

Shopping Sight For Glimpse Dearth

M.Harini priya

R. Veda priya

Dr.T.P.Rani M.E.,Ph.D.,

Department of Information Technology

Sri Sairam Engineering College

harinipriyamahesh@gmail.com, vedapriyaravi@gmail.com

rani.it@sairam.edu.in

Abstract

The vision is considered as one of the most important feature in living beings for sensing things around them or to navigate from one place to another. The visually impaired persons face serious disability to do simple tasks in their daily life. Many technologies have been developed to facilitate them in ways to detect an obstacle and to navigate from one place to another. Therefore, this paper aims to grease the wheels for the visually impaired people for shopping items in a super market. This paper has developed an application for visually impaired people to identify things that they purchase with their cost of price along with a facility to recognize the currency for monetary transactions. Initially the items to be purchased and its respective cost of price is identified by capturing the image of an item in a camera and the image is processed using object detection methods. Here the Optical Character Recognition (OCR) is mainly used to read the labeled names in the items. The cash amount in the currency paper is identified by using SIFT algorithm to effectively extract the prominent features in a currency to differentiate and recognize them. Thereby this application helps the visually impaired people to buy products in a market independently.

I. INTRODUCTION

One of the major sensory organ of human being is their vision. A person with visual ailment face severe challenge in their daily activities like taking care of themselves and their surrounding , travelling from one place to another , disabilities in working environment and so on. They are not even able to see things like traffic signals and billboards. Most of the above information are inaccessible by the visually impaired person which leads them to depend on other person for each and every basic tasks in their life.

Many technologies have been developed to help the visually impaired people to overcome their disabilities. There are devices such as smart stick to identify any obstacle around them , wearable glasses to recognize several objects or signs , devices that help them to navigate and tools to read documents.

Among these daily activities one of such important task for a visually impaired person is to do grocery shopping. For this they have to depend on other person or any third party support to purchase products of their interest. Therefore, we are developing an application that helps them recognize items in a super market and help them in the payment process for the purchased products from a store.

II. RELATED WORKS

In Intelligent electronic eye for visually impaired people, they have proposed a device embedded in helmet. It acts as an eye in giving instructions for blind people to walk and people with visual illness, uses image and obstacle detection sensor. The main disadvantage of this device is that it takes more time to process the image.

Another paper, The Development of Shopping Assistant Using Extraction of Text Images for the Visually Impaired uses a mobile application, which is used in a market environment. It works by capturing an image of the object with the help of camera embedded in the mobile phone, it recognises the text, such as the label or product name, which is extracted by implementing a color recognition technique. The text is recognised by the optical character recognition (OCR) which is used to convert virtually any kind of images containing written text into machine-readable text data which is further converted to speech and the audio is heard by phone's speaker. Its accuracy is found to be 44%.

Another mobile application named VisualPal that is designed for blind users to recognize objects captured from the phone's built-in camera. The application combines two algorithm namely of artificial neural networks and Euclidean distance measures. It uses color detection technique to convert the image from the RGB(Red, Green, Blue) color to HSV (hue , saturation, value) to obtain the hue value. The obtained value is compared with the hue component values trained to the system to identify colors. After detecting the object, the

identified object is voiced as output to the visually impaired through the phone's speaker. The system is under testing to work efficiently with android phones. This application has accuracy of 97.5%. A device proposed by Text detection and recognition using multiple phase method on various product features a method that detects only text on products. This device includes detection using maximally stable extremal regions (MSER) algorithm for identifying common regions, Canny edge detection, region filtering, and a bounding box. This system produced an 80% accuracy rate.

III. EXISTING SYSTEM

Smart Eye for Visually Impaired-An aid to help the blind people. This paper proposes a device which process the image of the person with the related datasets and helps in identifying the obstacles and the person near by, It also helps in navigation of a impaired person by taking the different images of the same location.

IV. PROPOSED SYSTEM

In this paper , we develop an application that helps to recognize the given product by capturing its image from mobile camera and performing the object detection methods. It also helps in payment process by both online transaction and monetary transaction. It has two models namely product identification module and payment module. The input and output is in the form of voice command and response.

The product identification module consists of identification of an item , reading out the item names along with the price of the product. Any given item is identified by training the model using neural networks. The product name is identified by optical character recognition(OCR).



