CURRENCY RECOGNITION BLIND WALKING STICK

Ms. Rani S. Lande[1],Rushikesh Malokar[2], Harshad Lajurkar[3], Akash Karmore[4]

Ms. Rani S. Lande[1] ,Electronics and telecommunication, PRMCEAM,Amravati,India ,
lande.rani@gmail.comRushikesh D. Malokar[2], Electronics and telecommunication,
PRMCEAM,Amravati,India,rushidmalokar@gmail.com
Harshad D. Lajurkar[3],Electronics and telecommunication, PRMCEAM,, Amravati, India,harsh95.h9@mai.com
Akash N. Karmore[4], Electronics and telecommunication, PRMCEAM,Amravati,India,akashkarmore11@gmail.com

Abstract—**Today's Technology improving daily different aspect in order to provide flexible and safe movement for people. The blind people used the blind walking stick to find out if any obstacle is present in front of them. For any type of movement blind people uses their own senses such as hearing sound and touch. So to overcome this problem we are developing blind walking stick for blind people. Another one more system is added is currency recognition system for visually impaired people using image processing Money related transaction is an important part of our day to day life. With the consideration of visually disabled people or blind people, it is somewhat difficult task to identify the paper currency as it has same feel without any brail marking on it. Even though denomination based on size may or may not be identified but it is almost difficult to identify whether the note is original or fake. It is the question on edge to develop such a system that will make sure for visually disabled or blind people that the currency they have is original or not. So to overcome this problem we have designed the currency recognition blind walking stick for blind people.**

IndexTerms—Currency recognition, image processing,*intelligent stick, Microcontroller, Ultrasonic sensor.*

INTRODUCTION

According to world health organization around the 30 billion people are blind on the earth and around the 30 million people are blind India. This blind stick is integrated with the ultrasonic sensor, pit sensor, moisture sensor and light sensor. Our proposed first uses ultrasonic sensor to detect the obstacle ahead using ultrasonic waves. Sensor senses the obstacle and passes this data to the microcontroller and then microcontroller process this data .if the obstacle is close the microcontroller send the signal to the buzzer and buzzer produce the sound and alert the blind person.

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There are approximately 50 currencies all over the world, with each of them looking totally different. For instance the size of the paper is different, the same as the colour and pattern.They have to remember the symbol of each currency. This may cause some problems (e.g. wrong recognition), so they need an efficient and exact system to help their work. As we mentioned before, the aim of our system is to help blind people who need to recognize different currencies, and work with convenience and efficiency.

LITRRATURE SURVEY

Zahid Ahmed, et.al. proposed a software system for currency detection developed for Bangladeshi currency. The fake currency can be detected with the extraction of existing features of banknotes. These features vary in accordance with the currency of corresponding country. Here features considered are micro-printing, optically variable ink (OVI), water-marking, security thread and ultraviolet lines, etc. Sample currency note has to go through optical character

recognition. The success rate of this software can be measured in terms of accuracy that has 100% recognition result for UV visible lines, OVI and iridescent ink, security threads recognition, etc.

Faiz M. Hasanuzzaman, eta proposed banknote recognition system by using SURF (Speeded up Robust Features) in order to achieve high recognition accuracy. It can also handle different challenging conditions those are present in real-world environments. Initially monetary features of every image are extracted with the help of SURF. These features are then matched with the precomputed SURF features of image in each banknote category. The numbers of matched features are compared with automatic thresholds of each reference region. Thus category of banknote can be determined.

Farid Lamont, etalproposed a method of artificial vision to recognize Mexican banknotes. Images captured are supposed to be taken under no illumination changes i.e. the input images of notes are illumination invariant. Here features like colour and texture of the banknotes are extracted. On the basis of RGB space to extract colour and the Local Binary Patterns to extract texture, respectively these features of banknotes are classified. Similar method proposed here can be applied to recognize banknotes of other countries which constitute different colours to distinguish denominations.

I. OBJECTIVE

- To identify original currency note using Image processing techniques and identify the obstacle by using sensor.
- System compare images of currency note to the stored images of original currency note images.
- To provide Cheaper and Accurate system to the user which can easily accessible and gives accurate recognition of currency notes.
- To make available to blind people quickly and easily so they can utilize anywhere and at any time.

