

COUNTERFEIT CURRENCY NOTE DETECTION USING IMAGE PROCESSING

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Abstract: In this paper, the programmed framework is intended for ID of Indian money notes and check whether it is phony or unique. In India increase in the counterfeit currency notes of 500 and 2000 rupees. As increase in the technology like scanning, color printing and duplicating, because of that there is an increase in the counterfeit problem. In this paper, acknowledgment of phony Indian money notes is finished by utilizing picture handling method. In this paper, acknowledgment of phony Indian money notes is finished by utilizing picture preparing strategy. In this technique first the image acquisition is done and applies preprocessing to the image. In pre-processing crop, smooth and adjust then convert the image into grey color after conversion apply the image segmentation then extract features and reduce, finally comparing image.

Keywords: image processing, image acquisition, preprocessing, image segmentation, grey scale conversion.

I. INTRODUCTION

Programmed acknowledgment of phony Indian cash note is essential in numerous applications, for example, computerized products dealer machine and mechanized merchandise tellers machine. This framework is utilized to recognize the legitimate Indian money note. The framework comprises of eight stages including picture obtaining, dim scale change, edge recognition, highlight extraction, picture division, examinations of pictures and yield. Programmed machine more supportive in banks since banks faces the issue of fake cash notes or demolished notes. In this manner including machine makes note acknowledgment process less complex and efficient.

All monetary forms the world over appear to be absolutely unique from each other. For example the span of the paper is extraordinary, the same as the shading and example. The staffs who work at places like cash trade workplaces need to recognize diverse sorts of monetary forms and that isn't a simple occupation. They need to recall the image of every money. This may come about into wrong acknowledgment, so they require an effective and secure framework to help in their work.

The Image Processing approach is utilized to distinguish the particular highlights of paper money. Picture Processing includes changing the nature of a picture to enhance its pictorial data for human elucidation. There are different procedures for money acknowledgment in view of surface, example or shading based. Extricating discriminant qualities from the cash picture is basic for exactness and heartiness of the mechanized framework. Two pictures are considered in the proposed framework; one is a unique picture to be distinguished, and other is the test picture on which confirmation is to be performed.

The framework will show cash is certifiable or phony and money section. It is essential to develop computerized framework to get highlight and perceive Indian money note in different zone, for example, saving money, ATM machine, shopping center, Bus station and railroad station.

II. ORDINARILY USED METHODS TO DETECT FAKE NOTES

1) Water Marking

The mahatma Gandhi watermark is available on the monetary certificates. The mahatma Gandhi watermark is with a shade impact and multidirectional lines in watermark.

2) Fluorescence

Fluorescent ink is utilized to print number boards of the notes. The note additionally contains optical fibre. The number panel in fluorescent ink and optical fibre can be seen when presented to UV light.

3) Latent Image

The idle picture demonstrates the particular section an incentive in numerical. On the watch side of notes, the inert picture is available on the correct side of Mahatma Gandhi representation on vertical band. At the point when the note is held on a level plane at eye level then the dormant picture is unmistakable.

III. RELATED WORK

Throughout the years a great deal of inquiries about have been done in this field of Currency note acknowledgment. The creators have done acknowledgment in view of Color, surface, security highlights and so on. There are numerous framework existing for acknowledgment of phony Indian cash utilizing diverse procedure[3]. Huge numbers of the framework utilizes different advances like picture securing, highlight extraction and arrangement framework utilizing different calculation. There are other phony money location strategy tails:

- i) Commonly Used Methods to Detect Fake Currency.
- ii) Digital Image Processing Method to Detect Fake Currency.
- iii) MATLAB system.

- iv) Counterfeit Detection Pen.
- v) Ultraviolet Fake Recognition Scanner.

