



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 7, July 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569

9940 572 462

6381 907 438

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Detection of Counterfeit Currency Using Machine Learning Algorithms

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ABSTRACT: The advancement of shade printing technology has extended the price of faux foreign money observe printing and duplicating the notes on a totally big scale. Few years back, the printing will be completed in a print residence, but now all people can print a forex be aware with most accuracy using an easy laser printer. As a end result, the issue of fake notes in preference to the real ones has been increased very in large part. India has been unfortunately cursed with the troubles like corruption and black cash. And counterfeit of forex notes is also a massive hassle to it. This results in layout of a system that detects the faux currency observe in a much less time and in a extra efficient way. The proposed machine offers a technique to confirm the Indian forex notes. Verification of foreign money notice is carried out by way of the principles of image processing. this text describes extraction of various capabilities of Indian forex notes. photograph processing technique is used to extract the features of the observe. The proposed gadget has been given advantages like simplicity and high-performance speed. The end result will be expecting whether or not the forex word is fake or no longer.

KEYWORDS: Counterfeit, currency, numerical data, image pre-processing, accuracy, prediction

I. INTRODUCTION

Each most important economy inside the gift times must accommodate the threat of counterfeit forex. Counterfeit foreign money is that the imitation forex produced without the felony sanction of the nation or authorities. a number of its ill-outcomes on including reduction inside the rate of actual cash, and growth in costs (inflation) because of extra coins getting circulated within the economic machine. that frequently this is often motive that faux overseas coins have been employed thru governments to earnings financial conflict towards every exceptional.

Due to this, we need to undertake counter-measures that could likely assist in stopping this danger. With the usage of pc systems and era, it's miles possible to create top best counterfeit bills which are tough to inform apart from authentic notes. In truth, many counterfeit notes had been seized which mimicked a number of the safety abilities which might be usually in-constructed real foreign exchange notes. therefore, we might want to innovate new techniques to help human beings in extra accurate identity of faux foreign money notes in a completely available manner.

II. RELATED WORK

Due to the counterfeit note, India is facing many problems and challenges in the business market. Many researchers have been encouraged to develop robust and effective currency detection machine.[1]A latest approach is provided in this paper the use of the bit-aircraft reducing approach to extract the most good-sized records from counterfeit banknote photographs with the software program of a side detector algorithm. The proposed approach consists of decomposing unique photographs of 256 Gray levels into their equivalent 8binary images. this is useful in reading the relative significance contributed through every bit of the specific photograph. better order bit degrees are evaluated for grayscale banknote pics with the utility of Canny thing detection algorithm. The effects are then compared with real

banknotes and with different gift techniques used for detecting counterfeit notes. [2] image processing may be carried out the RSB to HSV set of rules on this picture The numerous traits of the paper can be cropped and segmented in ROI. After segmentation, the paper characteristics of the paper currency can be extracted to subsequent steps. The extracted characteristics of the check photograph then go through the category. On the premise of category, the end result is generated in GUI. [3] The method using SIFT algorithm with Bayesian Classifier and has been proposed for checking the originality of notes. SIFT algorithm has been used to analyse external features of an image. This algorithm with nearest neighbour classifier has been applied to analyse external features of the checking the originality of currency notes.[4]on this paper, we provided an automated counterfeit detection tool exploiting photograph processing and device mastering primarily based algorithms. the safety features of the financial institution notes were extracted and encoded the usage of image processing techniques at the same time as k-means clustering and SVM classifier had been used for classification.[5]in this paper, we proposed a version which demonstrates the feasibility of using CNN with the VGG 16 architecture. This version also can be compared with various architectures of CNN which may additionally have low mistakes fee than the prevailing model and may be blended through applying photo pre-processing strategies like and facet-detection to crop the forex notice out of a picture on the way to present better consequences.[6] The trained dataset consists of Indian currencies like 10, 20, 50, 100, 500 1nd 2000. And the images obtained by using mobile camera also. So it provides maximum possible accuracy on identifying the currency as well as on verifying whether the obtained currency image is of a fake one or not. By extracting the multiple colours in the currency images, it will verify that the image is of a fake one or genuine one.[7] it is concluded that PCA is a brilliant approach for the detection of fake forex inside the Indian state of affairs as well as international. in the present paintings, a green model is proposed thru which ends are supplied in the form of the graph. The converged result has been received through computing imply, covariance, eigenvalues, eigenvectors and new facts set has been generated for identity of fake foreign money.[8]on this paper switch learned Alex net as our version for appearing the faux currency detection. The detection accuracy is maximum correct since the currency traits features are learned through layer by means of layer. For detecting the fake forex, the maximum famous technique in deep neural community known as transfer getting to know the usage of Alex net is adopted.[9] The system is divided “into twomodules: Currency Recognition and Currency verification. The input is taken as image then, it undergoes the process of image acquisition, pre-processing, edge detection, imagesegmentation, feature extraction and comparison. In currency verification we check or validate whether the currency is valid or not. [10]The forex photograph is represented inside the region of differences, that could be a vector region constructed through comparing the photograph with a chain of prototypes. every duration measures the difference a number of the picture in question and the prototype. to distinguish among images, the neighbourhood key factors of each photo are identified and defined. primarily based on forex traits, it is viable to efficiently select out the applicable key elements between two photos.

