

An Intelligent Voice-Based e-Market Place for Visually Impaired People

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Abstract: An eMarketplace is a form of advertising and exchanging of goods and services via the internet. An eMarketplace has greatly provided a chance for buyers and sellers to exchange a wide variety of items without restrictions such as time and location and eMarketplaces have allowed people to perform different tasks at the same time. However the visually impaired people are not able to use such a system due to their disability. Hence, we have developed a system for Visually Impaired people for online shopping with help of voice-based interactive system. It provides an opportunity for them to fully participate and complete their online shopping without current difficulties. In addition to the benefits of the e-Market places technology for both buyer and seller such as, connectivity and flexibility, handicapped people will have the ability to contribute positively to the field. Considering this segment of society is not only a humanitarian act, but is a quantum leap in the history of e-Market places.

Key Words: Voice-based e-market place, Visually Impaired people, Cloud computing, android application.

1. INTRODUCTION

Today many areas of life are evolving technologically where people are adopting digital media, which is becoming more efficient and simple to use. Digital technology is considered as one of the major developments in the world of technology due to the fact that it has the ability to be developed and spread progressively. Another major consideration for digital technology is its flexibility and capability in being utilized easily without interfering with the normal way of life. Areas that have so far exhibited a dramatic improvement on technology include but not limited to engineering, agriculture, transport, communication, finance, trade, media, management and banking. Overall, technology has greatly increased the productivity of the people and comfort has equally increased. However, despite the major innovations in technology, provisions for the physically challenged community such as the blind are limited. For instance, many Internet-based systems such as eMarketplaces remain inaccessible for blind people, raising issue of information asymmetry and social injustice.

An eMarketplace is a form of advertising and exchanging of goods and services via the internet. An eMarketplace has greatly provided a chance for buyers and sellers to exchange a wide variety of items without restrictions such as time and location. Hence, eMarketplaces have allowed people to perform different tasks at the same time. A blind person is a person who cannot partially or fully use his or her eyes. Due to the problem of using their sense of sight, these people are taught other forms of communication like the Braille language that assists them in the communication. This form of communication cannot be easily integrated into the internet. Hence, the need to develop other better ways to integrate them in this technology of eMarketplaces is crucial. This will enhance the internet access and allow the handicapped/blind users to access eMarketplaces more easily. An Intelligent Voice-Based eMarketplace for Visually Impaired People and conveniently. From research, it is proven that the blind people have a acute sense of hearing. Accordingly, the introduction of voice technology will be most suitable in this case. Several approaches have been introduced for the integration of the voice technology as one of the facilities on the internet to help blind people access eMarketplaces more easily and conveniently. Those approaches seek to understand blind people, their problems and abilities to access the internet.

2. LITERATURE SURVEY

Various researchers have suggested more comfortable and easy ways to be used by the handicapped especially the blind to access the internet. There are some specialized equipments that have been developed by scientists that are very sensitive to letter and word recognition, voice and speech recognition. The blind people can communicate in their daily operations with these major forms. Among the most sophisticated systems that have been developed to assist the blind in the area of internet surfing is the Braille surf. Braille is the language of communication used by blind people, which comprises of dots arranged in a specific order to communicate to the blind. It utilizes the sense of touch of blind people as it is proven that besides hearing, they also have the most advanced sense of touch. Despite Braille being one of the main forms of communication, in reality not many people use Braille as it is very difficult to learn [5]. Another system called ALVA Braille has been developed. It utilizes the screen as a display, and it is controlled by the normal operating system of the computers. The output of this system is on a Braille bar or through the use of a voice/speech synthesizer that produces an audible voice which can be received by the blind people [6]. Moreover, another development called Haptic [7] provides a special interface that allows blind users to feel the shapes on the screen. These techniques have been facilitating blind people into the internet browsing so become partially aware of its contents [8].

2.1 Problem Definition and objectives

Problem Definition: Developing an Application for Visually Impaired people for online shopping with help of voice-based interactive system.

