



e-ISSN: 2278-8875
p-ISSN: 2320-3765

International Journal of Advanced Research

in Electrical, Electronics and Instrumentation Engineering

Volume 11, Issue 4, April 2022



Impact Factor: 8.18

9940 572 462

6381 907 438

ijareeie@gmail.com

www.ijareeie.com



Fake Currency Detection and Billing System Using Python

Abhijit Katore¹, Prajwal Bharsakale², Shreyash Nagpure³, Rudresh Pasarkar⁴, Ajay Uike⁵

BE Student, Dept. of EXTC, P R Pote College of Engineering, Amravati, Maharashtra, India¹

BE Student, Dept. of EXTC, P R Pote College of Engineering, Amravati, Maharashtra, India²

BE Student, Dept. of EXTC, P R Pote College of Engineering, Amravati, Maharashtra, India³

BE Student, Dept. of EXTC, P R Pote College of Engineering, Amravati, Maharashtra, India⁴

BE Student, Dept. of EXTC, P R Pote College of Engineering, Amravati, Maharashtra, India⁵

ABSTRACT: Currency recognition is a simple process of identifying the denominational value of a currency but nowadays fake currency recognition is a challenging task. Moreover, humans can identify currency by the pattern recognizing ability inherently available within them. But fake currency detection is a complicated task when machines are involved and much costlier to afford a machine for a small shopkeeper. The input amount is detected and verified. Dataset is prepared and done by collecting dataset of the images of the currencies. All these images are stored in a directory. Detection and recognition process involves reading the image, and then identifying the value of money. In this method pre-processing steps like edge detection and character extraction are involved. After feature is extracted, pattern recognition technique is used to find the value of money and then billing amount and remaining amount also calculated from users billed amount.

KEYWORDS: Fake currency detection, segmentation method, Feature extraction methods, classifiers, optimization methods.

I.INTRODUCTION

In Banking-sector, biggest risk is fake currency generation. Mostly uv light is applying for the authentication of main features to detect fake currency are Note value, ink smudge Security thread, serial number , Intaglio printing , watermark , Reserve bank number panel , LD mark , Topography , Micro-lettering and numbers & alignment. In this important features are watermark, ink smudge, security thread,topography, numbers & place and micro- lettering. However, for machine-based evaluation, usually the following steps to be carrying out by researchers.

One by one identification performed by manual is only possible for confined quantity of notes. Therefore demand an machine learning centered alternative to recognize perhaps the image is real or fake. Each year Arrange Bank of India encounters issue of phony currency notes or ruined note. The material which are employing in every countries are different. In India, currency notes comprised of pulp containing the cotton and balsam with a particular dyes to really make those currency notes should be resistant, tough, with a quality to fight from wear and split and never to be fake easily . USD notes are produced from cotton fibre paper, in place of the wood fibre, which can be frequently applied to create popular papers. Currency duplication also known as counterfeit currency is a vulnerable threat on economy. Although fake currency is being printed with precision, the Crime Investigation Department (CID) says that they can be detected with some effort. Currency printed by local racketeers can be detected easily as they use the photographic method, hand engraved blocks, lithographic processes and computer colour scanning. In counterfeit notes, the watermark is made by using opaque ink, painting with white solution, stamping with a dye engraved with the picture of Mahatma Gandhi. Tourists are the most vulnerable people to fake currencies, because they don't know the proper and precise way of finding the difference between fake and real currencies note. So automatic identification of currencies using image processing technique will be helpful for the peoples.it is also very useful at different workplaces. The system is design to check the Indian currency note with denominations 10, 20, 50, 100, 200, 500 and 2000. It will done by pre-process the digital pictures and organize the prepared arrangement of information and it will be distinguish in monetary forms.



II.SYSTEM MODEL AND ASSUMPTIONS

Step by Step the Procedure for currency identification using image processing. The acquire currency note undergoes the projective transformation before feature extraction so as to standardize the size of all banknotes and account for differences in t dimensions. This step is essential so as to know which are dimension category the acquired note falls. Now the note will be identified according to its dimensions. All the Indian currency note have a specific dimension different from each other.

All the Indian currency notes have the same height, And the width which differentiates them from each other, apart from the other features. The dimensions of all notes are specified in the main code. First input is provide to the machine using webcams, which captures and process the algorithm. The dimensions of the notes are checked on the basis that further processing of the currency is carried out. After the dimensions of all notes obtained its grouped the respective note category. Now the next step is feature extraction from the currency notes. For feature extraction first the segmentation techniques are applied.