III. METHODOLOGY

In our mission, our aim is, to collect skilled model that could sort new enter pix primarily according to abilities extracted after wavelet transformation. The element of processing the image and doing wavelet transformation isn't a part of the venture. Trouble may be superior like every other assignment. Emphasise at the tool studying element of the hassle is the reason for that challenge. because of this, we're operating with the converted pictures. to check the general average overall performance of our project, we're capable of holdout a take a look at set if you want to moreover be labelled, but no longer seen to our project. We count on to gain excessive accuracy for our version because the problem is financial in nature. The competencies extracted after wavelet transformation have following feature information :Variance of wavelet converted photo (non-forestall) ,Skewness of wavelet transformed photograph(non-prevent),Kurtosis of wavelet converted photograph (non-prevent),Entropy of photo (continuous),beauty of the overseas money (integer)the number one 4 talents are non-stop and description the developments of a remote places cash note, at the same time as the fifth function is the real label of the notice, it is 1 for actual one, and zero for faux one. This project dataset consists 1372 samples, in that 762 samples belong to counterfeit notes, on the identical time as 610 samples belong to true notes. Additional to this we are detecting counterfeit currency by implemented another method which is image pre-processing. we are detecting counterfeit currency by using CNN algorithm.

IV. EXPERIMENTAL RESULTS

Figures shows the results of counterfeit currency detection from image pre-processing by using CNN algorithm and wavelength transformation by using gradient boosting classifier, support vector classifier and k-means neighbour classifier.



Figure 1: Entry Screen

Figure 1 describes about the entry screen. This screen contains two options i.e., Numerical dataset and Image dataset. When we click on the Numerical dataset option the currency is detected whether it's genuine or counterfeit using the variance, skewness, kurtosis and entropy values of the note and when we click on the Image dataset option the currency is detected whether it is genuine or counterfeit using dominant parts of image of currency note such as identification marks, latent image and security thread.



Figure 2: Detecting Genuine note using Image dataset

Figure 2 tells about detecting the genuine note using the image dataset. To detect whether the currency is genuine here we have considered the parameters such as identification marks, latent image and security thread.



Figure 3: Detecting Fake note using Image dataset

Figure 3 describe about detecting counterfeit note using Image dataset. The above image considered here is counterfeit as it is not obeying the parameters such as identification marks, latent image and security thread.

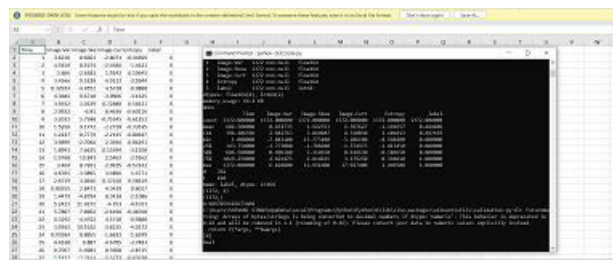


Figure 4: Detecting Genuine note using Numerical dataset

Figure4 describe about detecting the genuine image using Numerical dataset by considering the variance, skewness, kurtosis and entropy. If the label considered here is 0 then the currency note is real.