In similar to other existing framework in our proposed framework we utilizes the camera for picture obtaining, transport unit and programmed arranging unit. For the most part all other existing framework utilizes scanner for picture procurement. In the proposed framework Principal Component Analysis (PCA) is utilized for acknowledgment. The proposed framework comprised of i) Dataset Preparation ii) Feature Extraction iii) Principal Component Analysis.

This paper introduces detection of fake Indian currency note is done by using image processing principle. This is the minimal effort framework. This system works for identification of fake note on 100,200,500 and 2000 for Indian cash. The framework likewise gives exact and substantial outcomes. The different misrepresentation recognitions like charge card extortion, PC interruption and media transmission misrepresentation are overviewed. The fundamental strategies behind the charge card extortion recognitions and PC interruption are neural systems and model based thinking, some with information mining. In media transmission extortion location, the perception techniques are utilized. This paper introduces a rundown on Next-Generation Intrusion Detection Expert [2] System (NIDES) by utilizing the continuous and clump procedures. The ongoing is utilized to examine information and report the suspicious action. The group activity is a method of task that enables the client to run the tests and indicate the malignance. This paper presents a Fake cash recognition utilizing picture handling and other standard strategies by utilizing different techniques like watermarking, optically factor ink, brilliance, security string, intaglio printing, inactive picture, small scale lettering and distinguishing proof stamp. By joining two different parts of two pictures at that point, the variety will be diminished. Be that as it may, by utilizing layman strategy the phony note is distinguished.

This paper exhibits the plan and execution of Indian paper cash validation framework in light of highlight extraction by edge based division utilizing sobel administrator. To do this, the highlights are removed from the first picture and the edges are distinguished. At that point, the edges are divided and it is contrasted and the dataset and discovers the [6] phony location. This paper presents [5] the paper money confirmation framework in view of characterization extraction utilizing picture handling. It is done get getting the picture and changing over it to dark scale and the edge is distinguished. At that point the picture is portioned and the qualities are separated and it is looked at and the yield is appeared. It utilizes four systems including distinguishing proof check, security string, idle picture and watermark.

IV. PROPOSED SYSTEM

Manual testing of notes in exchanges is exceptionally tedious and confounding procedure and furthermore there is a possibility of tearing while at the same time dealing with notes. Hence programmed strategies for certified receipt acknowledgment are required in numerous applications, for example, programmed offering merchandise. In outlining of this framework one testing case is to plan framework that is extraction of attributes from money picture for exactness of the robotized system. In this venture, identification of phony Indian cash note is finished by utilizing picture preparing guideline. This is the minimal effort framework. The framework works for category of 100,200,500 and 2000 for Indian money. The framework also provides exact and substantial outcomes. The procedure of location of phony note is fast and simple. The first step is image acquisition it can be done by using CCD camera. The UV light is passed in note while taking the image. By using the UV light, acquired image should consist of all the features. In next step preprocessing can be done. Pre-processing the operations normally initial to main data analysis and extraction of information. In this unwanted distortion are suppressed and enhance some image features that are important to further processing. It includes image adjusting and image smoothening. In image adjusting, when the image obtained from scanner the size of image is large therefore to reduce the size of image, image adjusting is used. The third step is Gray Scale Conversion, image obtained is in RGB color. It is transformed into gray scale because it takes only the intensity information which is easy to process than processing of three components RGB. The next step is edge detection. The Edge detection is a basic tool in image analysis, image processing, and image pattern recognition and computer vision techniques. Edge detection is basic tool particularly in the area of feature detection and feature extraction. The fifth step is Feature extraction. In this step, specific form of dimensionality reduction. It is the method of capturing the visual content of image for retrieval and indexing. When input to the algorithm is too large to be proceeding and it is having much data but not more information. Then input data will be converted into reduced representation set of features. Feature extraction makes simple the amount of resources required to describe the large set of data. Then comparison can be done. In comparison, the extracted feature of input image and extracted feature of original image is compared. The last step the output is displayed. The output is currency denomination or currency is fake or original.

