International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 08 Issue: 04 | Apr 2021 www.irjet.net p-ISSN: 2395-0072

Improved Disability Assistant Android Mobile Application

Mulla Amina Mustaq[1], Sapkal Kinjal Baliram[2], Chaudhary Chinmaya Pravin[3],

Prof. K.S Charumathi[4]

[1-3]UG student, Dept. of Information Technology, Pillai College of Engineering, Maharashtra, India
[4]Professor, Dept. of Information Technology, Pillai College of Engineering, Maharashtra, India

---

Abstract- *Disabled people are those individuals who have a physical or mental impairment that might have a substantial or long-term adverse effect on the ability to carry out normal day-to-day activities. Nowadays, everyone has a smartphone which plays a major role in their life by providing many functions and applications that eventually help us throughout the day and make our life easier and more organized. Improved Disability assistant android application is an android application developed to enable to disabled people related to their disability for maintaining their health & fitness. The application provides reasonable exercise to carry out by disabled people to stay fit. Also a basic diet chart is maintained for their healthy appetite. The system consists of disability related features like speech to text & text to speech. The system also tends to educate the non-disabled, through which it would help communicate to the disabled. The proposed system is built using Ionic framework which provides a platform to develop hybrid applications. Besides this the system also consists of a reminder which allows to set custom reminders and a Google map feature. This system can be run on any smartphone device.*

Keywords- ionic mobile application, disable, health, fitness, text to speech, speech to text

1. INTRODUCTION

Smartphones play a major role in everyone's life as it provides many functions which will eventually help disabled people to carry out life activities easily. Nowadays disabled people are relying on their smartphone and use different kinds of applications to assist them in their daily life. But however, there are not many applications which are being developed to help and guide disabled people especially in the health and fitness aspect. Mobile phones greatly influenced the lifestyle of people having innovative applications and services that are merely provided by mobile technology . With the use of health apps, users can now get information whenever and wherever they want and can serve as a tool for users to achieve goals to improve health conditions. Further, people around the globe become more health conscious and adaptation to various innovative technologies to stay fit is now manifested. According to studies, health applications provide information and tools for users who have the goal to improve their health awareness.

1.1 Objectives

This paper introduces an Android application developed to help disabled people in health and fitness aspects. It is an application that

- Provides Text-to-Speech & Speech-to-Text features for deaf & dumb.
- Provides various exercises and nutrition plans for normal and disabled people.
- Help the disabled people to gain information regarding different hospitals around them and remind them about their appointments.
- Provides sign language images and video for the ease of the deaf and dumb people.

1.2 Scope

Smartphones and mobile phones are rapidly becoming the necessity of our daily routine. In this it has been proposed that how the mobile phone is useful for disabled people. The use of mobile devices is rapidly growing.

- The application is able to search for hospitals and clinics in the nearby area.
- The system has a medical reminder function which will remind disabled people of their medical appointments.
- The system will list down exercises which people can carry out in their day to day life and stay healthy .
- For people who are unable to speak or are unable to hear there are lessons about learning sign language also a voice assistant can assist them by speaking on behalf of them .

1.3 Organization of the Paper

The paper is organized as follows: The introduction is given in section 1. It describes the fundamental terms used in this project. It motivates to study and understand the different techniques used in this work. This chapter also presents the outline of the objective of the application. Section 2 describes the review of the relevant various techniques in the literature systems. It describes the pros and cons of each technique. Section 3 presents the theory and proposed work. It describes the major approaches used in this work. The result and output details are mentioned in section 4. The conclusion and future enhancement is presented in section 5.

2. LITERATURE REVIEW

In this section the relevant literature is reviewed. It introduces and summarizes the related works and similar systems to the project by describing and explaining the problems of these systems, also comparing between systems functionalities and its advantages and disadvantages.

2.1 Improved Disabled Mobile Aid Application for Android.

In the existing system, users can add and find information about the available accessible places around them and a forum like platform so that all kinds of disabled people can get connected and share their thoughts. But this application is not applicable in Malaysia. This application is designated to be used in foreign countries but cannot be used, because the language used and places shown in a specific area.

2.2 Speech Recognition Using Deep Neural Networks: A Systematic Review

This paper gives an overview of the main definitions of Automatic Speech Recognition (ASR) which is an important domain of artificial intelligence and which should be taken into account during any related research. It also gives a summary of important research relevant to speech processing, by giving a conclusion referring to certain enhancements that could be in the future works.

