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Automatic Recognition of Fake Indian Currency Note

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Abstract: ***The Currency Recognition System was developed for the purpose of fraud detection in paper currency, so this system is used worldwide. The uses of this framework can be recognized in banking frameworks, cash observing gadgets, cash trade frameworks. This paper proposes an automatic paper currency recognition system through an application developed using Machine learning Algorithms. The algorithm implemented is simple, robust and efficient.***
Keywords: Characteristic extraction, Framework, currency detection

I. INTRODUCTION

A currency is a form of money, issued by the public authorities. It is a account, a store of value and a medium of exchange. It is a monetary denomination, such as the dollar, euro or pound, that is acceptedin payment within a given area or among a specific group of people. Extensive usage of this paper cash can lead to problems in this era of modernization. Counterfeit notes are one such example. To increase the circulation of notes, people tend to produce imitated paper currency which looks exactly like the original notes. To identify the difference between the original and look alike note is a challenge. When such forged notes getinto the cycle of circulation, the economy of the country rapidly decreases. The terrorists use it to cripple the economy of a nation and create an economic terror. Although this fake currency is being printed with precision, there is a chance to detect them with some effort. The local racketeers use photographic methods, hand engraved blocks, lithographic process and color scanning process to manufacture the fake notes. In duplicate notes, the watermark is made by painting with the picture of Mahatma Gandhi. later oilor grease is applied to give translucent feel for the duplicate note. In original notes, the watermark is made using water coated metal stamp or dandy roll. In fake notes, the security thread is imitatedby printing a line using grey ink, or by using aluminum threadwhile pasting two paper sheets but in case of real notes securitythread is incorporated into the paper in the way as woven at thetime of manufacture it consists of micro lettering or individual numbers. Forgers find it difficult to reproduce with the accuracyas the shape of individual numbers and alignment of figures is difficult to imitate. This can be taken as a lead to identify the duplicate notes. This brings motivation to design a system that can detect such counterfeit notes. Currency Recognition System is a technique that aims at identifying the forged notes easily and efficiently. When brought in the form of a mobile application that can be simply downloaded, with one touch the common people can detect the invalid currency. A combination of Tensor Flow techniques and OpenCV along with has been used to develop in the system. This app, when passed to all the people of a country, will quickly eradicate the fake notes and aid to the growth of a nationby decreasing the movement of the counterfeit notes.

In the following section, we provide a detail description about recognizing the original and fake notes. In section II we describe the research work performed for building the current system. In Section III we describe in detail the problem, Designand Architecture of the system. In Part IV, we describe algorithms and methods for detecting the denomination of the note. In Section VI the conclusion work for the system is provided.

II. RELATED WORK

In the field of PCs, printers and scanners have made Duplicating cash note exceptionally basic subsequentlythe tremendous store of phony monetary forms has been accounted for in everyday news. proposed a framework where they included two types of system to distinguish counterfeit currency. First type using Ultra Violet (UV) recognition through lab see, second type using the light polarization after passing through currency. Only if both the results are positive the output is resulted as positive. This technique has far more superior approach than previous methods existed in reliability, automation and accuracy. This technique is used for document verifications. Polarization method constitutes for physical property of the currency note making it more reliable method than magnetic ink detectors and UV detectors which uses the chemical properties of note. Hence, it can be claimed as innovative approach of currency detection. In a proposed system where the software interaction has been used for recognition. Digital Image processing the widely used technique is followedto identify counterfeit Indian currency.