III.SEGMENTATION

It is the process of dividing into segments. The main object is divide into smaller the sub-segments and then each segment is processed and studied separately. Segmentation is performed in the K-Means Image Segmentation Algorithm. Create an initial cluster containing an original image and a set of centroid pixels randomly selected from the image. Append the initial cluster built to the array of cluster. Retrieve the current cluster from the array and iterate through the set of those superpixels.) For each super-pixel, compute the actual distance to each pixel in the current image. To do this, we'll normally use the variant of Euclidian distance formula that allows us to find the distance between two 3D-vectors of colors (R; G; B) of the either superpixel or the current pixel in the given image respectively. Perform a linear search to find those pixels which value of distance to the current super-pixel (i.e. centroid) does not exceed a specific boundary. Build the new cluster based to the new image containing all those pixels selected to the previous step and the current value of super-pixel. In this case the super-pixel will serve as a centroid of a newly built cluster. Also, we need to substitute the color of each pixel with the centroid's color.

IV.RESULT

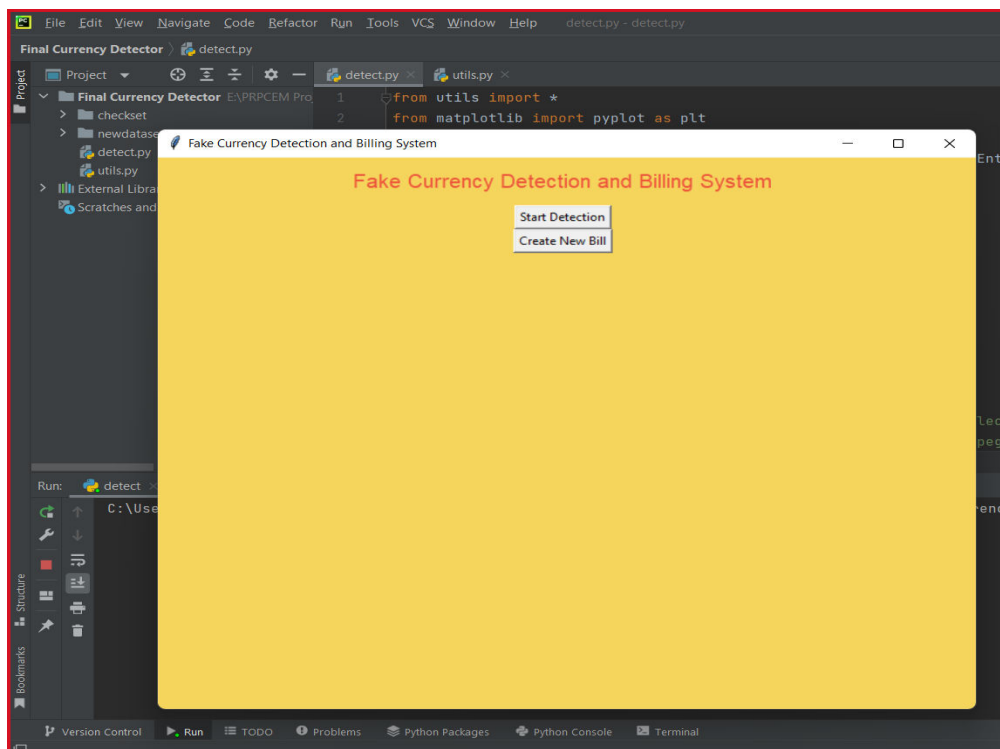


Fig 1 Interface when software launched



Above fig 1 shows when software is launched, we here implemented user interface by using the python “tkinter” library. Then By clicking on Start Detection Button, Image selection window will open, after selecting the image we can see the selected image as shown in fig 2.

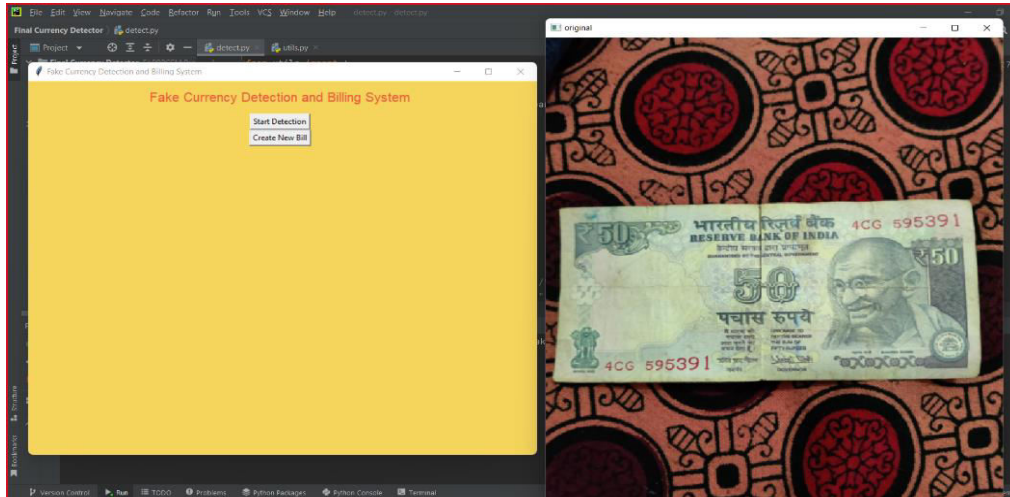


Fig 2 Interface when currency image is selected

Fig 2 shows the screen after selecting the image, it prompts us in different window with showing the selected image. After closing the prompt, the real currency detection starts.

