

BLIND HELPER APPLICATION BASED ON TEXT-TO-SPEECH

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ABSTRACT

Blind individuals don't have the posh to browse and write. Hence, I'm creating an associate in a nursing application that will modify the written text with a camera by simply sound on the screen employing a speech engine. I actually have conjointly designed a talking calculator so blind individuals will use the calculator via voice commands. On the side of that, I actually have supplementary applications so they assist blind individuals to use them throughout their standard of living. It conjointly shows your current location. With the assistance of this application, the user also will notice the weather of any town or location. It conjointly needs negligible effort from the user to use the appliance throughout the standard of living. With the ascent of wireless communications, the requirement for voice recognition techniques has enlarged greatly. Voice applications supported by voice interfaces, voice recognition, and voice dialogue management will facilitate users to be targeted on their current work while not a further effort for hands or eyes. the appliance listens to your commands and then responds with voice commands by talking.

Keywords: - OCR recognition, Calculator, Location detector, Weather detector, Text-To-Speech, Android

1. INTRODUCTION

Visually impaired are the ones who are completely or partially blind. According to an estimate made by the World Health Organization (WHO) 285 million of the population suffer from visual impairment and 39 people were blind and approximately 3% of all the ages in a nation are visually impaired. [2] This project was conceived keeping in mind the day-to-day struggles such as reading, current location, weather detection, phone battery status and time and date, etc. faced by the blind and visually impaired people. So, for that, I have used Google speech input where the blind user has to say certain words to open those particular tasks. One of the major factors in developing these technical aids is the compatibility with the user. He should not have trouble getting acquainted with the product. The features of the product should not be too difficult to use.[1] This application has simple working like the user has either swipe right or left on the screen to open the voice assistant and talk. I have also added a text-to-speech method for listening to the working and use of the application. It is developed to help deaf-blind people interact with others with ease. Provides the blind user the ability to perform some basic daily activities by the combination of some mere touches and taps, such as reading, calculator, weather, location, and getting the time and date phone battery status with someone. The project is designed to address the daily struggles of blind and visually impaired people such as reading, current location, weather detection, phone battery status, and time and date. So, for that, I have used Google Speech Input where the blind user has to say a few words to open those specific functions. This application has a simple function as the user swipes right or left on the screen to open and speak to the voice assistant. I've also added a text-to-speech method to listen to the application's functionality and usage. This application allows the blind user to perform some basic daily activities such as reading, calculator, weather, location, time, and date to know the battery status of the phone with the help of touch and tap on the mobile screen. Also, the main thing I have implemented is the user will open this functionality using voice commands like when I say read it automatically open that particular activity.

1.1 Tools and Technology Used

Software: - Android Studio

Language: - Java

Android SDKs are modules of Java code that are required for accessing mobile device functions.

The main component of the Android SDK is a library called Gradle to build our application.

Google Speech API is required.

Android Studio: Android Studio is the official Integrated Development Environment (IDE) for android development. Android Studio uses the Instant Push feature to push code and resource changes to a running application.

Java: Java is the first choice of android app developers because of its ease of use, robustness, security features, and cross-platform development capabilities.

SDK: SDK stands for software development kit or devkit for short. It's a set of software tools and programs used by developers to create applications for specific platforms.

Gradle: Gradle is a build system (open source) that is used to automate building, testing, deployment, etc. "build-gradle" are scripts where one can automate the tasks.

Google Speech API: Speech-to-Text enables easy integration of Google speech recognition technologies into developer applications. Send audio and receive a text transcription from the Speech-to-Text API service.

2. METHODOLOGY

1. **Importing:** - First I have added the required dependencies that allow us to include external library or local jar files or other library modules in our Android project.
2. **Design and Coding:** - Then in the .xml I have designed the user interface of the application. In MainActivity.java I have created all the methods that will help the user to open certain tasks with simple voice commands. By right-swiping on the screen user will read the feature or operations of the app. By left swiping on the screen voice input will start. After the user gives the voice command it will automatically be redirected to that particular activity. Let's say If the user says "read" then it will automatically open the read activity. So that user will just tap on the screen and take the picture and read-aloud text in it.
3. **Methods Used:** -
 - a. Text to Speech (TTS): - TTS is a method that converts speech from text. TTS is important for voice output for voice feedback for the user. TTS is implemented in software where audio capability is required. When the user enters a voice command, TTS will convert that voice into text format and performs a specific action.
 - b. Speech to Text (STT): - Android has an inbuilt feature that is speech-to-text through which the user can provide speech input to the software. In the background, speech input will be converted to text and perform an action in the form of TTS.

3. System Architecture

The system proposes the following applications:

1. OCR reader: - After swiping right on the screen user has to say "read" then it will ask if you want to read say yes for continue and no to return to the main menu.
2. Calculator: - The user has to say "calculator" after that user has to tap on the screen and say what to calculate then the application will say the answer.

3. Location: - In this user has to say location after that user will tap on the screen then it will say current location.
4. Weather: - In this user will say "weather" and then say the name of the city. After that application will say the weather of that particular city.
5. Battery: - To check the current phone battery status user has to say "battery".
6. Time and date: - To check the current time and date user has to say "time and date".

3.1 User Interface

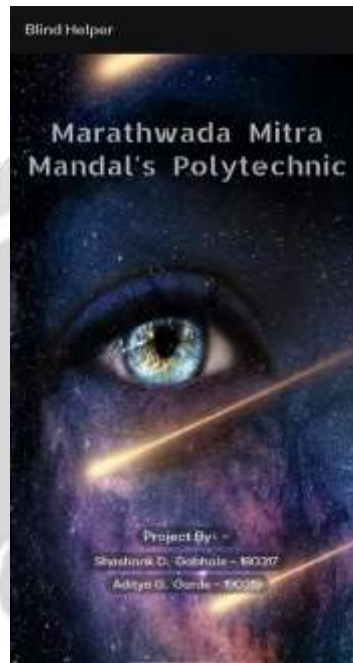


Fig -1 Home Page of Application



Fig -2 Features of Application**Fig -3 Google Assistant**

4. CONCLUSIONS

At present, mobile apps on smartphones are used to perform most of our daily activities. But the people with vision impairment require assistance to access these mobile apps through handheld devices like mobile and tablets. Google, Android applications have been developing various mobile apps for visually impaired people. Still, it needs to provide more effective facilities in the app by adopting and synergizing suitable techniques from Artificial Intelligence. This report introduced two environmentally-friendly designs for blind people. We presented information about the Blind people application. This application will be more effective for blind people. It is important to develop this application for the future. The system is used by blind people, but normal people also can use it. In the future, the proposed system will be able to interpret the textual description in a much better way. The image recognition can be enhanced with much more details about the image captured through the camera. Enhancement to this system can be done by adding the features of currency recognition [3].

5. REFERENCES

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