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Counterfeit Currency Detection

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Abstract: *This paper presents a programmed framework designed to identify Indian currency notes and determine whether they are genuine or counterfeit. The system is of great utility in the banking sector and other fields. India has experienced an increase in counterfeit notes of denominations such as 100, 500, and 1000 rupees, attributed to advancements in technology such as scanning, color printing, and replication. This has led to a rise in counterfeit issues. The detection of counterfeit Indian currency notes is achieved through image processing techniques. Initially, image acquisition is performed, followed by preprocessing, including cropping, smoothing, and conversion to grayscale. Subsequently, image segmentation, feature extraction, reduction, and comparison are conducted. This framework can greatly aid in distinguishing genuine and counterfeit Indian currency notes, offering a valuable tool for various sectors, particularly in addressing the rising counterfeit issues.*

Keywords: Fake bank currency, counterfeit detection money, image processing refer, specific feature

I. INTRODUCTION

In the past eight years, India's banking channels have reported over 3.53 lakh cases of counterfeit currency detection, indicating a significant increase. The practice of counterfeiting has evolved with the introduction of paper currency. The Indian government took a bold step by demonetizing 500 and 1000 Rs. notes, with Prime Minister Narendra Modi citing the need to tackle the growing threat of counterfeit Indian currency notes as one of the key reasons for this policy. Despite this move, Indian banks recorded an all-time high number of fake currency instances and observed an over 480% surge in suspicious transactions following the demonetization. A first-ever report on the investigation of such transactions after the 2016 notes ban revealed these findings. The Reserve Bank of India (RBI) holds the exclusive authority to issue banknotes in India

II. METHODOLOGY

In this system, an algorithm is used to analyze images of currency notes under ultraviolet light acquired by a digital camera. The process involves several steps:

1. The currency note is imaged using a simple digital camera or scanner under ultraviolet light.
2. The RGB image is converted to a grayscale image for processing.
3. The edges of the grayscale image are detected.
4. Characteristics features of the currency note are cropped and segmented.
5. After segmentation, the characteristics of the currency note are extracted.
6. The intensity of each feature is calculated.
7. If the calculated conditions are met, the currency note is classified as original; otherwise, it is considered fake

III. LITERATURE SURVEY

Amid demonetization, India discontinued Rs 500 and Rs 1000 notes, replacing them with Rs 500 and Rs 2000 bills to tackle illicit financial activities. However, counterfeit currency remains prevalent, leading to research on distinguishing real from fake notes. This research centers on detecting strip lines through edge detection techniques on both authentic and counterfeit bills. By employing HSV techniques, adjustments are applied to the saturation value of input images, thereby improving the reliability and dynamism of counterfeit currency detection.

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IV. PROPOSED SYSTEM

The user will input the image of the currency note for identification, and this serves as the training data. Training data refers to the information used to educate an algorithm or machine learning model in order to make predictions tailored to the designed outcome. Data augmentation involves employing techniques within data analysis to expand the volume of available data by introducing slightly altered versions of existing data or generating synthetic data based on the existing dataset. This process serves as a regularize and aids in mitigating overfitting when training a machine learning model. When we talk about data prediction, we refer to the practice of utilizing data analytics to make projections based on existing data. This method integrates data with analysis, statistical techniques, and machine learning to construct a predictive model aimed at forecasting future events.

V. SYSTEM ARCHITECTURE

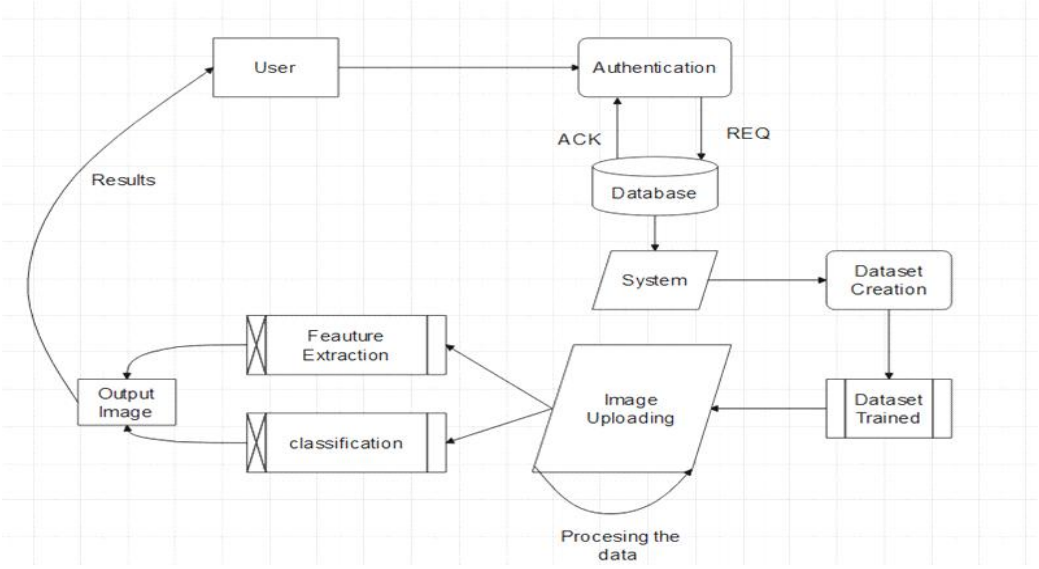

Fig -1: System Architecture Diagram

VI. APPLICATION

- Banking
- Organization
- Petrol Pumps
- Personal. SMS Alerts
- Notification to Nearest Police Station in case of Emergency
- Comfortable Wearable Device for Children**.**
- Mobile App Alerts

VII. FUNCTIONAL & NON FUNCTIONAL REQUIREMENTS

Functional requirements are the specific tasks and actions that a system must perform, such as calculations, technical operations, and data manipulation. These requirements define what the system is expected to achieve and how it should function. Behavioral requirements, captured in use cases, describe how the system utilizes the functional requirements in various scenarios. These use cases outline the specific interactions and behaviors of the system when fulfilling its function requirements

Nonfunctional Requirements (NFRs) encompass attributes such as security, reliability, performance, maintainability, scalability, and usability. These requirements act as constraints or limitations on the system's design across different aspects, ensuring that the system meets particular standards and expectations.

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Functional requirements:

- Registration
- User Login
- Creation of database:
- Users Mandatory Information

Design Constraints:

- Database
- Operating System
- Web-Based Non-functional Requirements

Security:

- User Identification
- Login ID
- Modification

Performance Requirement:

- Response Time
- Capacity
- User Interface

Maintainability Availability:

- 150 GB Hard Disk
- 6 GB RA

VIII. CONCLUSION

A plan is put forward to create a system for identifying counterfeit Indian currency notes using a deep learning approach. The system aims to enhance the accuracy of detecting fake currency notes and address the limitations of current systems, including the detection of minor details on the notes. It will also verify security features such as watermarks, scripts, signatures, and more within the notes. This proposed system is cost-effective and efficient.

IX. ACKNOWLEDGMENT

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