Objectives:

- Build an intelligent voice-based e-Market Place for Visually Impaired People system will helps to shop themselves.
- Develop voice based interactive system for searching product details, the user can shop with help of the product reviews.
- Implement purchase product by the blind user using voice-based interactive system.
- Implement of payment process with the help of voice-based interactive system.
- Implement Status of the delivery would be given to the user and it will also shows the location of the products.

3. METHODOLOGY:

In this section the system implementation methodology is explained in detail.

3.1 System Architecture:

In system architecture, we assume the availability of a standard eMarketplace database, which consists of all products' prices and details. For the entire database in the architecture, voice-based assistance declarations are defined to the eMarketplace system. These declarations consist of all variables that will be used in data mining and they expose the eMarketplace contents in its database to the eMarketplace interface. Internal matching is defined between the eMarketplace database and its related interface. The aim is to achieve usability of eMarketplace by ensuring that handicapped people especially blinds utilize eMarketplaces with confidence by referring to the voice-based assistant. Voice-based assistant takes the vocal entry from the handicapped user to perform the matching procedure on the desired eMarketplace. The vocal entries that the handicapped user speaks after hearing the vocal instructions which provided by the voice-based online assistant referring to the internal matching of eMarketplaces components and the result is given back. In case of that the vocal entry was matched or found, the voice-based assistant will further proceed the order for the handicapped/blind user. Otherwise, if the vocal entry is not matched or found, the voice-based online assistant will divert customer automatically to a customer care representative (CCR) using voice over IP call through the eMarketplace system. In such a case, the handicapped/blind customer will have the full opportunity to speak and explain his/her desired product with the CCR. The architecture is shown in Figure 3.1. It shows the overall plan of eMarketplace voice-based system including the relevant database, the voice-based online assistant which located on the interface, the CCR and how the blind users interact with it.