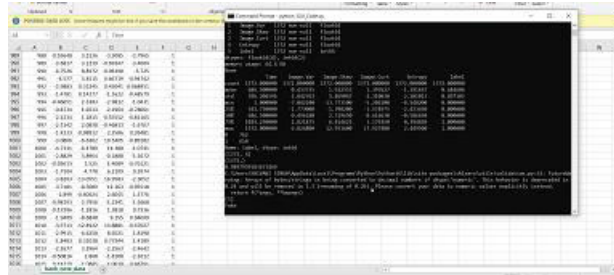


Figure 5: Detecting Fake note using Numerical dataset

Figure 5 describe about detecting the counterfeit image using Numerical dataset by considering the variance, skewness, kurtosis and entropy. If the label considered here is 1 then the currency note is considered as fake.

V. CONCLUSION

In this technique, the authentication of foreign money is defined by using applying photograph processing and using numerical datasets. essentially, a few features are extracted together with various domination parts of observe like identity marks, latent image and protection thread for image processing and variance, skewness, kurtosis and entropy for numerical datasets. The capabilities extracted the usage of photograph-based segmentation using template matching and numerical values works well inside the entire system with much less computation time. The technique is very simple and smooth to put in force. This approach may be very adaptive to put in force in actual time world.

In future, cell app can be advanced which might be beneficial for everyday as well as visually impaired persons, the same machine can be advanced for different user's foreign money notes. additionally, the app's interface may be further changed as in step with the user necessities.

REFERENCES

- [1]. Mohammad H Alshayegi*, Mohammad Al-Rousan and Dunya T. Hassoun Detection Method for Counterfeit Currency Based on Bit- Plane Slicing Technique International Journal of Multimedia and Ubiquitous Engineering Vol.10, No.11 (2015), pp.225-242
- [2]. P. Ponishjino, Kennet Antony, Sathish Kumar, Syam Je Kumar (2017), Bogus currency authorization using HSV Techniques, International conference on electronics, communication and aerospace technology
- [3]. Sandeep kaur, seema bhagla, sunil kumar (2017), Enhancement of sift algorithm to authority of Indian currency, International Journal of Computational Intelligence Research ISSN 0973-1873 Volume 13, Number 5 (2017), pp. 945-953
- [4]. Mrutunjay singh, Preetam Ozarde and Konidena Abhiram, (2018), Imageprocessing-based detection of counterfeit Indian bank notes, Conference: 2018 9th International Conference on Computing, Communication and Networking Technologies (ICCCNT)
- [5]. Navya Krishna G, Sai Pooja G, Naga Sri Ram B, Yamini Radha V, Raja Rajeswari P, (2019), Recognition of Fake Currency Note using Convolutional Neural Networks, International journal of innovative technology and exploring engineering, Blue Eyes IntelligenceEngineering & Sciences Publication, Volume: 8
- [6]. Anjana P, Apoorva P, (2019), A Novel Approach for Identification of Indian Currency using Super Resolution Method, International Journal of Innovative Technology and Exploring Engineering (IJITEE), Blue Eyes Intelligence Engineering & Sciences Publication, Volume: 8
- [7]. Snehlata, Vipin Saxena (2019), An efficient Technique for detection of fake currency,international journal of recent technology and engineering, Vol 8.
- [8]. M. Lavanya, V. Vijayaraghavan, (2019), Real Time Fake Currency Note Detection using Deep Learning, International Journal of Engineering and Advanced Technology (IJEAT), Blue Eyes Intelligence Engineering & Sciences Publication, Vol 9.
- [9]. Dr P Mangayarkarasi, Akhilendu, ArakhaAS, MeghashreeK, FarisAB (2020), Fake Indian currency note recognition, international journal of research engineering and technology, vol 7.
- [10]. Devid Kumar, Surendra Chauhan (2020), Indian fake currency using computer vision, international research journal of engineering and technology, vol 7.



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