TAXI SERVICE for VISUALLY IMPAIRED

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ABSTRACT

In this day and age with the world moving so fast it's hard to keep up with the fast paced routines of the people. Whenever we go somewhere, say for a job or visiting some place the most hectic thing is the travel. It came to our mind if it is so hectic for us then, think about how the visually impaired tackle their daily commutes. It must be difficult for them to get a cab. There are various online cab booking applications but they are very complicated to be operated by a blind person.

So our team proposed an app to aid the visually impaired to book a cab online with minimum effort so they don't need to have to hustle to find a cab. The app consists of an easy gesture and voice driven interface so that any blind person would be easily able to operate it. It allows the user to book a ride to a certain destination using some gestures and voice commands. So anyone could book a cab easily without actually looking at the phone. Some features so that the cab driver and the user can identify each other. We think this app would make their life easy.

Keywords- Visually impaired, blind, gesture, voice

I. INTRODUCTION

Globally, at least 2.2 billion people have a vision impairment or blindness, or at least 1 billion have a vision impairment that could have been prevented or has yet to be addressed. The majority of people with vision impairment are over the age of 50 years. Now asking help to someone every time you have to go somewhere, even imagining it is hectic. There are various apps in the market like uber, olaetc … but the interface is so heavy that the people prefer someone else booking it for them. So we thought why not create an app that would help the impaired to book a taxi. A simple app could get things done. In this project, the main purpose is to help visually impaired persons in travelling by using the application of booking rides. In this application we are using some techniques because using this app will get easy to operate to blind persons. So for that purpose, here we use Android Studio. Android includes such inbuilt techniques. Modern technology is making it easy to use this app in their comfort. We are using such voice commands, Speech to text conversion and some gestures like swiping to move ahead in the process.

II. PROBLEM DOMAIN

Android software development is the process by which new applications are created for devices running the Android operating system. Google states that "Android apps can be written using Kotlin, Java, and C++ languages" using the Android software development kit (SDK), while using other languages is also possible. All non-JVM languages, such as Go, JavaScript, C, C++ or assembly, need the help of JVM language code that may be supplied by tools, likely with restrictedAPI support. Some programming languages and tools allow cross-platform appsupport (i.e. for both Android and iOS). Third party tools, development environments,and language

support have also continued to evolve and expand since the initial SDKwas released in 2008. In addition, with major business entities like Walmart, Amazon, and Bank of America eyeing to engage and sell through mobiles, mobile application development is witnessing a transformation.] The official Android app distribution mechanism to end users is Google Play; it also allows staged gradual app release, as well as distribution of pre-release app versions to testers. The Android software development kit (SDK) includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Currently supported development platforms include computers running Linux (any modern desktop Linuxdistribution), Mac OS X 10.5.8 or later, and Windows 7 or later. As of March 2015,the SDK is not available on Android itself, but software development is possible byusing specialized Androidapplications.Until around the end of 2014, the officially- supported integrateddevelopment environment (IDE) was Eclipse using the Android Development Tools(ADT) Plugin, though IntelliJ IDEA IDE (all editions) fully supports Android development out of the box, and NetBeans IDE also supports Android development via a plugin. As of 2015, Android Studio, made by Google and powered by IntelliJ, is the official IDE; however, developers are free to use others, but Google made it clear that ADT was officially deprecated since the end of 2015 to focus on Android Studioas the official Android IDE.Additionally, developers may use any text editor to editJava and XML files, then use command line tools (Java Development Kit and ApacheAnt are required) to create, build and debug Android applications as well as control attached Android devices (e.g., triggering a reboot,installing software package(s)remotely)

III. TECHNICAL PROBLEM DEFINATION

In today's world there are many people who are visually impaired but thanks to technology they are able to make use of applications to help with their different abilities and use the smart phones just like any other who would use a smartphone. These people have to bear various hurdles just to travel from point A to B. They need to travel to the nearest bus stop and somehow find the bus stop is another thing, calling for cabs passing by is difficult as they don't have slightest knowledge that it is a normal car or a cab, so to rely on another person is their only option. Due to these public transports there routes and the places they can go become limited to the public route. With technology these problems can be solved .Cab service companies like Ola and Uber but their UI can be difficult for these visually impaired people to access.