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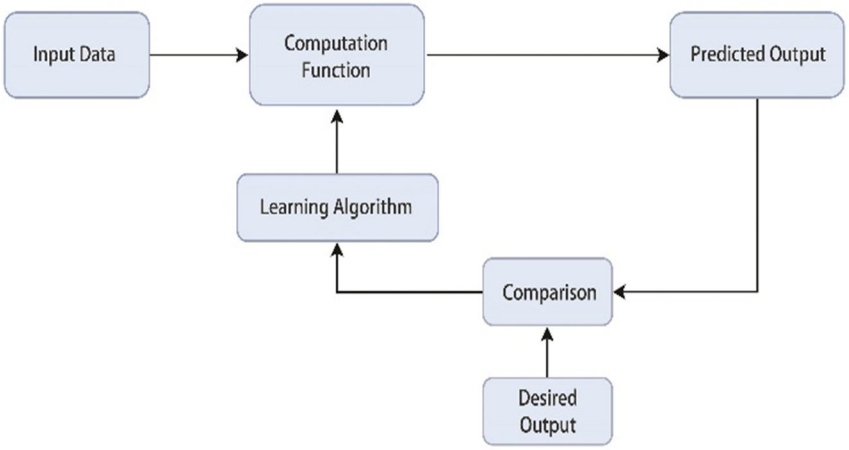
The Indian currency is classified based on a unique feature set like, dimension, latentimage dominant color and Identification Mark. This is used to recognize the currency by extracting and performing segmentation. Using image processing techniques this process becomes more software oriented rather than machines. This system will help visually impaired people finding difficulty in distinguishing different currency denominations and recognize counterfeit currency. The system focuses more on security features present in Currency notes and using those the Indian Currency is verified and validated. Experimental results show that the accuracy of the system proposed is close to 90%. proposed a framework which uses Image preparing and design acknowledgment methods for identifying counterfeit. Genuine examples are utilized in the analysis which mirrors the capacity to build up a high- exactness machine for verification of paper currency. Thorough this technique utilizing genuine examples bolsters the capability of the methodology. It has gotten hard to recognize expertly conveyed counterfeit banknotes causing the need to execute logically propelled features in banknotes. proposed a technique which consolidates powerful phony banknote disclosure figuring's. The algorithm proposed were tested utilizing 20 distinct categories of Indian rupee (INR), European Euro (EUR), and US Dollars (USD). At the point when neural systems were utilized, the trial results demonstrated 100% characterization exactness for fake banknotes, and 99.9% order precision for certifiable banknotes. At the point when the probability test strategy was utilized, 99.8% grouping exactness for certified banknotes and 100% order precision for fake banknotes was gotten. proposed the methodology for perceiving the personality of the monetary standards with decline in the preparing time of confirmation by design acknowledgment strategies is utilized which enhances the exactness of phony note identification. Preprocessing, shading identification, division, edge location and layout coordinating procedures are utilized as acknowledgment stages. Theapplication advises that whether the cash is unique or phony tothe end client. Indian cash dataset is used for testing the existing framework. The primary qualities of the model are execution examination which is performed by approaches like quantitative strategy histogram and quality measurements correlation study analysis. Various calculations are utilized for perceiving the money utilizing picture handling. The algorithm utilizes the essential shading and a piece of money for acknowledgment. The means included are picture preprocessing utilizing commotion location, shadingchange, division, edge discovery, and example coordinating. proposed a methodology where the ID of cash relies on various advances, including edge location, highlight extraction, picture division, picture obtaining, dim scale change, and correlation of pictures.By apply some productive pre-preparing and highlight extraction procedures, we can in any case improve the exactness of money recognizable proof framework. The methodology gives a proficient strategy for counterfeit money identification dependent on physical appearance of notes. The work will be valuable for decreasing the duplicate money. The missing boundaries which are missing in the phony notes are distinguished. Unique Currency is recognized utilizing Image Processing Technique.

III. MACHINE LEARNING

The Main goal of machine learning is to study, engineer, and develop mathematical models, which can be trained with context-related data (provided by generic environment), to infer the future and to make decision without complete Knowledge of all influencing elements.

Machine learning is the field of artificial intelligence, which educates computer on how to perform complex task. With machine learning software application can learn to increase their accuracy of expected outputs. In this application across business problems, machine learning is also referred to as predictive analytics



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IV. EXISTING SYSTEM

Manual testing of notes in transactions is very time consuming and confusing process and also there is a chance of missing while handling notes. Therefore automatic detection for bank note recognition is required in many applications such as automatic selling goods. In Existing System there was following features as follow

1) *PC:* In PC the MATLAB is used for this system. This is used For image processing and to apply User Interface which runs On the PC. Communication with the microcontroller is done Using serial communication. In MATLAB the PCA Technique is used for recognition of Indian currency.
2) *Fake Note Detection Unit:* The system uses signal conditioning to identify whether The note is fake or real. For this, note goes through UV light To detect the originality of the note. The original currency absorbs the UV light and the fake currency reflects the UV Light. The conditioning and testing is done using a UV LED transmitter and UV receiver.
3) *Camera:* Camera is used for image acquisition. It will take picture of incoming note and picture is forward to processing unit. After suitable image processing signal will be produced.

V. WORKING OF PROPOSED SYSTEM

A. Here in this the system will take currency image from the user through the network the system will extract the features and display.
B. The system will give reply if It will match image kept in server and recognize whether the currency note is fake or not
C. The application will take the Currency Note image using camera used in an application.
D. Network Connection is compulsory for using this application. Here we will provide input as image to the system through Internet.
E. The system will match the image kept in server and recognize whether the currency note is fake or not.

