Fake Currency Detection using Image Processing & Python Module

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Abstract— India is a country where it consists of different types of currencies and coins. Currencies have their own denomination and using that we can identify currency easily. Now a days a lot of illegal counterfeiting rings manufacture and sell fake Indian currency is printed as well, which has caused great loss and damage to the economy. Thus it is imperative to detect fake currency. We propose a new model to detect fake Indian notes using their digital images. The image of currency is represented in the dissimilarity space, which is a vector space constructed by comparing the image with a set of prototypes. Each dimension measures the dissimilarity between a prototype and the image under consideration. In order to obtain the dissimilarity between two images, the local key points on each image are detected and described. Based on the characteristics of the currency, the matched key points between the two images can be identified in a competent manner. A post processing procedure is further proposed to remove mismatched key points. Support Vector Machine (SVM) is conducted for the detection of fake currency, so only genuine currency is needed to train the classifier.

Keywords: Fake Currency, Fake Currency Detection, Currency Image Representation, Dissimilarity Space, Class Learning

I. INTRODUCTION

Currency duplication also known as counterfeiting currency is a massive threat to economy of India. So to detect or identify the genuine currencies and classifying them according to the standards can be done using image processing techniques is what says here. Generally worship places are the second most places where most of the coins and currencies are used. So automatic identification of currencies using image processing technique will be helpful in those places. Here proposes new feature named super resolution in order to identify an Indian currency with its denomination. Automatic machine is more helpful in banks because bank faces the problem of counterfeit currencies or damaged notes. Therefore involving machine makes note recognition simpler and systematic. Automatic machine is also important to detect fake currency note in every country. The system designed to check the Indian currency note with denominations 10, 20, 50, 100, 200 and 500. It will pre-process the digital pictures and organize the prepared arrangement of information and it will distinguish in monetary forms. This paper proposes a convenient method for identifying Indian currencies. When the input image of the currency is blurred or its resolution is one less than the proposed system, it will help to get it as a high clarity one. So the identification of currency denomination becomes easy. The produced results have 100% accuracy for recognizing the true currency notes

A. Proposed Approach

In the proposed work, we will develop a system to detect fraud currency for Indian Notes. Extracting sufficient monetary characteristics from the currency image is essential for accuracy and robustness of the automated system. Clustering will be done using k-means algorithm. In which it forms the clustering of feature one by one. After that recognized the input image as a 10, 20, 50, 100, 200, or 500 and compare the features of the image and classified it as original or fake with the help of SVM algorithm. Automatic method for detection of fake currency note is very important in every country.

1) K-means Algorithm

Means algorithm is an unsupervised clustering algorithm that classifies the input data points into multiple classes based on their inherent distance from each other. The image processing technique that extract the region of interest of image and also denomination of paper currency by considering the scanning image and further adjust size and pixel of the scanned image.

B. Algorithm

1) Step 1: Read an input currency image.
2) Step 2: The acquired image will get converted into grayscale.
3) Step 3: After that the super-resolution method will be applied.
4) Step 4: .Watershed segmentation method is used to segment the image.
5) Step 5: When segmentation of the image is done, feature method to extract the text in the currency.
6) Step 6: After all these the currency denomination will get identified and displayed.
7) Step 7: After identification of the currency image it will also verify that the image is a fake one or genuine one.
8) Step 8: Stop