The 'Taxi Service for blind people' application is an android application which will be helpful for the visually impaired. In this application there are many modules which help blind people to book rides in an online environment by using some gestures.

IV. EXISTING SYSTEM

There are many existing taxi booking service systems like Uber, Olx which provide taxi services to travel from one point to another but these system are too complicate for a visually impaired person to operate. These applications have very small buttons and complicated flow. They provide excessive features which the blind users won't even use and won't be able to use.

As efficient as the present system of ride sharing services is, it fails when inclusivity to all kinds of people are concerned. In this system, we shall see what gaps are identified in the system when visually impaired people are concerned.

1) The entire process of locating the app on a touch screen phone, entering the pickup and destination locations and seeing how much money is to be paid to the driver, is a physical impossibility for any visually impaired person.

2) A visually impaired person will not know whether or not his ride has arrived, as he cannot see the cab/auto arriving.

3) It will be impossible for a visually impaired person to locate his ride based on seeing the number plate of the ride. Likewise, even the driver will find it difficult to locate the client.

4) A visually impaired person cannot see the given OTP, that the driver would require to start the ride.

5) Someone who is visually impaired would not be able to see which route the driver is taking to reach a location. He/she would also find it difficult to share his/her ride status with a friend/family.

6) A visually impaired person would find it difficult to pay money to the driver, in cash, once the destination is reached.

7) Lodging a complaint or giving ratings would be aextremely difficult for someone who is visually impaired

To carry out all of the above would be practically impossible for someone who is visually impaired, without help from an able-sighted person.

V. PROPOSED SYSTEM

In the proposed system we would like to remove most of the limitations present in the current system. The application will make use of simple gestures to navigate throughout the application so the users don't have to find a specific button. This app will provide voice to text .Here, the application will provide the user with a talk over feature where the user will give commands to the application like getting location which will get the current location of the device and then the user can speak out the destination address which will be converted to text format. Once the user says to book a ride the application will find the nearest cab and the ride will be confirmed. After the ride is complete the amount will be read out buy the text to speech feature.

Feature to be focused on:

1).Easy to use GUI:
For Blind people's understanding purpose here we are using some technology for their comfy travelling. So it is easy to operate this application.

2). Voice Commands:
Blind users cannot see the application, so that person will give the voice commands. By giving voice command he will select the source, destination, type of car. Phone will keep on detecting those voice commands.
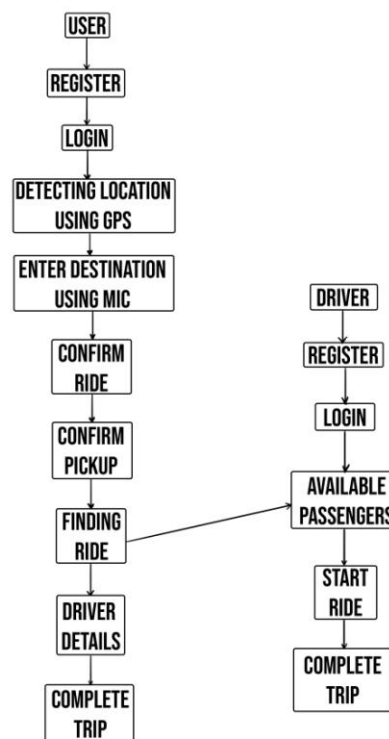
3). Speech to text Conversion:
It works like Google Assistant .User gives the voice

commands and the phone detects those commands. After detecting that command, the phone converts it into speech. And it turns to next.

4). Gestures:
After receiving commands and converting into text, it turns to the next activity by using some gestures. Those gestures can be swiped left or right. Swiping left will cancel the process and swiping right will go ahead for next activity.

VI. DATA FLOW DIAGRAM

VII. IMPLEMENTATION

There are two separate applications one for the user and one for the driver. In the previous version both were in the same app so the size of the app increased and it would cause complications. So first things first how will the user open the application. Anyone can open the app using the voice assistant (e.g.Google Assistant).

