INTERNATIONAL JOURNAL OF

MULTIDISCIPLINARY RESEARCH

IN SCIENCE, ENGINEERING AND TECHNOLOGY

INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.54

Survey on – Classification and Value Recognition of currency for the blind

Mr. P. Aravind[1], A.Sravana Sindhu [2], B.Bhavana [3], D.Sai Deepika [4], N.Nagamani Deepika [5]

Assistant Professor, Dept. of CSE, KKR & KSR Institute of Technology and Sciences, Guntur, A.P, India[1]

B. Tech Final Year, Dept. of CSE, KKR & KSR Institute of Technology and Sciences, Guntur, A.P, India[2, 3, 4, 5]

ABSTRACT: Currency recognition or bank-note recognition is a process of identifying the denominational value of a currency. It is a simple and straightforward task for the normal human beings, but if we consider the visually challenged people currency recognition is a challenging task. Visually handicapped people have a difficult time distinguishing between different cash denominations. Even though unique symbols are embossed on different currencies in India, the task is still too difficult and time-consuming for the blind.

KEYWORDS: Currency detection, visually disabled, SIFT, ORB, FAST, SURF, Denomination, Image Processing, Deep-learning, Feature Extraction, Pre-Processing, Edge Detection, Data Augmentation

I. INTRODUCTION

Currency Detection in this project we are trying to detect different Indian currency notes that are 10, 20,50,100,200,500,2000. In simple word we can say that classification of Indian currency notes. This classification of the notes can be useful for the visually impaired people or blind people for currency detection. By using this technique, the visually impaired people no longer get cheated using the money exchange through hand. According to the latest surveys, there exists a large population of visually impaired in our country and this proportion is increasing. In everyone lakh individuals, a total of one hundred and sixty-five people is visually impaired. It was estimated that visually impaired are eighty two percent and eighteen percent are people with low vision. In this project work, we are applying convolutional neural networks that uses deep learning algorithm and VGG16 model in order to help blinds in the detection of currency notes. It is a well-known fact that an important aspect in our life is monetary transactions While developments of various methodologies have been proposed by many other countries with regard to automatic recognition of currency notes, this aspect is an issue requiring a feasible and timely solution in the context of India. However, one of the major concerns regarding Indian currency notes is the exposure to high rate of noise when in circulation. Hence any solution given should

be able to produce accurate results, whilst adapting to the conditions unique to the notes in India. For implementation of the Currency Detection, we will be using VGG-16 architecture which is CNN model in deep learning. We will be taking the input of different Indian currency notes making collections of dataset to train the algorithm and perform data augmentation.

II. LITERATURE SURVEY

1According to research in [1], authors have introduced an unsupervised algorithm for segmentation of synthetic aperture radar images which is rely on fuzzy clustering approach to beat the high time complexity of rich-performance clustering algorithms which analyse all pixels for image segmentation. Their algorithm selects a subset of key pixels supported by the rule of local extrema and performs segmentation on those.
2. Research in [2] proposes a system for recognizing fake currency notes of Indian currency. The system verifies the real images on the premise of image processing by extraction of varied security measures of Indian currency notes
3 The analysis in [3] gives a dataset for the evaluation of change point detection algorithms which consist of 37 time series from different domains. By analysing the consistency of human annotations, the dataset describes evaluation metrics for measuring the performance of algorithms
4. The study in [4] has proposed three algorithms which are suitable for different BCs by combining the Augmented Lagrangian Method (ALM) and the symmetric RedBlack GaussSeidel (SRBGS) method. These algorithms are more efficient and precise than other models with L1 or L2 fidelity.

5.Many of the currency recognition systems are proposed. In [5], the author recognizes and classifies four different kinds of currencies through computer vision. The typical Accuracy rate was 93.84%.

6. Also, in [6], the author proposed an Android paper currency recognition system that applied to Saudi Arabian papers. Recognizing paper currency methods that relies on some features and correlations between two currency Images.