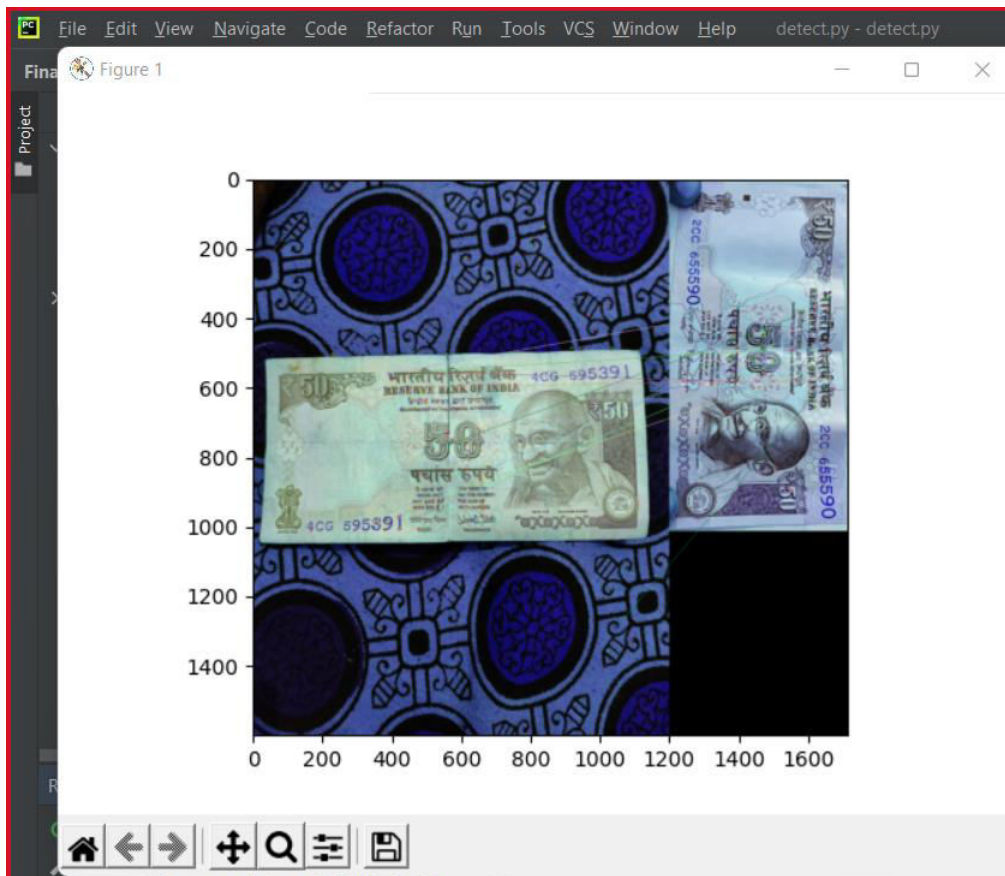


Fig3 Show final currency Detection and comparison



Fig 3 shows us final detection result of currency and shows the matched image in database in a comparative manner where we can see what part of images matches with each others.