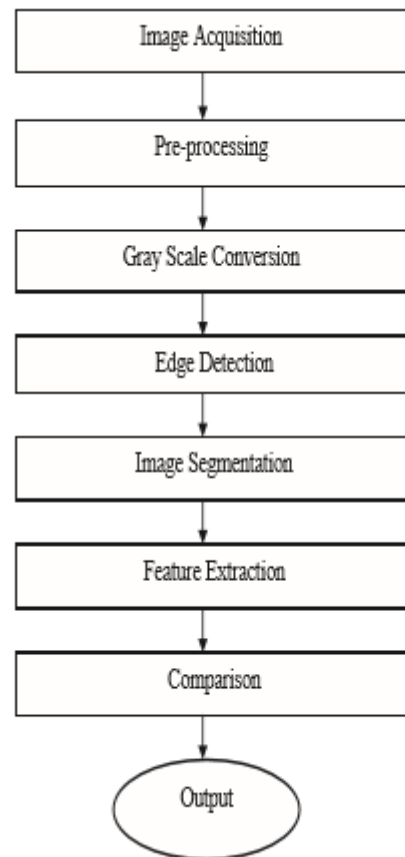


Fig1: Flow Chart of Digital Image Processing Method to Detect Fake Note

There are mainly 6 modules in this project

1) Image Acquisition

The camera or scanner is used for image acquisition. UV light is used in image acquisition. The acquired image should consist of all the features.

2) Pre-processing

In pre-processing the operations normally initial to main data analysis and extraction of information. In this unwanted distortion are suppressed and enhance some image features that are important to further processing. It includes image adjusting and image smoothening. In image adjusting, when the image obtained from scanner the size of image is large therefore to reduce the size of image, image adjusting is used.

3) Gray Scale Conversion

The image obtained is in RGB color. It is transformed into gray scale because it takes only the intensity information which is easy to process than processing of three components RGB.

4) Edge Detection

The Edge detection is a basic tool in image analysis, image processing, and image pattern recognition and computer techniques. Edge detection is basic tool particularly in the area of feature detection and feature extraction.

5) Feature Extraction

Feature extraction is the specific form of dimensionality reduction. It is the method of capturing the visual content of image for retrieval and indexing. When input to the algorithm is too large to be proceeding and it is having much data. Then input data will be converted into reduced representation set of features. Feature extraction makes simple the amount of resources required to describe the large set of data.

6) Comparison

In comparison, the extracted feature of input image and extracted feature of original image is compared. For this PCA is used. The output is displayed. The output is currency denomination or currency is fake or original.

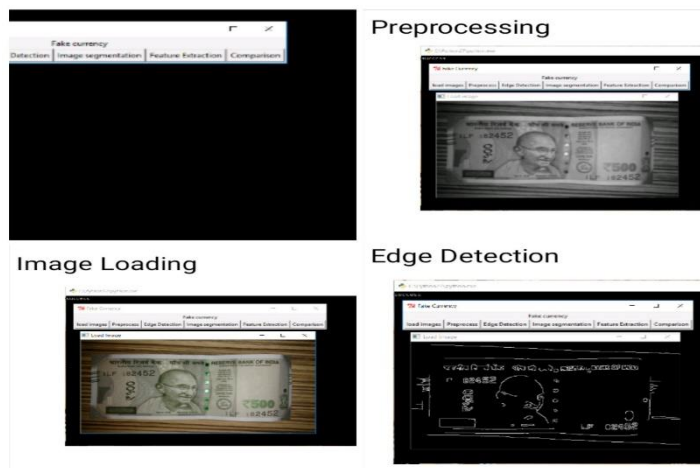


Fig2: Recognition of Indian fake currency note

In figure2 the recognition of 500 note is done in various levels by using image processing technique. The UV light is passed in preprocessing.