7. Sungwook et al. defined an efficient and fast algorithm for differentiating multiple national bank currencies depends on size information and correlation matching of multiple templates [7]. As different bank currencies have different sizes so this information was regarded to be a vital feature. This method was tested using 55 currencies of 30 different classes from five countries like EUR, KRW, RUB, and USD.so, results of this method is 100%.

8 However, the above study has not solved the matter that the accuracy of the ORB algorithm is reduced/decreased when the dimension of the currency image of an oversized external environment changes greatly. So, depend on the original ORB image registration method, Yanyan Qin et al. [8] combine the primary SIFT method with the ORB method and define the SIRB (SIFT and ORB) algorithm. SIRB solved the errors of ORB scale inconsistency while managing the merits of ORB in matching fast.

9. The performance evaluation of a feature matching algorithm is that the idea for judging the pros and cons of algorithm. Thanks to the various research areas, different needs, and different application scenarios of image matching, its difficult to measure the performance of an algorithm with a unified standard. Therefore, its usually necessary to use diverse indicators to process the results of image matching and comprehensively evaluate them, there by selecting an algorithm with superior comprehensive performance.

10.Prashengit Dhar and colleagues presented a paper currency detection system. It is based upon combined features of LBP and SURF [10]. Detection is done on the basis of training of the system over different currencies. SVM classifier is trained and used for prediction. This system focuses only on Bangladeshi taka (currency of Bangladesh). In addition to currency detection, this system can also provide an output of the count of total cash in the image. Overall accuracy of this method 92.6%. Despite of there being many algorithms still they have some disadvantages as in the SIFT and SURF algorithms.

III. REVIEW FINDINGS

1. In the mentioned Survey Reviews, the traditional mechanisms have only the notes detection and checking whether the notes are fake are not. It only has classification feature of fake note. They are unable to detect the value of notes. To overcome this, we make avail of Image-Processing which can detect the values of notes.

2. In the some of the above reviews, they used some Machine learning algorithm like SIFTs to detect the values of notes but they are time-consuming and expensive which is not much effective for the impaired one as they cannot identify the fraud.so, to overcome this, We use Deep-learning technique which can detect the values of notes and provide the resultant value of note in voice-format less than a minute.

3. From the Summarization of certain reviews taken, The methods they have implemented for fake detection and as well as Note value detection is available only for a particular currency and is not implemented for many currencies available. So, we added this feature world-wide that can detect the currency value of any country.

IV.PROPOSED WORK WITH METHODOLOGY

We have proposed a deep-learning technique to detect the value of the note and used Image-processing to classify the note as fake or not. The system makes avail of the dataset consists of different currency notes of different countries and for example India, they are 10,20,50,100,200,2000. In this we are going to detect the note with the live camera. First it goes on detecting the notes is present or not if any note is not detected then it goes on printing 'nothing' if the notes is detected it takes the picture goes for the classification. After the classification of the note detected it gives the voice outcome as the application is to fulfil the need of the blind people. It announces the value of note it is either 10/20/50/100/200/500/2000 rupees at the end.

The proposed model can be able to detect the values of notes of different countries across the world. It can be very beneficial to detect the value of note and fake currency.
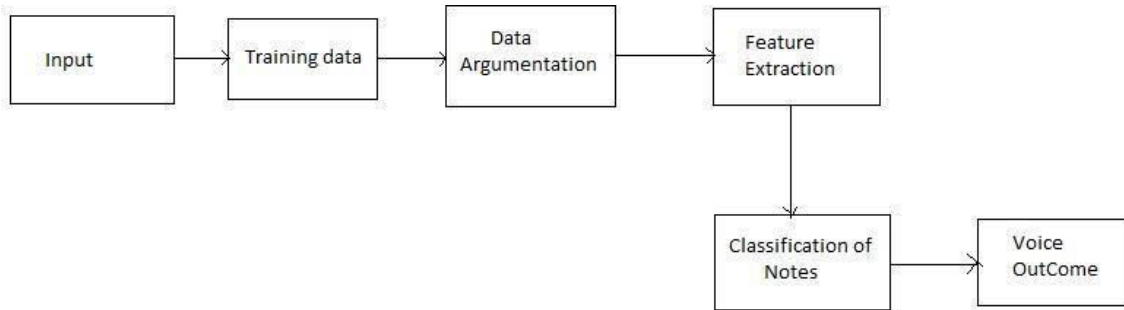
V. COMPARISON WITH EXISTING SYSTEM

