



FAKE CURRENCY of indian DETECTION USING IMAGE PROCESSING

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Abstract: - One of the main issues that nations, including India, face is the detection of counterfeit currency. Although banks and other large businesses have automated systems in place to identify counterfeit money, it is quite challenging for the common person to determine the difference between the two. The second-oldest profession in the world, money fraud is as old as money itself and has been practised so frequently throughout history. This has led to an increase in corruptions within our the country, which is hindering its economic growth. Some methods are used to spot fake currency include latent pictures, optically changeable ink, water marking and security thread.

Keywords - counterfeit items, fake currency, image capture, binarization, and security thread

INTRODUCTION

The only bank in India with full authority to print bank notes is Reserve Bank of India. However, some individuals counterfeit money. A survey indicates that there are already 400 billion rupees worth of counterfeit notes in circulation. Only 0.63 million of the 90.26 billion Indian currency notes in circulation in 2015–16, or seven out of every million, were discovered to be counterfeit, according to data from the RBI. Of the Rs 16.41 lakh crore in money in circulation in 2015–16, Rs 29.64 crore was the value of these fraudulent notes. There is no proper way for the average person to cope with fake Indian currency, which is introduced into the system in denominations of Rs. 100, Rs. 500, and Rs. 2000. Common People are victims of these currencies. It is ineffective to manually test each note, and it is challenging to distinguish between fake currency and real currency. Therefore, bank note recognition requires automatic procedures. For the automated system to be accurate and reliable, the currency picture must be sufficiently extracted for monetary properties. The process of recognising notes is made easier and more effective when machines are used, either independently or in support of human experts. In this project, we developed a method for identifying phoney money notes using

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Source: <https://image.app.goo.gl/cKFRqcY8H7STHYP6>

Fig 1. Features of the 500 rupees

LITERATURE SURVEY

[1] Prof. Chetan More, Monu Kumar, Rupesh Chandra, and Raushan Singh delivered the article "Fake money Detection using web framework and Basic Python Programming " in 2020. The system suggested in this research is written in the Python programming language and uses the Flask web framework (Flask is a micro web framework combining Python and web development).

[2] Vivek Sharan and Amandeep Kaur's article, "Detection of Counterfeit Indian Currency Note Using Image Processing," which was presented in 2019, details the use of image processing to identify counterfeit Indian currency notes. Three key elements were taken into account in this study: the latent picture, the RBI logo, and the denomination number with the rupee symbol and colour portion of the currency note. They had deployed an algorithm that finds fake Indian rupee notes using these three properties.

[3] Aakash S. Patil's work, "Indian Paper currency detection," which was presented in 2019, introduced a new method to enhance recognition and transaction speed for classifying Indian currency. It required the use of the OpenCv library of computer functions, which was primarily focused on real-time computer vision and covered functions like note identification, segmentation, and recognition. Additionally, the Python NumPy module was used for numerical processing, and argparse was used to parse command line arguments for the OpenCV bindings.

[4] The study by Archana MR, Kalpitha C P, Prajwal S K, and Pratiksha N, titled "Identification of fake notes and denomination recognition," advocated Identification of fake note and denomination recognition in 2018 to reduce human power. The money recognition and conversion mechanism makes up the majority of this system. They used a software interface that could be applied to many financial standards.

[5] The method named Performance Matrix for the Fake money detection using MATLAB image processing system was described in the paper titled "Fake currency detection using Image processing" presented by S. Atchaya, K. Harini, G. Kaviarasi, and B. Swathi in 2017. This This strategy is based on model-based reasoning and neural networks. This study describes many techniques for spotting counterfeit money, including optically changeable ink, fluorescence, and water marking.

[6] Professors Jayant Adhikari and Rajesh Babu, along with Ms. Monali Patil, developed a system that uses visual processing to distinguish between characteristics of a real note and a fake note. They used the SVM method and the K-means method for features of grouping to train their data model.

[7] Gaikwad, Mayadevi A., and Bhosle, Vaijinath V. Vasudev D. Patil By contrasting visual characteristics, They offered a method in their research paper for detecting phoney money from real, including looking at the gap between Gandhiji's face and other notations. A system that only uses software processing might find use for this strategy.

[8] Trupti Ghotkar, Renuka Nagpure, and Shreya Sheety. To distinguish between genuine and fake notes, they have developed a system that makes use of the floral designs on the notes printed by the RBI.

[9] Yatin Jaie, Rajat Sachdeva, Vijul Dalel, Neeru Rathee, Arun Kadian, They recommend combining supervised machine learning with image processing to boost the accuracy of this method and find the characteristics that set a real note apart from a fake one.

10] Garima Srivastava, Akanksha Upadhy Research Scholar and Associate Professor Vinod Shokeen. In their study, they demonstrated that combining image processing with logistic regression results in accuracy levels greater than 99%.

Author	Technology Used	Features
Chetan More, Monu Kumar, Rupesh Chandra, Raushan Singh	Basic Python Programming and Web Framework	Makes use of flask web framework
Vivek Sharan and Amandeep Kaur	Image processing	latent picture The colour portion of the currency note has the RBI logo, the denomination's numerical value, and the rupee symbol. They had deployed an algorithm that finds fake Indian rupee notes using these three properties.
Aakash S. Patil	OpenCv	Note that the OpenCV bindings for cv2 use identification, segmentation, and recognition along with the Python NumPy package for numerical processing.
Archana MR, Kalpitha C P, Prajwal S K, Pratiksha N	currency recognition & conversion system	They used a software interface that could be applied to many financial standards.
S. Atchaya, K. Harini, G. Kaviarasi, B. Swathi	MATLAB image processing system. Neural networks and model-based	This study describes many techniques for spotting counterfeit money, including optically changeable ink, fluorescence, and water marking.
Ms. Monali Patil, Prof. Jayant Adhika [ri, Prof. Rajesh Babu	K-means algorithm for feature clustering and SVM algorithm to train their data model.	They trained their data model using the SVM technique and the K-means approach for feature grouping.
Mayadevi A.Gaikwad, Vaijinath V. Bhosle Vaibhav D Patil	Visual features of software processing	evaluating visual characteristics like the separation of Gandhiji's image from other notations. For a system that just uses software processing, this methodology may be helpful.

Renuka Nagpure, Shreya Sheety, Trupti Ghotkar	Using floral designs	RBI distinguishes
Neeru Rathee ,Arun Kadian, Rajat Sachdeva ,Vijul Dalel, Yatin Jaie	image processing along with supervised machine learning	The ability to distinguish a genuine note from a fake one will improve the method's accuracy.
Akanksha Upadhyaya Research Scholar, Vinod Shokeen Associate Professor, Garima Srivastava.	image processing along with logistic regression	By using regression

• **CONCLUSION**
The main motivation behind this project was the development of an efficient and user-friendly solution. This Python-based system can automatically distinguish between fake and genuine Indian currency. According to experimental findings, this low-cost system uses effective and efficient

image processing approaches to generate accurate and reliable results quickly. The written Python code accepts 500 Indian rupees.

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- [3]Aakash S. Patil's work, "Indian Paper currency detection," which was presented in 2019,using open cv.
- [4]The study by Archana MR, Kalpitha C P, Prajwal S K, and Pratiksha N, titled "Identification of fake notes and denomination recognition," advocated Identification of fake note and denomination recognition in 2018 to reduce human power.
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