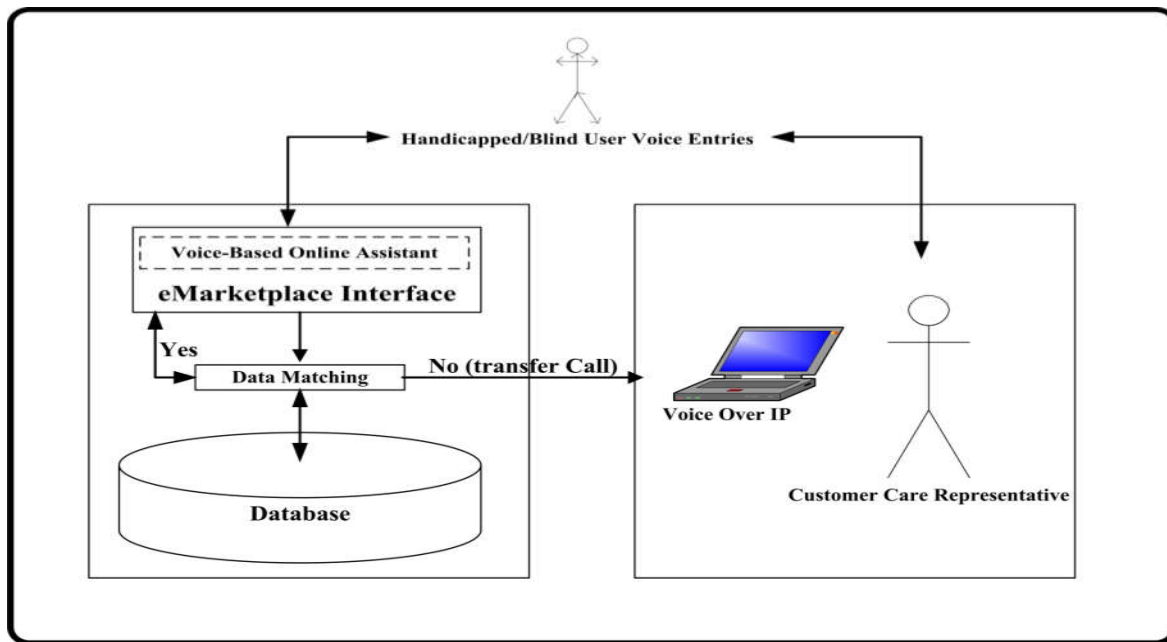


Fig. 3.1 Architecture of the Voice-based eMarketplace

Role of the Proposed Voice-Based eMarketplace Interface

The voice-based eMarketplace is an efficient technique of demonstrating information of traditional eMarketplaces. It represents information in a voice manner that can easily be understood by handicapped people especially blinds. It provides an opportunity for them to fully participate and complete their online shopping without current difficulties. In addition to the benefits of the eMarketplaces technology for both buyer and seller such as, connectivity and flexibility [3], handicapped people will have the ability to contribute positively to the field. Considering this segment of society is not only a humanitarian act, but is a quantum leap in the history of eMarketplaces. Thus, implementing such a technique is crucial to keep place with the continuing evolution eMarketplaces

3.2 Functional overview and Workflow of the System

The basic functional overview of Intelligent Voice-Based e-Market Place for Visually Impaired People system is as follows:

From above Fig. 3.2, Functional overview is a following Stages

1. Takes the input Voice and Recognize from the VIP SHOP App
2. Perform the Speech Translation process over input speech
3. Collected data to be stored in Cloud storage
4. Analyse the result according to the impaired people given
5. The Desired result is Get back to VIP SHOP App

In the First phase, the Android App will be installed on End users or impaired Mobile Devices. The blind people can give input as his Voice. Then he sends to the Server, before check it sending to server, the server can perform the Speech Recognition by Google speech translator. In the second phase, the collected data can be stored to Cloud storage to perform the Analysis such as match the translated text data with the stored in Cloud data. In this third phase, the admin can login in his system and perform the analysis on that given blind people data and analysed data can be sends back to the blind (VIP SHOP) device. In this Fourth phase, the admin can send the desired results back to End user App.

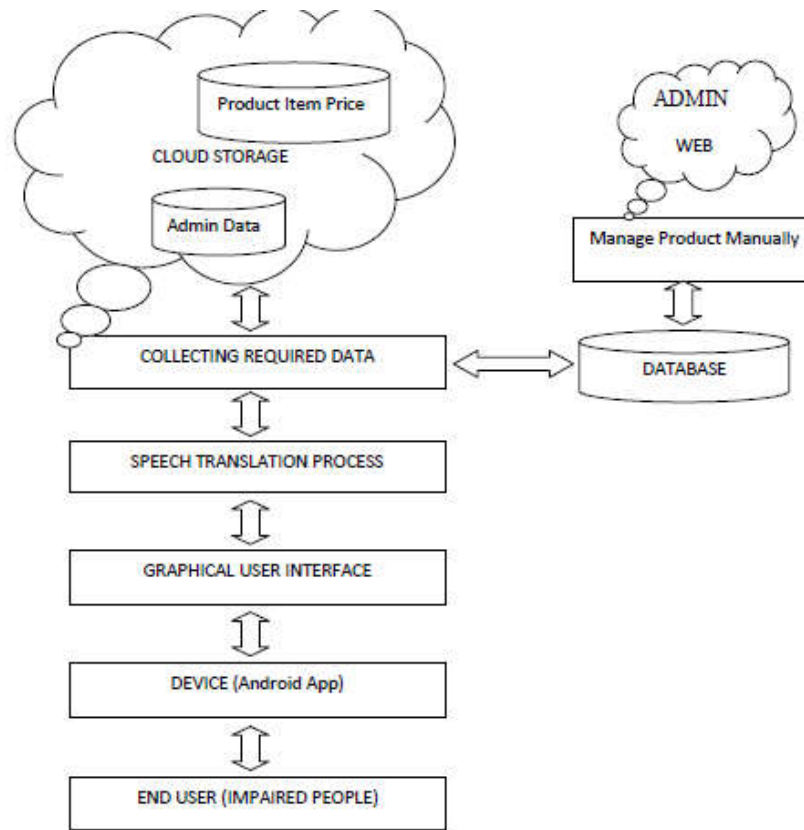


Fig. 3.2 Basic functional overview

The flow chart of Intelligent Voice-Based e-Market Place for Visually Impaired People system is as follows:

