visual impairments. More than 90% of the middle-aged adult group strongly agreed with the practicality of special apps, a significantly higher percentage than was observed in the young and old adult groups. In addition, the participants with low vision considered special apps less accessible than did those with blindness ($p < .05$). Discussion Results show that persons with visual impairments frequently use apps specifically designed for them to accomplish daily activities. Furthermore, this population is satisfied with mobile apps and would like to see improvements and new apps. Implications for practitioners Developers of apps for individuals with visual impairments need to refine and test the existing apps. Practitioners need to be knowledgeable about app usage so they can provide effective instruction to their students or clients. This study provides preliminary information regarding app usage among persons with visual impairments.

IN[4] **Andrius Budrionis (2020)**, Smartphone-based Computer Vision Travelling Aids for blind and visually impaired individuals: A Systematic Review Given the growth in the numbers of visually impaired (VI) people in low-income countries, the development of affordable electronic travel aid (ETA) systems employing devices, sensors, and apps embedded in ordinary smartphones becomes a potentially cost-effective and reasonable all-in-one solution of utmost importance for the VI. This paper offers an overview of recent ETA research prototypes that employ smartphones for assisted orientation and

navigation in indoor and outdoor spaces by providing additional information about the surrounding objects. Scientific achievements in the field were systematically reviewed using PRISMA methodology. Comparative meta-analysis showed how various smartphone-based ETA prototypes could assist with better orientation, navigation, and wayfinding in indoor and outdoor environments. The analysis found limited interest among researchers in combining haptic interfaces and computer vision capabilities in smartphone-based ETAs for the blind, few attempts to employ novel state-of-the-art computer vision methods based on deep neural networks, and no evaluations of existing off-the-shelf navigation solutions. These results were contrasted with findings from a survey of blind expert users on their problems in navigating in indoor and outdoor environments. This revealed a major mismatch between user needs and academic development in the field.

4. HARDWARE AND SOFTWARE REQUIREMENTS

- **HARDWARE REQUIREMENTS**

- Processor
- RAM
- Hard disk
- Compact Disk
- Keyboard
- Monitor

- **SOFTWARE REQUIREMENTS**

- Operating System
- IDE
- Front End
- Back End

5. SYSTEM SPECIFICATION

Android

Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open-source software and designed primarily for touch screen mobile devices such as smart phones and tablets. Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open-source software and designed primarily for touch screen mobile devices such as smart phones and tablets. In addition, Google has further developed Android

TV for televisions, Android Auto for cars, and Android Wear for wrist watches, each with a specialized user interface. Variants of Android are also used on game consoles, digital cameras, PCs and other electronics. Initially developed by Android Inc., which Google bought in 2005, Android was unveiled in 2007, with the first commercial Android device launched in September 2008. The operating system has since gone through multiple major releases, with the current version being 8.1 "Oreo", released in December 2017. Android has been the best-selling OS worldwide on smartphones since 2011 and on tablets since 2013. As of May 2017, it has over two billion monthly active users, the largest installed base of any operating system, and as of 2017, the Google Play store features over 3.5 million apps.

Applications

which extend the functionality of devices, are written using the Android software development kit (SDK) and, often, the Java programming language. Java may be combined with C/C++, [79] together with a choice of non-default runtimes that allow better C++ support. The Go programming language is also supported, although with a limited set of application programming interfaces (API). In May 2017, Google announced support for Android app development in the Kotlin programming language. The SDK includes a comprehensive set of development tools, including a debugger, software libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Initially, Google's supported integrated development environment (IDE) was Eclipse using the Android Development Tools (ADT) plugin; in December 2014, Google released Android Studio, based on IntelliJ IDEA, as its primary IDE for Android application development. Other development tools are available, including a native development kit (NDK) for applications or extensions in C or C++, Google App Inventor, a visual environment for novice programmers, and various cross platform mobile web applications frameworks. In January

2014, Google unveiled an framework based on Apache Cordova for porting Chrome HTML 5 web applications to Android, wrapped in a native application shell.

Memory management

Since Android devices are usually battery-powered, Android is designed to manage processes to keep power consumption at a minimum. When an application is not in use the system suspends its operation so that, while available for immediate use rather than closed, it does not use battery power or CPU resources. Android manages the applications stored in memory automatically: when memory is low, the system will begin invisibly and automatically closing inactive processes, starting with those that have been inactive for longest. Lifehacker reported in 2011 that third-party task killers were doing more harm than good.

Virtual reality

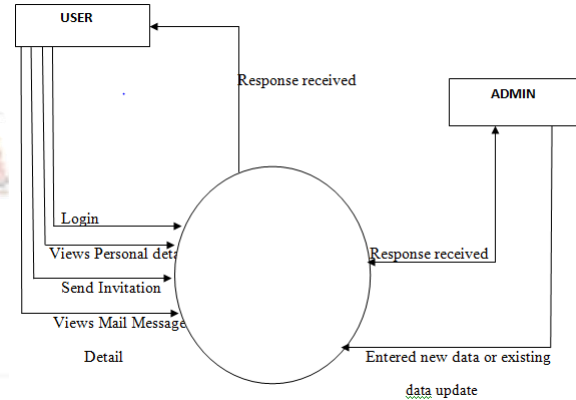
At Google I/O on May 2016, Google announced Daydream, a virtual reality platform that relies on a smartphone and provides VR capabilities through a virtual reality headset and controller designed by Google itself. The platform is built into Android starting with Android Nougat, differentiating from standalone support for VR capabilities. The software is available for developers, and was released in 2016.