II. SYSTEM ARCHITECTURE

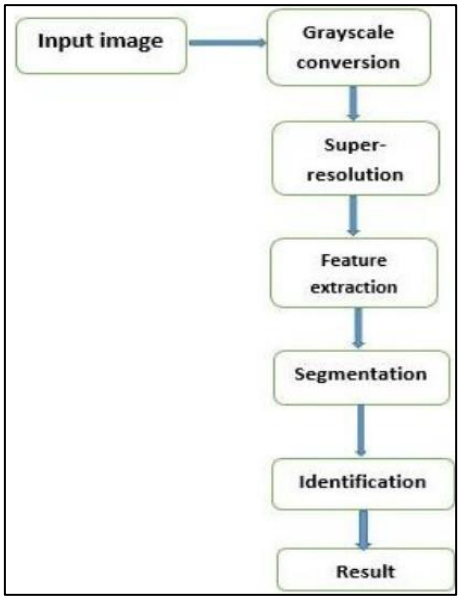

Fig. 1: System Architecture

III. LITERATURE SURVEY

Research [1] a convenient method of automatic coin and currency identifier which can be placed in temples i.e. the digital hundies, and at first it finds the denomination of currencies and then counts the total. After that it displays on an LCD screen. The image processing consist of the algorithms oriented FAST and Rotated BRIEF for the feature extraction purpose. The result of matched number of features in input images provides high accuracy. It proposes a method of coin and currency which fall into the counted automatically. The coin and currency sorting and counting are carried out accurately.

Research [2] designed a prototype for automated currency detection which is based on generally color feature and texture feature and also proposed the Feed Forward Network (FNN). Also, it measured the similarity between a real and fake banknote.

Research [3] have studied fake currency detection using image processing and other standard methods and explained some other methods to detect fake currency through security features of currency using Python.

Research [4]. The approach has been applied to other currencies to check its speed and accuracy which is 96.7%. It described two characteristics of Indian currency to identify counterfeit notes which are identification mark and currency serial number. Generally, the image processing technique applied on currency using Sobel Operator.

Research [5]. Have used the Image processing method for currency recognition which is the most important method for feature extraction. After extracting the valuable features, the intensity has been computed.

IV. SOFTWARE USES

A. Python (For Image Processing: openCV, Utils. etc)

We have used the Python module such as openCV, k-Means, SVM – support vector machine. The openCV module help us to read the Digital images and work on it. OpenCV module of the Python is very much vast module to use.

k-Means is used for clustering the features. It is very useful for classification. It classify into groups and make a cluster. Compare the cluster with the information store in the data base and display the desire output.

SVM (support vector machine) as all the attributes are in different plane it is difficult to execute. With the help of this module or say libraries present in sciket learn help us to calculate and convert on dimension to another.

V. OUTPUT

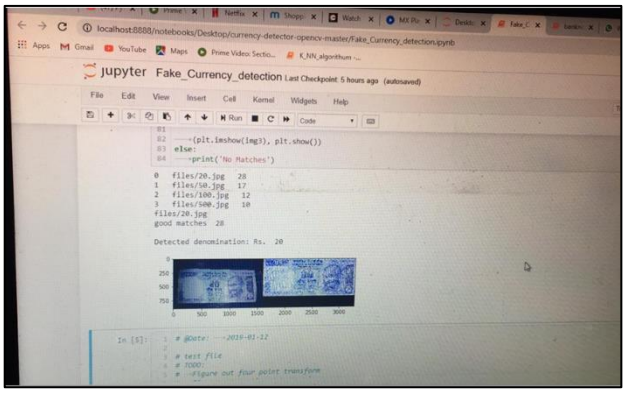

Fig. 2:

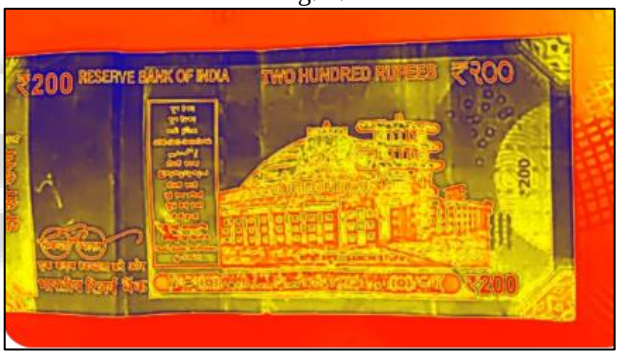

Fig. 3:

Fig. 4:

A. HTML (For Web Designing)

Fig. 5:

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