In payment module , the online digital money transaction is carried out through audio commands and physical cash transaction involves recognition of the currency value by capturing it and performing object recognition algorithms in computer vision



V. WORKING

In the first module, the item that is captured in the camera is identified by using convolutional neural network. The CNN model is trained with the features of several items. It works by getting the images and draws various boundaries in it . It then applies classifiers to identify the pattern. The pixel with high match value is considered and the object related to the pattern is given and text to speech voice output.

The name of the item is known by using optical character recognition technique where each word in the image is converted into text. The background subtraction technique is carried to eliminate the background colour or image and pure text is extracted. The OCR scans the name by each letters and matches with the desired letter then combines all and produces the audio output. Similarly, the manufacture date , rate of the product and other product details mentioned in the item are read out with the help of this technology.

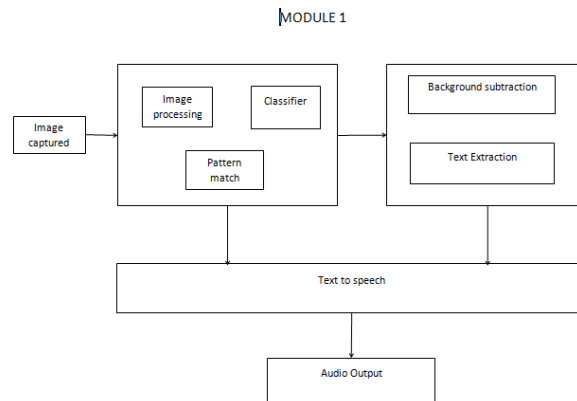
The second module of the project is about the payment procedures. This particular module can be used individually in case of monetary transaction for the blind people. It has both online money transaction and physical payment of cash. The online money transaction process is carried by means of accessing the users bank account by using fingerprint for secure purposes. After logging on to their corresponding bank account all the monetary transaction process is carried away by coordinating with voice commands.

The physical cash recognition system works on scale-invariant feature transform(SIFT) algorithm which is used to identify the value irrespective of the scaling of the image. Basically , it works by identifying the colour of the cash and then by successive image processing , segmentation , background subtraction and feature extraction of the given captured image. The obtained extracted

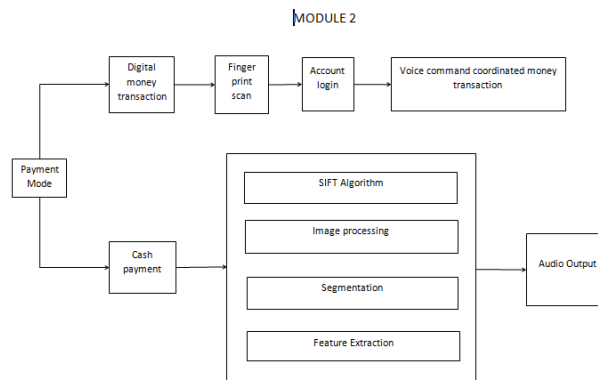
image is then compared to predefined data set famously called Alex net . When the match is found the output is delivered in predefined audio form.

VI. SYSTEM ARCHITECTURE

The item to be purchased is captured in the mobile camera and allowed to detect the object by finding the match with predefined data set trained using CNN . If is an object (say tomato) it simply tells the object . If it is any kind of product with label it reads out the name , rate and other details by using OCR



The payment module assists in digital monetary transaction using fingerprint authentication. The cash value recognizer uses SIFT algorithm to identify the currency and coin value and generates audio output



VII. FUTURE ENHANCEMENTS

There is scope for extending it to identifying more products to make it as a whole product that is helpful to the blind person. Another enhancement that can be made is face recognition by processing images previously stored.

VIII. CONCLUSION

The proposed system integrates the working of the various modules into a single system and thus provides a multipurpose application for the visually impaired person. This application is mainly developed for the shopping purpose. This helps the visually impaired in buying the products on their own without anyone help. The application is opened using voice command so that the visually impaired person can start using the application. This application helps the user by scanning the product which they desire to buy. After scanning this application reads out the product description with the help of OCR. The voice output helps the impaired person to know the usage of the product. This also helps in doing the transaction through online and also helps in identifying the currency note in manual transaction. The application also helps in sharing their location to the contact who the person selects through voice input. The accuracy is high since the voiced output is heard through headphones.

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