Android SQLITE

SQLITE is a open source SQL database that stores data to a text file on a device. Android comes in with built in SQLITE database implementation. SQLITE supports all the relational database features. In order to access this database, you don't need to establish any kind of connections for it like JDBC, ODBC etc. SQLITE is an open-source relational database i.e. used to perform database operations on android devices such as storing, manipulating or retrieving persistent data from the database. It is embedded in android by default. So, there is no need to perform any database setup or administration task. Here, we are going to see the

example of SQLITE to store and fetch the data. Data is displayed in the logcat. For displaying data on the spinner or list view, move to the next page. SQLITE Open Helper class provides the functionality to use the SQLITE database.

6. BLOCK DIAGRAM



7. ARCHITECTURE

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well. Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency.

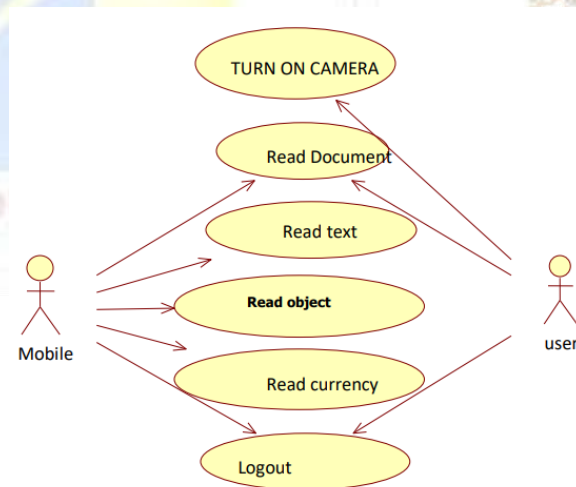


Fig.7.1.User case diagram

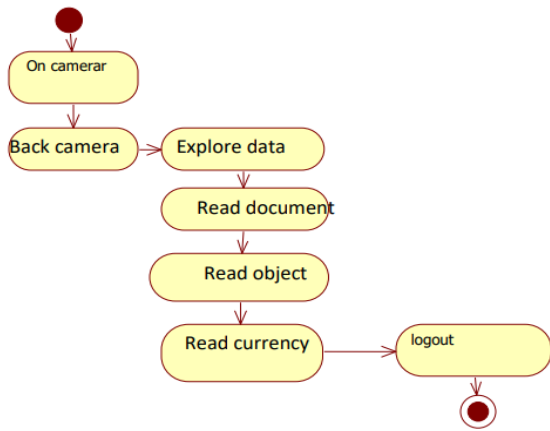
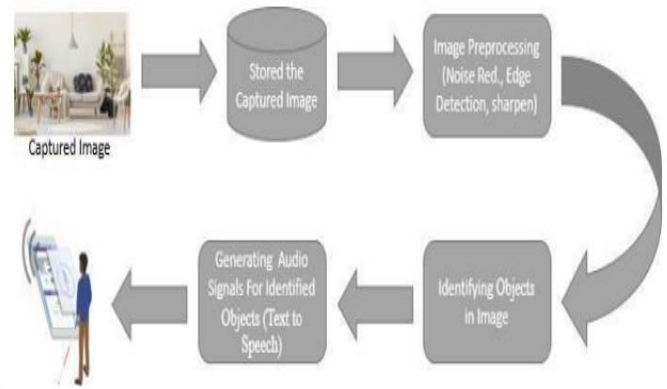


Fig.7.2. Activity diagram

8. KEY FEATURES

- Android's default user interface is mainly based on direct manipulation, using touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching, and reverse pinching to manipulate on-screen objects, along with a virtual keyboard. Game controllers and full-size physical keyboards are supported via Bluetooth or USB.
- The response to user input is designed to be immediate and provides a fluid touch interface, often using the vibration capabilities of the device to provide haptic feedback to the user. Internal hardware, such as accelerometers, gyroscopes and proximity sensors are used by some applications to respond to additional user actions, for example adjusting the screen from portrait to landscape depending on how the device is oriented, or allowing the user to steer a vehicle in a racing game by rotating the device, simulating control of a steering wheel.
- Android devices boot to the home screen, the primary navigation and information "hub" on Android devices that is analogous to the desktop found on personal computers. Android home screens are typically made up of app icons and widgets; app icons launch the associated app, whereas widgets display live, auto-updating content, such as the weather forecast, the user's email inbox, or a news ticker directly on the home screen.

9. PROCESS MODEL



10. RESULT AND OUTPUT

All pages that a user's see over internet or to be specific on browser is said to be web page. Home page is subset of web pages, the launching page of each site is called as home page of that website. A home page is generally the primary web page which a visitor navigating to a website from a search engine will see, and it may also serve as a landing page to attract visitors. Thus, good home page design is usually a high priority for a website. Voice synthesis, defined as TTS (acronym for Text-To-Speech), is a computer system that should be able to read aloud any text, regardless of its origin. The use of TTS aims to produce human voice artificially. Voice synthesis is a complex process and complex algorithms are needed to produce an intelligible and natural result. TTS synthesis makes use of techniques of Natural Language Processing.

11. CONCLUSION

The Android platform proved to be capable of supporting a melding of different services. Our sample application showed how GPS data and Google search services could be combined to keep school children safe. Only one type of sensor and one online service was used. Many more novel applications are possible when taking into account Android's extensive sensor capability and Internet access. The open nature of Android forms the foundation of a hitherto untapped reservoir of mobile applications.

12. FUTURE SCOPE

Future development is planned to integrate additional communication capabilities to give the smart-phone the ability to allow it to communicate with an automobile's on-board diagnostic system to gain more information about driving conditions. This system would use current road conditions and real-time traffic information from the Internet to assist in the determination of the best route given the conditions. Such a system could be used to provide drivers an evacuation route in emergencies.

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