V. RESULTS AND DISCUSSION

In this area result is acquired by performing image processing Operations. In the framework image acquisition is finished by utilizing the camera and UV light is passed in image acquisition, obtained image is send to the handling unit. As appeared in the GUI the gained picture is the test image. After that we need to choose the control catch for particular divisions. At that point the test picture is then changed over into gray scale picture, segmented image, cropped image and resized image. Then comparison of cropped and resized image with the images saved in the data base is done. Then the result is displayed in the PC.

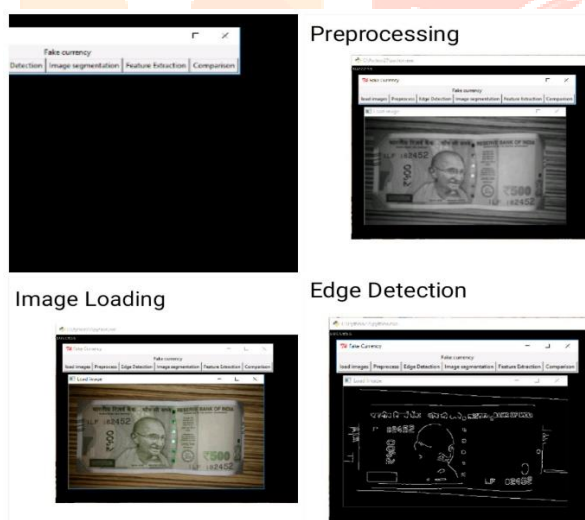


Fig3: Recognition of fake currency note

VI. CONCLUSION

In this project, the detection of fake currency note is done by using image processing technique. This is a very efficient and minimal cost system. The framework works for section of 100,200, 500 and 2000 for Indian cash. The framework additionally gives exact and substantial outcomes. The procedure is quick and simple. The input is taken from CCD camera and the UV light is passed. The output is obtained by PC.

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REFERENCE

- [1] Yaojia Wang, Siyuan Lin (2010) ” Currency recognition system using image processing”
- [2] Pragati D. Pawar¹, Shrikant B. Kale(2012)“ Recognition of Indian CurrencyNote Based on HSV Parameters”
- [3] Bhawani Sharma, Amandeep Kaur, Vipin(2012)” Recognition of Indian Paper currency based on LBP”
- [4] Rubeena Mirza, Vinti Nanda (2012) “Design And Implementation Of Indian Paper Currency Authentication System Based On Feature Extraction By Edge Based Segmentation Using Sobel Operator”
- [5] Vipin Kumar Jain, Dr. Ritu Vijay(2013) “Indian Currency Denomination Identification Using Image Processing Technique”
- [6] Kishan Chakraborty, Jordan Basumatary,Debasmita Dasgupta(2013 “Recent Developments In Paper Currency Recognition System”
- [7] M.Deborah.,C.Soniya Prathap.M.E(2013)“ Detection Of Fake Currency Using Image Processing”
- [8] Dr. Ajit Danti, Karthik Nayak(2014) “Grid Based Feature Extraction For The Recognition Of Indian Currency Notes”
- [9] Aruna D H, Manpreet Bagga, Dr.Baljit Singh(2014)” A Survey On Indian Currency Note Denomination Recognition System”
- [10] Eshita Pilonia, Bhavika Arora(2015)” Recognition of Fake Currency Based on Security Thread Feature of Currency”
- [11] S. Girija, A. Nithyakalyani(2015) “ A Novel Currency And Denomination Recognition System”.
- [12] Snehlata Sahu, Toran Verma (2016) “Identification Of Paper Currency Techniques: A Survey”.
- [13] Mayur Jadhav, Pushpak Wani(2016) ” Counterfeit Currency Recognition And Detection Using Image Processing.
- [14] Mayadevi A.Gaikwad, Vaijinath V. Bhosle(2016) ” Automatic Indian New Fake Currency Detection Technique”.
- [15] Sonali R. Darade,Prof.G.R Gidveer(2016)” Automatic Recognition of Fake Indian Currency Note”.