Once the application is open the app greets the user and gives instruction on how to operate the app using basic gestures.
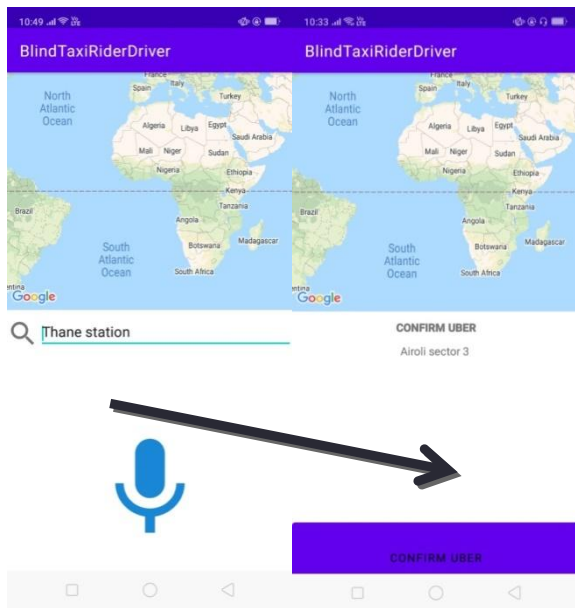

Fig.1. Swiping to the right moves to next activity

We are using text to speech technology so if the user is blank and does not know what's in screen using the gestures (double tapping) all the text on the screen will be read out.

Android allows you convert your text into voice. Not only you can convert it but it also allows you to speak text in variety of different languages.

Android provides TextToSpeech class for this purpose. In order to use this class, you need to instantiate an object of this class and also specify the initListener. (speak) the text on the screen with support for many languages.

You have to specify the properties for TextToSpeech object, such as its language ,pitchetc. Language can be set by calling setLanguage() method.

The user will need to put the desired location.Taking into consideration that the user will be visually impaired and it would not be that easy for them to type in the location of the destination, we are using speech to text using the SpeechRecognizer API
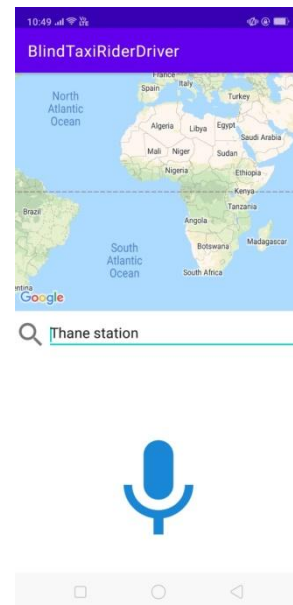

Fig.2. All the text on the screen will be read out by double tapping

This class provides access to the speech recognition service. This service allows access to the speech recognizer. Do not instantiate this class directly, instead, call SpeechRecognizer#createSpeechRecognizer(Context), or SpeechRecognizer#createOnDeviceSpeechRecognizer(Context). This class's methods must be invoked only from the main application thread.
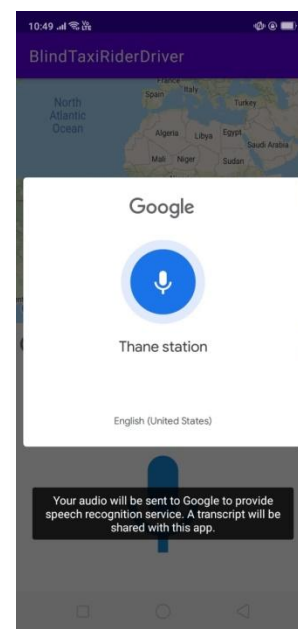

Fig.3. Speech recognition in action

The implementation of this API is likely to stream audio to remote servers to perform speech recognition. As such this API is not intended to be used for continuous recognition, which would consume a significant amount of battery and bandwidth.

VIII. CONCLUSION

E-Cab Service is a system that attempts to bring visually impaired people to the forefront of today's corporate world, as well as cater to their personal needs, by simplifying the process of booking cab services without having them rely on other people to book rides for their commutes. Thisis an Android based app, that integrates voice based technology (TTS and STT) to make the process of booking rides easy and simple. The visually impaired user merely speaks a few words and his/her ride is booked. The app integrates all the features of the Ola app, namely, creating an account, booking a ride, determining how far the user's ride is, showing the pickup and drop off locations, notifying the user how far the ride is and whether the cab has arrived or not, paying the driver and much more. This system can be enhanced in the future to add more features and tide over the gap between the visually impaired people with rest of the society.

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