2.3 Health Apps by Design: Reference Architecture for Mobile Engagement.

It defines design requirements for quality health apps and a framework for patient engagement to propose a new reference architecture for the next generation of healthcare mobile apps that increase the likelihood of being useful for and used by patients and health care providers alike. They propose a refined approach for engaged communication between patients and care providers.

2.4 Text – To – Speech Synthesis (TTS)

The basic idea of text-to-speech (TTS) technology is to convert written input to spoken output by generating synthetic speech. It implements an isolated whole word speech synthesizer that is capable of converting text and responding with speech and validate the automatic speech synthesizer developed during the study.

Sr no.	Techniques	Author & Year of Publication	Advantages and Disadvantages
1.	Improved Disabled Mobile Aid Application for Android.	Dhafer Sabah Yaseen, Shamala and Sim Liew Fong Shah Alam, Malaysia 2019	Advantages:This application allows the disabled people to get nearby hospital and clinic records, various exercise for their fitness and also provides reminder about appointments & medicines Disadvantages: Reminder feature was not separated to a different page due to which there were issues occurring to the people regarding their appointments and medicines
2.	Speech Recognition Using Deep Neural Networks: A Systematic Review	Ali bou nassif 1, ismail shahin 1, imtinan attili1, Mohammad azzeh2, and khaled shaalan	Advantage: Explained the system and its major features, also the general architecture of the Automatic Speech Recognition System. Disadvantage:The paper wants to use speech with other human senses to improve the interface, as it is currently not doing so.
3.	Health Apps by Design: Reference Architecture for Mobile Engagement	Pannel Chindalo, InfoClin, Arsalan Karim, InfoClin,Ronak Brahmbhatt, InfoClin, Nishita Saha, InfoClin, Karim Keshavjee,	Advantage:Define design requirements for quality health apps and a framework for patient engagement to propose a new reference architecture for the next generation of healthcare mobile apps Disadvantage:The paper has the difficulties that are

		InfoClin,Canada . 2016	impeding the acceptance of apps in health care.
4.	Text – To – Speech Synthesis (TTS)	Nwakanma Ifeanyi 1 , Oluigbo Ikenna 2 and Okpala Izunna	Advantages:The general objective of the project is to develop a Text-to-speech synthesizer for the physically impaired and the vocally disturbed individuals using English language, to enable the deaf and dumb to communicate and contribute to the growth of an organization through Synthesized voice. Disadvantage:This project intends to Focus only on the acoustic signal processing without the incorporation of a visual input.

3. SYSTEM ARCHITECTURE

3.1 Proposed system

The proposed system consists of six different modules:

- Text-to-Speech
  This is created using the text to speech plugin of ionic Cordova and native . It converts the text that has been typed into a voice command.

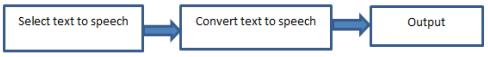


Fig - 1 : Workflow of Text-to-Speech.

- Speech-to-Text
  This is created using the speech recognition plugin of the ionic native and converts the speech into texts.

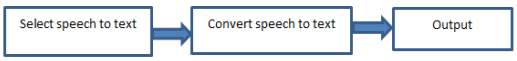


Fig - 2 : Workflow of Speech-to-Text.

- Nutrition
  This page gives the diet plan for being healthy.It consists of three categories namely normal, vegetarian, and non-vegetarian which consist of a list of the diet to be taken.

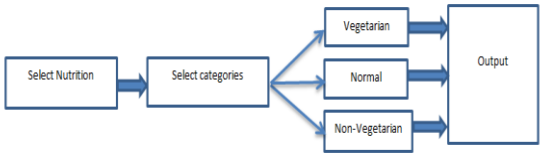


Fig – 3 : Workflow of Nutrition module.

- Exercises
  This page is categorized into morning workout, upper body, lower body, full body, and back. The exercises in these categories are in the form of gifs and contain an explanation of how they are to be carried out.

