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Voice Based Application as Medicine Spotter For Visually Impaired

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Abstract— *This paper proposes to use visual features matching in the identification of medicine boxes for visually impaired people. Visually impaired people need not be dependent and seek others help to find the medicine to be taken. This android application is used to overcome the difficulties they face in this scenario. In this application, a reminder is set which tells the user when to take the medicines, as voice output. The pictures of the medicine strip held in the hand are captured by the inbuilt camera of the mobile. The image is processed and consequently text localization and extraction is done by which the name of the medicine is identified. A spotter section is also consolidated with this application which checks the prescription which has been already uploaded in the user's mobile, compares with the name of the medicine identified and if the medicine has to be taken at that time, then it tells the quantity of medicine to be taken to the user as voice output. This idea would achieve good results in practice.*

I. INTRODUCTION

Visually challenged people and uneducated people face a lot of adverse challenges in their day to day life. Most of the time they are perplexed in a new environment or surrounding due to issues related to accessibility. So, this prevents them from experiencing the world in the same way as others do.

Identifying and accessing things is something many of us may take it for granted. But the visually challenged people are curbed by their disability. Especially in a medicine taking scenario, it is difficult for them to find whether they have identified the medicine correctly or not. They will have to seek others help for it. Moreover a mobile application will be easy to use and the hardware needed is very limited. Visually impaired people use more other senses like touch and hearing in order to perceive the environment. Many tasks are currently only performed using vision, like checking the semaphore state, recognizing buildings, cross the street. And many others are harder, like watching a TV show, reading and others.

II. RELATED WORKS

This paper proposes a Gaussian based approach in which initially the object of interest is identified, followed by region of interest identification and performing various image processing operations on the identified image to retrieve the desired text. Object detection using computer vision has been investigated along last decades. Template matching is an usual way to detect previously stored objects, but it is very computational expansive and does not handle occlusion very well. Another possible approach is to extract features in the image. An image feature is a point that stands out in the neighbourhood. There are quite a few applications available in the market as of now. Recognizer developed by Looked is a commercial application dedicated for iPhones that is supposed to recognize an object within the camera field of view that was previously stored in a local database of object's images. Here and Now, an iPhone app that uses the camera of the iPhone to retrieve product information.

Fig. 1. Medicine Box Detection using Camera.

III. PROPOSED WORK

Image processing module

The user gets a reminder as a voice output which tells when to take the medicines, and this reminder is set based on doctor's prescription. The reminder also gives the information whether the medicine should be taken before food or after food. Before the user could take the medicine, it would be good if he could know if the medicine he has in his hand is the correct one or not.

BOXES LABELS RECOGNITION USING FEATURES

Each medicine box is detected using their visual features. They are features designed to be invariant to scale and rotation. In this work, both properties allow the system to detect the medicine even though the box is rotated or is inside a range of distance.It is possible to compute a holography between two images if their features points are extracted and matched. However, all features must be coplanar. Usually, each medicine box is recognized by its front side which we assume that is

planar. The backside can also be used, but it is not usually as much discriminative as the front side. However, one can choose to register both sides so that the user can present the box to the camera using both sides. Object detection processing time is an important issue because the system should provide feedback to the user about the object in real time, otherwise the user would have to stand the medicine box for a long time until the system prompt to detect it.

COURSE DETAILS

In this module, the application has the course details which is used for the identifying medicines and send them all to the user through voice output.

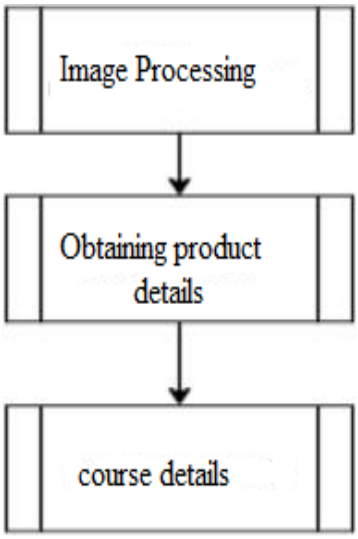

Fig. 2. Process Modules

HUMAN-COMPUTER INTERACTION

Before the system application start, each medicine is registered with an image and a sound file. The idea is that when a medicine box is presented in front of the camera, the system reports the drug facts using audio. There is two possibilities when a box medicine is detected: the system is locked and the respective audio file is played until reaches its end or it is played until another medicine box is detected. Another's possibilities is to use automatic medicine name detection and even web-based drug facts retrieval, so that medicine box registration would not be necessary. But, these approaches are error prone and were avoided. Besides, speech synthesizer could be used to read the drug facts, but after some trials we decided to ask a radio announcer to record parts of the drug facts and positive feedbacks were reported by the users.So that users can use the system, they must know how to locate the system camera. One possibility is that system has others senses features like braille indication and a specific sound emission.

IV IMPLEMENTATION

This paper proposes a paradigm of the interactive medicine taking guide assistant application for visually Challenged.

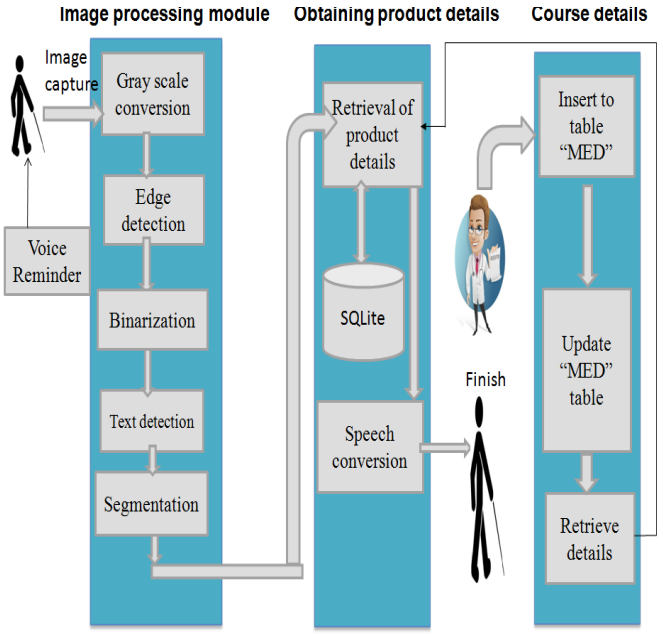

Fig. 3. Architecture Diagram

V CONCLUSIONS

In this paper we have proposed an application for the visually impaired and the uneducated people to provide complete assistance in the medicine taking scenario through label reading. In order to do this we have presented an approach to detect, localize, and extract texts appearing in grayscale or colour images. This is based on employing a colour reduction technique, a method for edge detection and region segmentation and selecting text regions based on their horizontal projection and geometrical properties. This application is implemented on the android platform owing to its ease of use. All the input and output are given by means of speech in order to address the accessibility issues of the visually impaired. Future work includes enabling a multiple login option in a same device so that more than one visually impaired person can use the same device. To update the prescriptions into database on their own without doctors help by using a printed prescription.

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