VI. APPLICATION.

A. Its fake note detection can be used in Banking sector.
B. It can be used in cash observing Gadgets
C. It can be used in cash trade market
D. It can in used in business and share market

VII. SYSTEM ARCHITECTURE OF PROPOSED SYSTEM

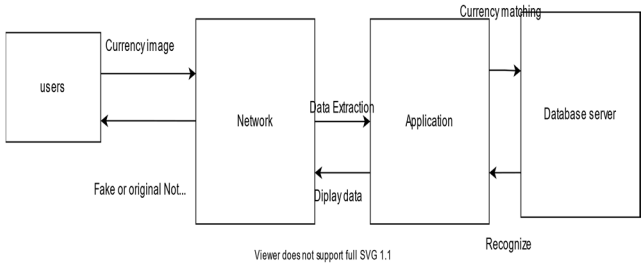

Fig 1 Flow diagram of Currency detector

VIII. CONCLUSION AND FUTURE SCOPE

In the existing system, detection of fake Indian currency note is done by using image processing principle. This is the low-cost system. The system works for denomination of 100, 500 and 1000 for Indian currency. The system also provides accurate and valid results. But in our proposed system we have used machine learning algorithm like Tensor Flow which will detect the fake Notes and In future we can expand this project by using some more algorithm which is fast and efficient.

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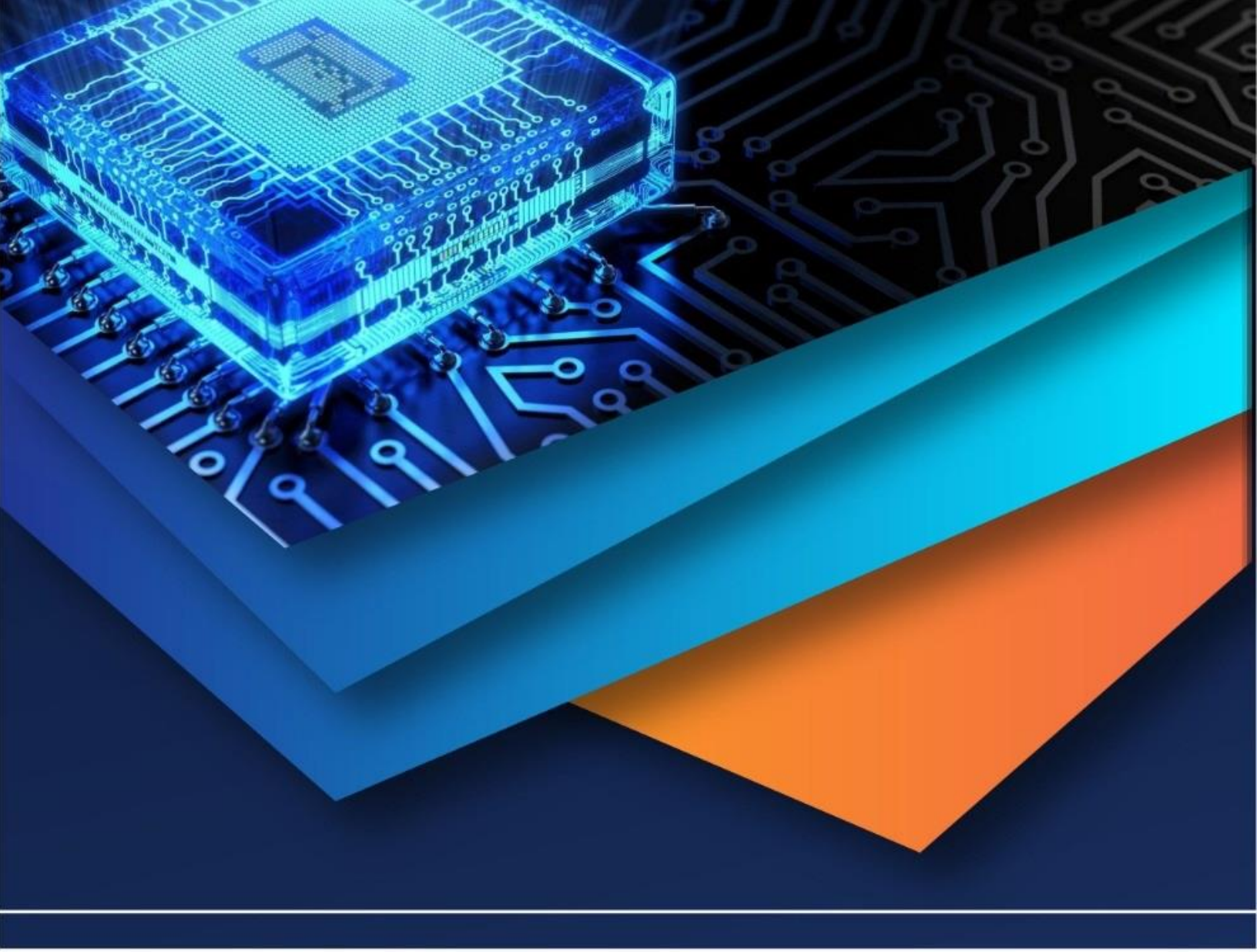

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