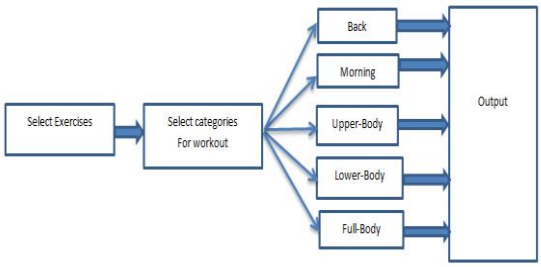


Fig - 4 : Workflow of Exercise module.

- Gps location
  This module gives the current location of the user and lists the nearby hospitals around.

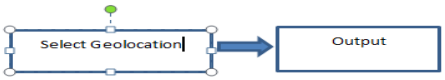


Fig – 5 : Workflow of GPS module.

- Reminder
  It uses the local notification plugin of ionic native for popping up the notification of the event that is to be reminded to the user.

Fig – 6 : Workflow of Reminder module.

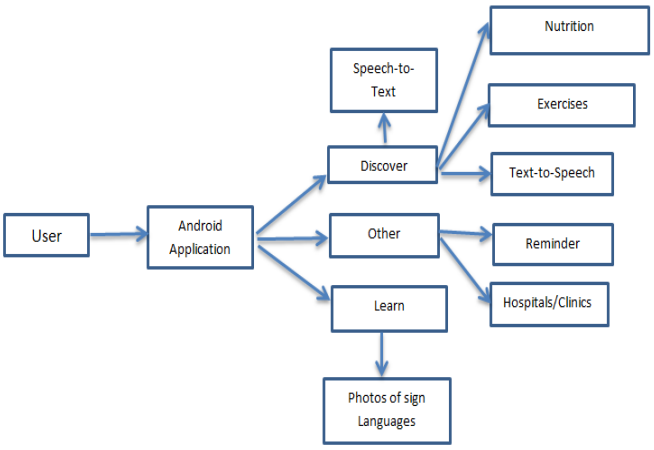


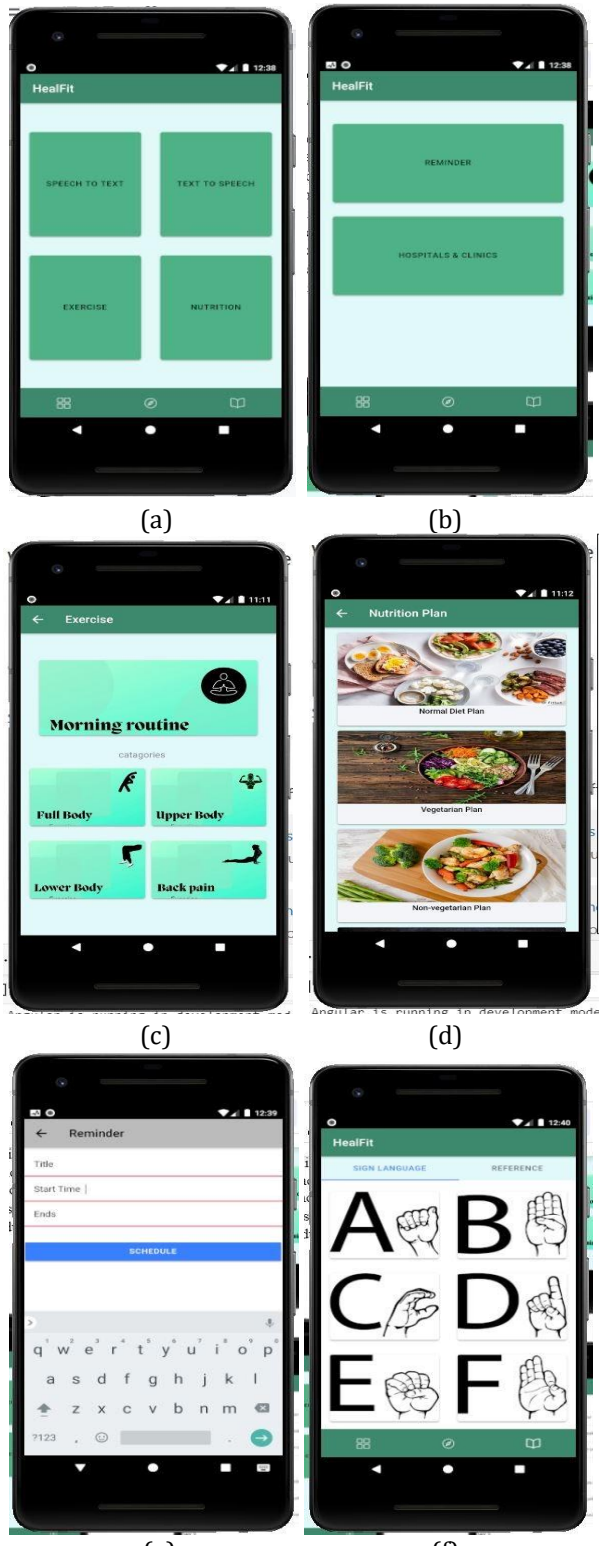
Fig – 7 : Proposed System Architecture.

