

Indian Currency Detection And Lower Denomination Exchanger Machine

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Abstract: Circulation of Fake currency can have so many adverse effects on the economy of India. The counterfeiters are becoming harder to track down because of highly advance technology. One of the most effective methods to stop counterfeits can be the use of counterfeit detection software that is easily available and is efficient.

Our project will recognize Indian currency note using a real time image obtained from a web cam. The necessity of our project is image processing. The web cam images are detected using image processing which recognizes area of image that is going to manipulate and shows the segmentation of original image. So our aim is to work on those factors that are impossible to implement on counterfeit note so we started working on three parameters out of ten which will be enough to differentiate fake and original note.

Accordingly, when the currency is detected and verified. As per the requirement of lower denomination user will set a count by using GUI. The mechanism of exchange is in process using arduino, roller and infrared sensor for number of count of lower denomination to be delivered to the user. Finally, we get the lower denomination as requested to the system.

Keyword: Feature Extraction, Binary Hamming Distance, counterfeit detection, Denomination.

I. INTRODUCTION

Disadvantages of higher denomination currency notes are as such like:-

- A. There are more chances of forgery, printing of fake notes, and duplicancy.
- B. There is also the chance of loss. Like by mistake when you lose a 2000 rupee note you at a time, then you tend to lose a lot.
- C. As per my personal experience, often, the merchants and shopkeepers do not accept higher denomination currency notes because of the fear of getting cheated or due to lack of changes of smaller denominations. It is a real hassle in real life, I believe.

These day's people hardly believe others, and that too when the matter of money comes.

We know that high denomination currency results in ease of corruption and weakening of banking system, however its more wide spread and more harmful impact is fake currency and its consequences e.g. weakening of official currency, most importantly this fake currency works as tool for anti-national & anti-human activities. Official investigations agencies have been reporting that alongside most of the terror attacks, it was observed that large amount of fake currency have been brought to India and were used as a tool.

We designed a system that is helpful in recognition of paper currency notes with fast speed and in less time. This proposed system describes an approach for verification of Indian currency banknotes. The currency will be verified by using image processing techniques. In this article, four characteristic features are extracted. The approach consists of a number of components including image processing, edge detection, image segmentation, and characteristics extraction comparing images. The characteristics extraction is performed on the image of the currency and it is compared with the characteristics of the genuine currency. MATLAB is used to extract the characteristic features of paper currency. The result will be whether currency is genuine or counterfeit. We are going to use this method to detect fake currency. After detecting we will exchange higher currency note to the lower currency note by using controller and mechanical mechanism. This will use to overcome the Disadvantages of higher denomination currency notes. GUI interfacing and Mechanical mechanism is interesting and challengeable.

II. LITERATURE REVIEW:

The paper[1] presented by B. Sai Prasanthi¹, D. Rajesh Setty² described by Indian Paper Currency Authentication System using Image processing .In this paper, automatic banknote recognition systems encouraged many researchers developed corresponding robust and reliable techniques. Processing speed and recognition accuracy are generally two important targets in such systems. The paper [2] presented by Ying Li Tian describe by Effective Component-based Banknote Recognition for the Blind. In this

paper, for the detection of forged notes it needs to identify the denomination every time they use the device which consists of ultraviolet light. Problems can be summarized as follows, i) Motion Blur Problem. ii) Noise imposed by image capture instrument. iii) Different type of note. iv) Less efficient feature extraction technique.

III. METHODOLOGY:

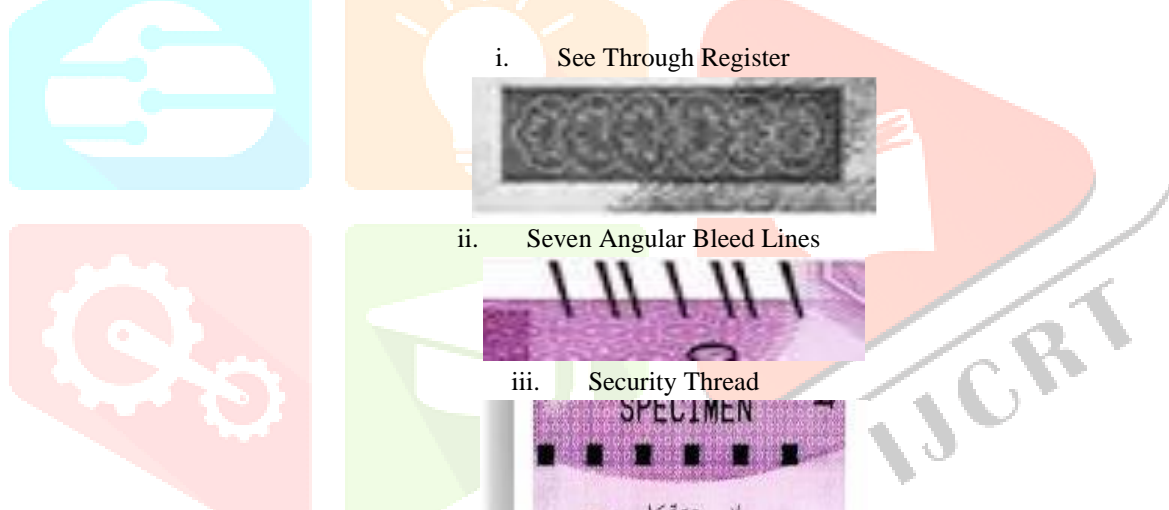
A. Note Detection methodology:

The proposed system will work on two images, one is original image of the paper currency and other is the test image on which verification is to be performed. The proposed algorithm for the discussed paper currency verification system is presented as follows -

- i. Image of paper currency will be acquired by simple scanner or digital camera.
- ii. The image acquired is RGB image and then it will be converted into gray scale.
- iii. Edge detection of the whole gray scale image will be performed.
- iv. After detecting edges, the six characteristic features of the paper currency will be cropped and segmented.
- v. After Segmentation, the characteristics feature extracted.
- vi. The characteristics of test image are compared with the original pre-stored image in the system.
- vii. If the conditions are satisfied, then the currency is said to be genuine otherwise counterfeit.

In the proposed method characteristics of paper currencies are employed that are used by people for differentiating different banknote denominations. Basically, at first instance people may not pay attention to the details and exact characteristics of banknotes for their recognition rather they consider the common characteristics of banknotes such as the size, the background color (the basic color), and texture present on the banknotes.

B. In this method, Out of ten Characteristics these are three characteristics feature extracted as follows:-

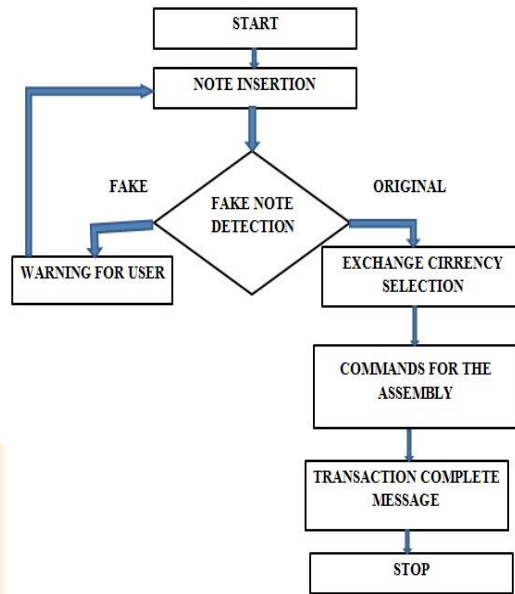


Out of Ten Characteristic these feature can easily be visible and identified by human eye also gets detected into software easily and verify the fake note so this characteristics plays important role in the Detection.

C. Note Exchange Methodology

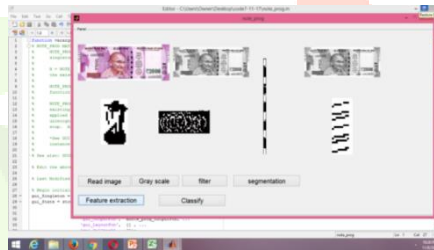
- i. After the detection of fake note, MATLAB interrupt to the controller which triggers to MOTOR ON.
- ii. When the Motor turns ON with the help of roller, the note is drop into the tray as per the signal or rotation count given through MATLAB.
- iii. As command in the controller the roller will rotate continuously till the task is completed. i.e. if user require 2000₹ currency exchange arm will move 4 times for 500₹ note and drop it in withdrawal tray respectively.

IV. FLOW CHART OF THE SYSTEM (IMAGE PREPROCESSIN AND EMBEDDED)



V. RESULT:

1. Image processing Result:



2. Embedded Result:



VI. CONCLUSION

Our project resolves the problem of fake denomination and exchange of higher denomination. The verification of fake note is done the image of note gets captured as soon as note is inserted. The image processing technology is used for fake detection of currency.

With the help of GUI interface the requirement of user count is given as input .The hardware dispatch the lower denomination as per the GUI count. The Project completely satisfies user need by providing exact lower denomination that was needed.

I REFERENCE:

- A. Sai Prasanthi1, D. Rajesh Setty 2 “Indian Paper Currency Authentication System using Image processing” International Journal of Scientific Research Engineering & Technology (IJSRET), ISSN 2278 – 0882 Volume 4, Issue 9, September 2015
- B. Faiz M. Hasanuzzaman, Xiaodong Yang, and YingLi Tian, Senior Member, IEEE Robust and Effective Component-based Banknote Recognition for the Blind IEEE Trans Syst Man Cybern C Appl Rev. 2012 Nov; 42(6): 1021–1030.
- C. Rahul Bagadia , Pallavee Jaiswal “Various Fake Note Detection Systems” International Journal for Research in Technological Studies| Vol. 4, Issue 5, April 2017.
- D. Binod Prasad Yadav, C. S. Patil, R. R. Karhe, P.H Patil “An automatic recognition of fake Indian paper currency note ” , IJESIT, Volume 3, Issue 4, July 2014.
- E. Shaurav Lamsal, Aman Shakya “ Banknote Identification Based on Color and Texture” 1,2Department of Electronics and Computer Engineering, IOEGC , 2015.

