Fake Currency Detector

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Abstract: The purpose of this paper is to present an introduction to fake currency detector concept because Counterfeit notes are a problem of almost every country but India has been hit really hard and has become a very acute problem. Fake Indian currency of 500 and 1,000 rupees seems to have flooded the whole system and there is no proper way to deal with them for a common person. The legal system is even more troublesome, even a small court case in India can easily drag for months and years there is necessity to make available low cost and easy detection of fake currency for every computer user. As we are technical and part of Indian Future introduces this idea in our concept.

Keywords: Fake currency detector concept, Fake Indian currency of 500 and 1,000 rupees, technical and part of Indian Future

I. INTRODUCTION

This concept includes detection of the fake currency .fake currency nowadays has probably become the biggest threat to the nationality. IB (Inspection Bureau) data shows that around 169,000 corers of the money with the public could be counterfeit which comes to around 28% of the total currency in India.

Definition:
To avoid complexity of detector machine using embedded technology which contains processor, converters, interfacing techniques. And these devices are of high cost due to which ultimately cost of machine increases. It is not possible for each and every person to carry the detector machine with him every time whenever he is handling the currency.

Analysis:
Image Processing is a tool it provides a platform of simple reliable techniques to common man with low cost. For non computer users another alternative is camera mobile it simply captures the image and uploads on internet and they can easily get the status of the currency. Indian Banks at cash counters needed are the machine which can verify not only the images but also can check the chemical and physical properties of papers, inks, resins and other materials used in production of note. The machine should be capable of not allowing any fake note to pass as genuine.

Image Processing:
An image may be defined as a two-dimensional function, f(x, y), where x and y are (plane) coordinates and the amplitude of f at any pair of coordinates (x, y) is called the intensity values of f are all finite, discrete quantities, we call the image a digital image. The field of digital image processing refers to processing digital images by means of digital computer. Note that a digital image is composed of a finite number of elements each of which has a particular location and value. These elements are called picture elements, image elements and pixels.

II. MAIN RESULTS

Saturation: - The difference in the two values of saturation is observed so the threshold value has been decided of 600 for 1000 Rs Note, if the value is greater than 600 then result is a fake note.

Luminance: - The RGB values are converted in the gray scale values and then by comparing results are obtained.

Entropy:

$$p = temp \div (607.0 \times 264.0)$$
$$\log p = \log(p)$$
$$sum = (p \times \log p)$$

temp= frequency count of particular color
The difference in the two values of entropy is observed so the threshold value has been decided of 452 for 1000 Rs Note, if the value is greater than 452 then result is a fake note.

PSNR:

$$sum = (arr_1 - arr_2) \times (arr_1 - arr_2)$$
$$floatn = 160248$$
$$mse = sum \div n$$
$$rmse = squrt(mse)$$
$$mse1 = (int)mse \times 10000$$
$$psnr = 20 \log(255 \div rmse)$$

It checks the difference between each pixel and then it multiplies the difference thus PSNR is calculated.

PSNR is clearly observed so the threshold value has been decided of 135000 for 1000 Rs Note, if the value is below 135000 then result is a fake note.
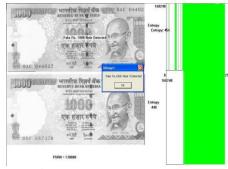
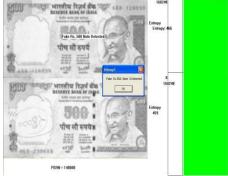## A. Example of Figure

Fig. 1. 1000 Rs/- Image Results

Fig.2. 500 Rs/- Image Results

B. Tables

TABLE I

Currency Notes	Image Size
500 Rs/-	607*264
1000 Rs/-	607*264

TABLE II

I P Parameters	Minimum threshold values	Maximum threshold values
Saturation(500 Note)	Rs/-985	1200
Saturation(1000 Note)	Rs/-375	600
Entropy (500 Note)	Rs/-382	462
Entropy (1000 Note)	Rs/-322	452
PSNR(500 Rs/- Note)	145000	150000
PSNR(1000Rs/- Note)	135000	140000

III. CONCLUSIONS

Fake currency detection using six parameters is discussed. Features such as Luminance, Chrominance, Saturation, Intensity, Entropy and PSNR were analyzed. Experimental results on sample images showed that are approach performs well in terms of calculating parameters value. It was motivated by the desire to overcome the shortcomings of general purpose FCD approaches which cannot be viewed by normal eye. An overview of content based FCD provided and investigated some techniques for color image processing. The experiment was carried out on variety of note images

ACKNOWLEDGMENT

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