1. In the existing system, we have a technique that detects the fake note. But in proposed system along with fake note detection, we have added a feature that can detect the value of note.
2. In the existing system, they used some machine learning algorithms like SIFT which resulted in time consuming and expensive. In the proposed used, we used deep-learning paradigm VGG16 that can reduce the time and effort of the user.
3. In the existing system, we have note value detection for only particular countries like INDIA. In proposed system, we have note value detection for all the currencies that gives the result in voice format.

VI. CONCLUSION

Our system proposes a vision based deep learning technique that can recognize and classify Indian Currencies were well developed. VGG 16 was found to extract deep features from the input image. Our system gives a better accuracy of 95%. The existing system uses ANN, RBF which extracts less features. Therefore, VGG16 is used which is capable of extracting which more deep features.

New innovative apparatuses and advances inter technological machinery show that the individual difficulties of the blind and visually diminished can be solved in present era. In this article, we have surveyed the technologies that are considered to be strong and computational for the currency note recognition system, especially for the sightless and visually damaged people. This article provides a brief overview of the evolution of existing techniques and algorithms. The work makes it more efficient to understand the methods and algorithms which are involved in the system. From this, the visually impaired people able to improve their quality of life by reduce the dependency to other especially during outside activities.

REFERENCES

[1] Ronghua Shang, Yijing Yuan, Licheng Jiao, Biao Hou, Amir M. Ghalamzan E, and Rustam Stolkin – A Fast Algorithm for SAR Image Segmentation Based on Key Pixels -Oct 2017

[2] Anwar Wanjara, Priyanka Satija, Nikita Patil, Samiksha Chindhalore, Shubham Gaulkar, Prof. A. D. Gotmare – Counterfeit Currency Detection System

[3] Gerrit J. J. van den Burg, Christopher K. I. Williams – An Evaluation of Change Point Detection Algorithms – May 2020

[4] Xiaole Zhanga, Yuying Shi a, Zhi-Feng Pangb, Yonggui Zhu – Fast algorithm for image denoising with different boundary conditions

[5] Jyothi, Ch Ratna, Y. K. Sundara Krishna, and V. Srinivasa Rao. "Paper currency recognition for colour images based on Artificial Neural Network." In Electrical, Electronics, and Optimization Techniques (ICEEOT), International Conference on, pp. 3402-3406. IEEE, 2016.

[6] Sarfraz, et al. "An intelligent paper currency recognition system Procedia Computer Science Journal, Vol. 65, pp. 538-545, 2015

[7] Youn, S, Lee, C, Chulhee Lee Efficient multicurrency classification of CIS banknotes Elsevier Neurocomputing, Vol. 156, pp. 22-32, May 2015.

[8] Qin Y, Xu H, Chen H. Image feature points matching via improved ORB[C]// International Conference on
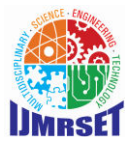
Progress in Informatics & Computing. IEEE, 2014.

[9] Mikolajczyk K, Tuytelaars T, Schmid C, et al. A Comparison of Affine Region Detectors[J]. International Journal of Computer Vision, 2005, 65(1-2):43-72.

[10] Mitsukura, Y., ukumi, M., Akamatsu, N., 2000. Design and evaluation of neural networks for coin recognition by using GA and SA. In: Proceedings of the IEEE- INNS-ENNS International Joint Conference on Neural Networks, 2000, vol. 5. IJCNN, pp. 178 183.

INTERNATIONAL JOURNAL OF

MULTIDISCIPLINARY RESEARCH
IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

www.ijmrset.com