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CURRENCY DETECTOR SYSTEM FOR VISUALLY IMPAIRED

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ABSTRACT

In the current world of cheating and other frauds, people find it very difficult to lead their lives. The same is even worse in the case of Blind or visually challenged. They face many more challenges in their daily life, especially while dealing with currency and other money related issues. In order to help blind people we are developing a project that helps them identify the denomination of the currency, as there is no brail mark on the currency note. Counterfeitnoteor fake note is another difficult task to identify, for both healthy and blind person. Hence, in addition to it wear incorporating fake note detection system, which helps every citizen from verge of being cheated. The currency recognition algorithm discussed in this paper using image processing is based on an ORB (Oriented fast and Rotated Brief). It is faster and also rotation invariant. The proposed algorithm shows 90%truerecognitionrate.

KEYWORDS: To detect the denomination of the currency note–with help of its orientation and colour, To detect fake note alarm – to help the users from verge of being cheated

INTRODUCTION

Reading is obviously very essential in today's life. Printed text is everywhere in the form of reports, bank statements, products, classroom handouts, bills, receipts, instructions on medicine bottles etc. Normal people can easily read this printed text, but it's a very difficult task for the blind person store ad them. The more you read more comfortable you feel. There exist a few-systems like object identification for blind persons that have some importance for portable use.

Visual impairment has been a global issue for several decades. According to a report published by the World Health Organization titled "Global Data on Visual-Impairments 2010", of an estimated 285 millionvisuallyimpairedpeoplegloballyin2010,246 million suffered from low levels of vision and 39 million were completely blind.

MATERIALS AND METHODS:

1. System Requirement Software Requirements

- Operating system: Windows7/10.
- Coding Language: Python, OpenCV tool, MATLAB
- Packages: Pyttsx3package, Matplotlib package

2. Hardware Requirements

- System: Pentium Dual Core.
- HardDisk:120GB. •Monitor:15' LED
- Ram:4GB.

3. Modules

- Image Acquisition
- Pre-processing
- Edge detection
- Thresholding

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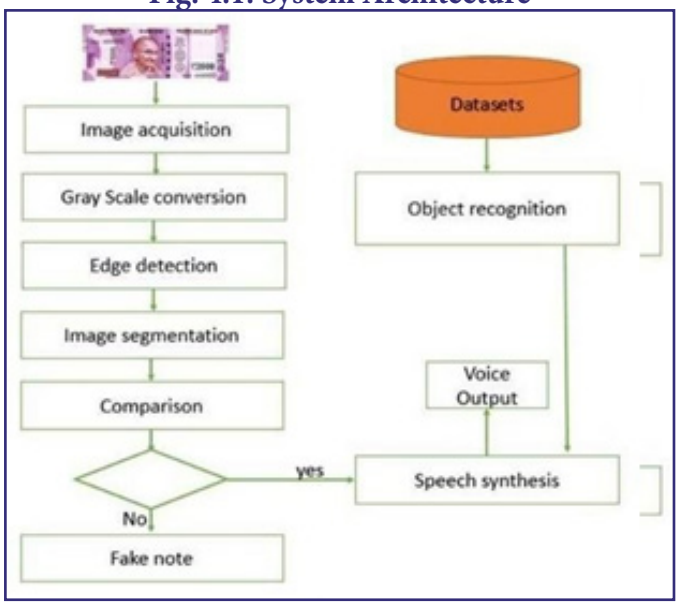
Research Paper

Fig. 4.1: System Architecture



1. Image Acquisition

Image Acquisition is a technique to develop rough pictures received from cameras / sensors seton satellites for various applications. Various strategies have been made in Image Processing during the last decade.

Processing structures are getting not able as a result of basic openness of stunning staff. The inputted image under goes grey scale conversion using gaussian grey method or the gaussian blur method, this is done so, to identify any hidden features in the image. Then, the image is also converted into it's negative, this enables the system to be more efficient and find even more hidden elements in the image.

2. Pre-processing

Pre-processing is a process where activities with pictures at the most insignificant level of impression of both information and yield are power pictures.

The mark of pre- processing is development of the image data that suppresses unwanted turning. All the undesirable mutilation is taken out in this module. Image blur and dilate Image methods are used to remove unnecessary Things (noise) from the image, it helps in image filtration. Programmed thresholding is an extraordinary method to separate evaluable data encoded into pixels while limiting foundation commotion. This is refined by using an input circle to upgrade the limit an incentive prior to changing over the first gray scale picture to double. The thought is to isolate the picture into two sections the foundation and frontal area. Binary Thresholding is done to give outline so the inputted image, the method is also called as masking. Adaptive thresholding is again done, to get accuracy.

3. Edge detection:

Edge detection is a picture processing method for finding the limits of articles inside pictures. It works by distinguishing discontinuities in brightness. In this module the edges of the note is distinguished utilizing the idea of progress in brightness. Edge detection is done using So bel edge detection method, to improve accuracy it is again done using canny edge detection. The thresholder image output is fed into Lapla ci an edge method, to provide precision.

4. Segmentation:

The well-known strategies utilized for picture segmentation are thresholding strategy, edge location-based methods, district-based procedures, bunching based methods. Picture thresholding is a basic, yet compelling, method of apportioning a picture into a forefront and foundation. This picture examination method is a sort of picture segmentation that segregates protests.

RESULTS

The Currency Detector System for Visually Impaired was successfully designed and tested to identify different currency denominations accurately. The system was able to recognize currency notes and provide clear audio output to assist visually impaired users in identifying money independently. During testing, the device responded quickly and produced reliable results under normal lighting conditions.

The system reduced the need for external assistance while handling cash transactions and improved user confidence in daily activities. It was observed that the combination no firm age processing and voice output made the system easy to use and efficient. The project also demonstrated low power consumption and cost- effective operation, making it suitable for practical implementation. Overall, the developed system proved to be a helpful assistive technology that enhances accessibility, convenience, and independence for visually impaired individuals.

DISCUSSION:

The Currency Detector System for Visually Impaired was developed to help visually challenged individuals identify currency notes easily and independently. The system successfully combined image processing techniques with audio output to provide accurate currency recognition. During testing, the device showed good performance in identifying different currency denominations under proper lighting conditions.

The use of voice alerts improved usability by allowing users to hear the detected currency value clearly. The system also reduced dependency on others during money transactions, increasing confidence and convenience for visually impaired users. However, certain limitations were observed when notes were folded, damaged, or placed in poor lighting conditions, which slightly affected detection accuracy.

Despite these challenges, the system proved to be reliable, affordable, and user-friendly. With further improvements in image processing and artificial intelligence, the accuracy and speed of detection can be enhanced. Overall, the project demonstrates the importance of assistive technologies in improving accessibility and supporting independent living for visually impaired individuals.

CONCLUSIONS

The Currency Detector System for Visually Impaired provides an effective and practical solution for helping visually challenged individuals identify currency notes independently. The system successfully uses image processing and audio output techniques to detect different currency denominations accurately and quickly. It reduces the difficulty faced during money transactions and minimizes dependence on others.

The project demonstrated reliable performance, ease. of use, and cost-effective implementation, making it suitable for real-world applications. It also improves confidence, accessibility, and convenience for visually impaired users in their daily activities. Al though certain environmental factors may affect accuracy, the overall system proved to be efficient and beneficial.

Thus, the project highlights the importance of assistive technologies in enhancing the quality of life and promoting independence for visually impaired individuals.

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