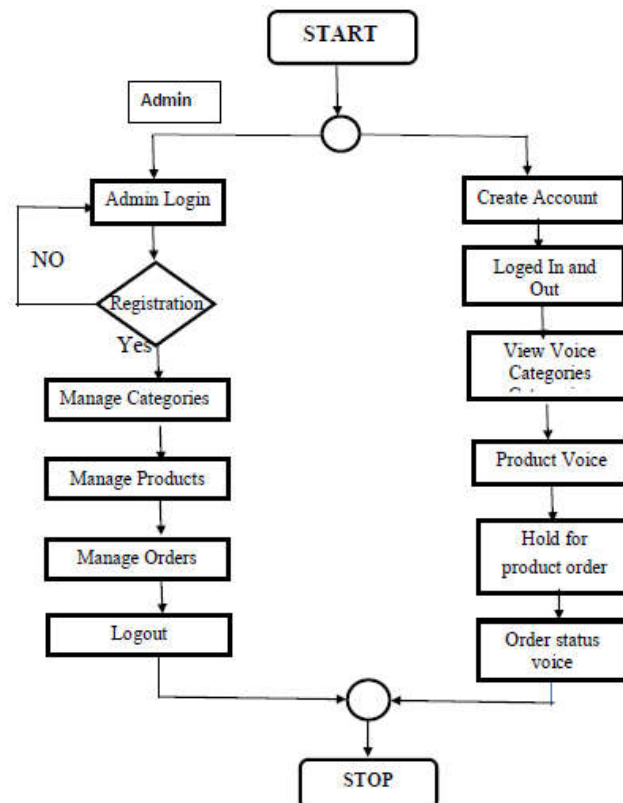


Fig. 3.3 Work flow of the system

Description(Admin)

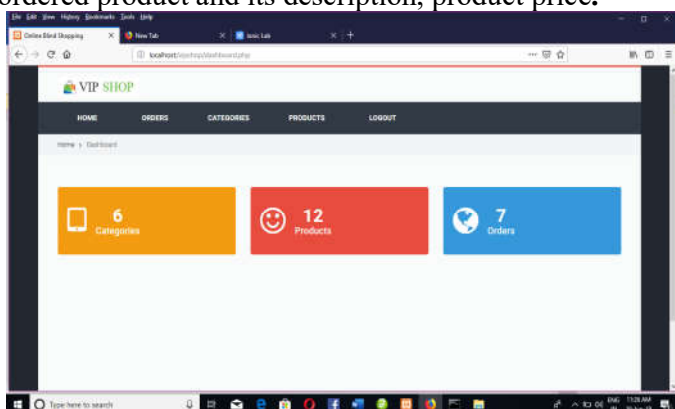
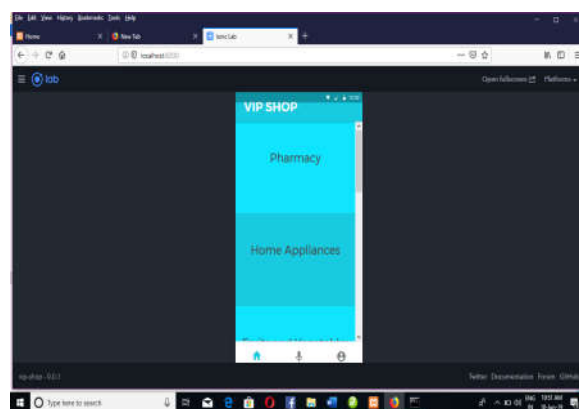
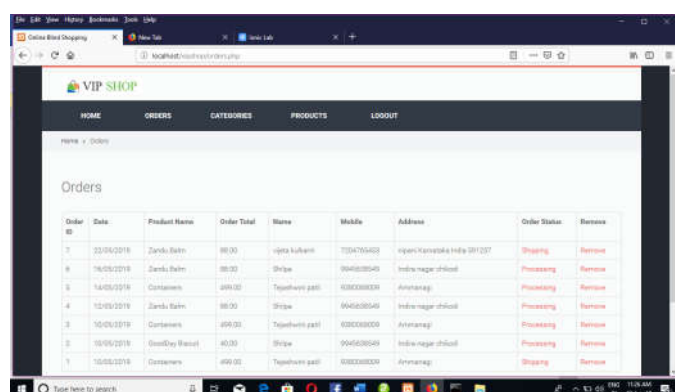
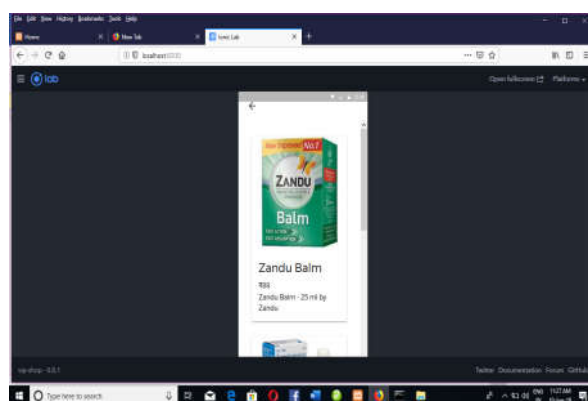
- Step 1: Start.
- Step 2: Admin login then yes to manage another wise no go to again login.
- Step 3: After successful registration, Choose the categories.
- Step 4: Choose the particular Category and select particular item in that category.
- Step 5: Manage the Orders.
- Step 6: Logout.
- Step 7: Stop.