SYSTEM ARCHITUCTURE
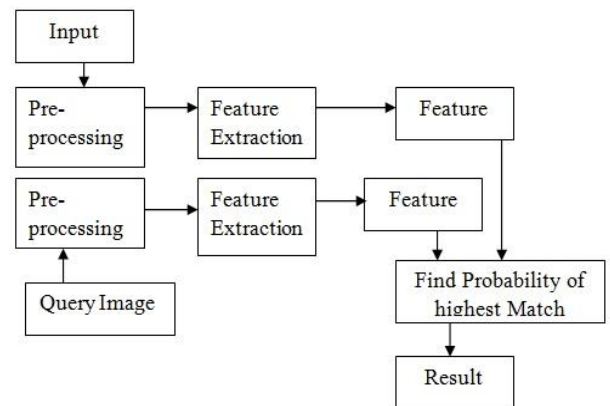
Fig(a):- Proposed Recognition System

In this system the ultrasonic sensor are used to sense the obstacle. The sensor is set a threshold limit if any obstacle is found within that range it gives beep speech through speaker. The microcontroller read the distance of the obstacle using the sensor and also sends the command to the buzzer. The vibrator is connected in parallel with the buzzer for vibration sensation. The light sensor is used to inform the users if it is day or night or any particular place dark or bright,the moistures sensor is used to detect the water pit or any puddles, if present. The entire signal is send to the microcontroller which in turned send signal to the buzzer thereby alerting the user and another most important system we can used in this stick, is currency recognition system.In preprocessing, different images of banknotes are taken. These banknote images constitute images of different denominations.To make feature extraction easier, image resizing can be done. Image enhancement technique helps to increase the contrast among bright as well as dark points. This makes the image clear and so it will be further helps feature extraction. It produces feature points which are nothing but feature descriptors. Feature descriptors of both sample input image and query image are calculated and are compared to find probability of highest match points to generate final result.

SYSTEM DESCRIPTION

In this system the sensors are used to sense the obstacle. The sensors are set a threshold limit if any obstacle is found within that range it gives beep speech through speaker.The ultrasonic sensor is used for detecting objects/obstacles which are in front whereas the sensors are used to detect the obstacles on the sides.Sensor senses the obstacle and sends this signal to microcontroller. The microcontroller reads the distance of the obstacle using sensor and also commands the buzzer.

A. Description of currency recognition system
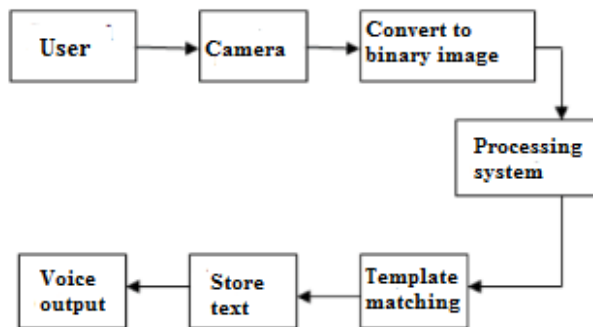
Fig(b):- Block diagram of currency recognition system

- Input (Image Acquisition)A digital camera is used for image preprocessing. The starting step of the paper currency recognition system would be image segmentation that means separating the note image from the background. When using a digital camera perform image transfers, some noise will appear on the image. Image noise is the random variation of brightness in images. Removing the noise is an important step when image processing is being performed.

- Browsing: Proposed System browse these images file in the system and this image will be given for feature segmentation and template matching.

- Image processing: It is method to convert an image into digital form and perform some operations on picture or image, in order to obtaining an enhanced image or to extract some useful information from image or picture. Here, we use Template matching for finding small parts of image.

- Template matching: It is a technique in digital image processing for finding small parts of an image which match a template image. It can be used in manufacturing as a part of quality control, a way to navigate a mobile robot, or as a way to detect edges in images.

- Finally, we get output which shows the whether currency is Original or Duplicate. After applying Template matching Algorithm, so blind person can know whether note is real or fake through the audio signal.

CONCLUSION

In this system, to deal with the common problem for blind people we have propose a currency recognition blind walking stick to recognized currency as well as obstacle to help the bind person in their daily lives. In this system we get the output in the form of audio signal.By using digital image processing, analysis of Currency image is more accurate as well as this method is efficient in terms of cost and time consuming compared to existing techniques.Extracted features of currency image will be using for currency value recognition as well as for its verification. Application based system shall be designed to get proper result whether currency image is fake or its genuine.

All the study which had been review show that, there are no. of technique for making a currency recognized ultrasonic blind walking stick for blind people. The advantage of this system lies in the fact that it can prove to be a very low cost solution millions of blind person worldwide.

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[5] Sonali P. Bhagat1, Sarika B. Patil2 PG Student (Digital systems), Department of ENTC, SCOE, Pune, India 1

Assistant Professor, Department of ENTC, SCOE, Pune, India 2.

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