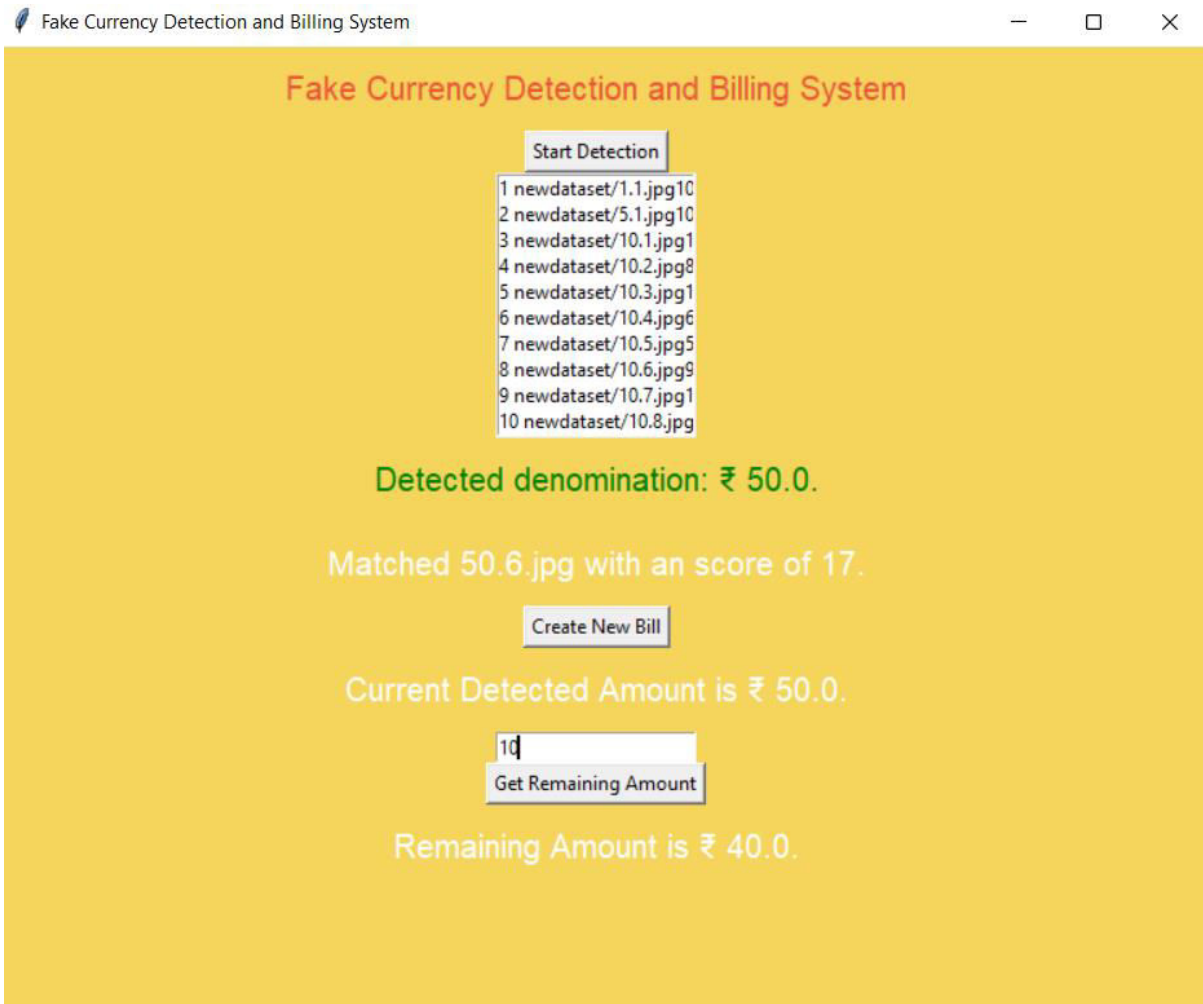


Fig 4 shows remaining amount

Fig 4 shows the detected amount currency amount or the fake currency detected warning. We can also start a new billing or can stay with existing bill. Here remaining amount also shows after entering the billing amount.

V. CONCLUSION

The authentication of Indian banknote currency is described by applying some image processing methods. In primer research, only three features are considered and extracted including bleeding lines, identification mark and security thread from the image of the currency based on canny edge detection method. The process begins from image acquisition and end at classifier methods. The features are extracted using edge-based segmentation by canny operator and same time it will work only with limited number of images. The complete methodology works for Indian denomination 2000. Only a comparative analysis and primer evaluation has done based on the detection stages of Fake currency detection. Concentrated only in main features, In future, will consider next features and also design a new automatic system for fake currency detection based on deep convolution neural networks based on other parameters. And the same time, will focus to combine 10,20,50,100,200,500 notes also and will compare with other CNN architectures based on different kind of epochs and splits to prove the image authenticity and integrity.



REFERENCES

- [1] Fake Indian Currency Note [Online]. Available: https://en.wikipedia.org/wiki/Fake_Indian_currency_note .
- [2] Tushar Agasti, Gajanan Burand, Pratik Wade and P Chitra, —Fake currency detection using image processing| 14th ICSET-2017.
- [3] Chinmay Bhurke, Meghana Sirdeshmukh, Prof. Mrs. M.S.Kanitkar, —Currency Recognition Using Image Processing.
- [4] International Journal of Innovative Research in Computer and Communication Engineering, Vol. 3, Issue 5, May 2015.
- [5] Singh, A., Mankani, P., Bhoyar, K., Pandey, A., & Tekriwal, A. “Detection of Fake Currency using Image Processing” (2019).
- [6] Agasti, T., Burand, G., Wade, P., & Chitra, P. “Fake currency detection using image processing” (2017).



INNO  SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.18



ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



International Journal of Advanced Research

in Electrical, Electronics and Instrumentation Engineering

 9940 572 462  6381 907 438  ijareeie@gmail.com



www.ijareeie.com

Scan to save the contact details