Description(User)

- Step 1: Create an Account .
- Step 2: After completion of an account ,using the details of user name and Password.
- Step 3: If the login is successful then goes to the hearing of product categories otherwise go back to the login process.
- Step 4: After tapping on the product, It gives details about that item.
- Step 5: To place an item, we need to hold.
- Step 6: The ordered has been taken successfully and give the message through voice.
- Step 7: If we want to order an item again then go to step 3.
- Step 8: Logout.
- Step 9: Stop.

4. RESULTS

The goal of our project is to provide facility to blind people to make online shopping without the help of anybody. The system developed using cloud computing and android. As shown in fig. 4.1, there is a dash board provided to system administrator where admin can add user, view user, enter categories, view the product and update the status of the product delivery. Through voice interaction the blind user is able to make online shopping, shown in fig. 4.2. The fig. 4.3 shows the list of added users added by the admin. The list of users ordered products, contact number and a delete option to delete a user and fig. 4.4 shows of ordered product and its description, product price.

**Fig. 4.1 Dash board of admin panel****Fig. 4.2 Web application of VIP SHOP****Fig. 4.3 Screenshot of the added ordered products page****Fig. 4.4 snapshot of ordered product and its description, product price.**

5. CONCLUSION AND FUTURE WORK

The assimilation of technology into the field of eMarketplaces has an important role particularly in addressing the needs of everybody including those who are physically challenged. Thus, further developments and enhancement of Internet applications should include investigations of 'comfortable' forms of eMarketplaces that are suitable for the handicapped, especially the blind. As mentioned earlier, there has been commendable attempts to generate more comfortable ways for the blind to be part of the changing technology especially eMarketplaces.

This has included the use of text readers, voice recognition devices and speech synthesizers. Although there are challenges in their applications, they can be of great assistance to the blind and even with some modest improvements they can lead to major breakthroughs in introducing the blind to eMarketplaces technology. This will in turn expand business of eMarketplaces. In this paper, we have proposed a voice-based module for eMarketplaces for handicapped/blind people. The system can deal with blind people using voice input and output commands. The event table of the scenario for the purchasing process has been described to illustrate the proposed system. Overall, the system can be crucial for both the blinds and people with typing or browsing difficulties.

Future Work

Further studies can be conducted to implement the proposed voice-based eMarketplace. For instance, the proposed system can be developed as a Blind Interface Module, which can be used as an add-on facility to an existing eMarketplace. This module can be activated when needed.

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