3.2 Working of the application.

Initially, the user will open the application .After opening the application the user will select the module out of the six that have been displayed. If the user selects Text-to-Speech, the user will have to type what he wishes to convert into speech in the space provided beside the text label and then click on the play-text button which will convert the text into voice. The user also has the ability to select the pace of the voice. The user could also select Speech-to-Text, this is helpful for the deaf people as it will help them in understanding what the other person is speaking to them. Here the user would have to first get the permission for the mic and then click on the button with the mic icon, which will recognize the user's voice and convert it into text. The text will be shown in a form a list of possible results. Now, if the user selects exercises or nutrition buttons then they will be directed to their subpage that will display the category and the user can then choose accordingly.

Another activity in the app includes searching for the hospital through GPS. If the user selects the hospital and clinic , the module will show the current location of the user and display the list of nearby hospitals and clinics. Along with this, the user has a ability to feed the date and time of their appointment into the add event form provided in the reminder module and receive a notification about it at the date and time specified. The last tab describes sign language photos and reference videos to educate the user on the basics of sign language learning.

4. RESULT AND SNAPSHOTS



(a) (b)

(c) (d)

(e) (f)

Fig. 8 shows the user interface of the application (a)Main Page to select features (b)Mainpage to select Reminder and Hospitals/Clinics (c) Exercise page (d)Nutrition Page (e)Reminder Page (f)Sign Language

5. CONCLUSION AND FUTURE ENHANCEMENTS.

5.1 Conclusion

Improved disability assistant is an android application developed using ionic framework using angular and JavaScript. The system has various features like text to speech for the dumb person and speech to text for the deaf person. Along with this the system provides exercises and nutrition plans for maintaining their health & fitness,

In this paper, the study of different techniques and features is done to create a system which is developed mainly for the help of disabled people. The literature survey done in this paper is a comparative study of different methodologies and algorithms used by various researchers over the years to create a system for disabled people. This helped us in choosing appropriate modules for our system. A brief explanation of how the system is created and its working is presented along the proposed architecture. The result that we get is also provided in this paper.

5.2 Future Enhancements.

The application is not built for people with visual disability or motor disabilities so it can be further enhanced for them as well. The app could consist of an object detection module for the blind and could be converted into a fully voice based application. Also the reminder feature can be improvised by displaying the notification that has been scheduled. Since the application contains google maps there are endless possibilities for enhancing the gps features.

REFERENCES

[1] Dhafer Sabah Yaseen1, Shamala A/P Batumalai2, Falah Y. H. Ahmed*3 and Sim Liew Fong4 Improved Disabled Mobile Aid Application for Android 2019 IEEE 10th Control and System Graduate Research Colloquium (ICSGRC 2019), 2 - 3 August 2019, Shah Alam, Malaysia

[2]Md. Amanat Khan Shishir, Shahariar Rashid Fahim, Fairuz Maesha Habib, Tanjila Farah EYE ASSISTANT 1st International Conference on Advances in Science, Engineering and Robotics Technology 2019 (ICASERT 2019)

[3] Anitha.J, Subalaxmi.A, Vijayalakshmi.G Real Time Object Detection for Visually Challenged Persons International Journal of Innovative Technology and Exploring Engineering (IJITEE)
ISSN: 2278-3075, Volume-8 Issue-8 June, 2019

[4]http://mobihealthnews.com/32183/nielsen-46-million-people-used-fitness-apps-in-january/

[5]http://therealtimereport.com/2014/06/24/health-and-fitness-apps-see-62-increase-in-usage-in-lastsix-months/

[6] GPS - Global Positioning System". [Online]. Available: http://epa.gov/iegion5fields/gps.html.