# ABSTRACT

The one important asset of our country is Bank currency and to create discrepancies of money miscreants introduce the fake notes which resembles to original note in the financial market. During demonetization time it is seen that so much of fake currency is floating in market. In general by a human being it is very difficult to identify forged note from the genuine not instead of various parameters designed for identification as many features of forged note are similar to original one. To discriminate between fake bank currency and original note is a challenging task. So, there must be an automated system that will be available in banks or in ATM machines. To design such an automated system there is need to design an efficient algorithm which is able to predict weather the banknote is genuine or forged bank currency as fake notes are designed with high precision. In this paper we are using CNN algorithm on dataset available on UCI machine learning repository for detection of Bank currency authentication. To implement this we have applied machine learning algorithms are measured their performance on the basis various quantitative analysis parameter.

# TABLE OF CONTENTS

# List of Figures

# CHAPTER 1

# INTRODUCTION

Duplicating money represents the unlawful replication of unique money, henceforth fake money is a phony cash that has not been approved by the administration. RBI is the main body which has sole duty to print cash notes in India. Consistently RBI faces the issue of fake money notes, once separated and flowed in the market. Counterfeit note discovery framework is created for perceiving counterfeit note from the certifiable. The main arrangement that is by and by accessible for basic man to recognize fake cash is Fake Note Detector Machine. This machine is for the most part accessible just in banks which aren't reachable each time by normal resident. . Every one of these situations needs a sort of answer for average folks to pass judgment on a fashioned monetary certificate and to cease our money from losing its worth. The technique of picture preparing depends on the extraction of the highlights of Indian banknotes. Pictures are handled by utilizing different procedures of picture preparing and assist different highlights are extricated from the pictures. The methodology comprises of various segments including picture handling, trademark extraction, looking at pictures. The essential thing of approach is that we extricate the highlights based on which we will arrange the phony note. Security highlights of money are basic for deciding genuine and phony cash. Regular security highlights incorporate watermarks, idle pictures, security string, and optically factor ink. In the study, a methodology for counterfeit money detection separates the general characteristics dormant pictures and ID mark from the picture of money. Extricating traits from pictures of money notes can get very mind boggling as it includes the extraction of some obvious and undetectable highlights of Indian cash.

After demonetization 500 and 2000 are the high esteemed money notes existing till date so there is a most extreme likelihood that this notes can be falsified so as to dodge this we are utilizing programming to recognize the phony notes utilizing picture handling system.

## 1.1 PROBLEM DEFINITION

During demonetization time it is seen that so much of fake currency is floating in market. In general by a human being it is very difficult to identify forged note from the genuine not instead of various parameters designed for identification as many features of forged note are similar to original one. To discriminate between fake bank currency and original note is a challenging task. So, there must be an automated system that will be available in banks or in ATM machines. To design such an automated system there is need to design an efficient algorithm which is able to predict weather the banknote is genuine or forged bank currency as fake notes are designed with high precision.

# CHAPTER 2

# LITERATURE SURVEY

Literature survey is the most important step in software development process. Before developing the tool it is necessary to determine the time factor, economy and company strength. Once these things are satisfied, then the next step is to determine which operating system and language can be used for developing the tool. Once the programmers start building the tool the programmers need lot of external support. This support can be obtained from senior programmers, from book or from websites. Before building the system the above consideration are taken into account for developing the proposed system. The major part of the project development sector considers and fully survey all the required needs for developing the project. For every project Literature survey is the most important sector in software development process. Before developing the tools and the associated designing it is necessary to determine and survey the time factor, resource requirement, man power, economy, and company strength. Once these things are satisfied and fully surveyed, then the next step is to determine about the software specifications in the respective system such as what type of operating system the project would require, and what are all the necessary software are needed to proceed with the next step such as developing the tools, and the associated operations.

## 1. A.A. Mandankandy, K.E. Kannammal, Fake currency detection: a survey. Gedrag en Organisatie 33(4), 622–638 (2020).

Imitate something authenticate is called as counterfeit. In banking sector,

counterfeit currency is a big threat still. There are lots of detection methods are available, but with the advent of freely available image operation tools, it's a serious issue in banking sector. There are lots of important regions which is present in currencies, finds out those for evaluation is the basic task. Classifiers can find out the extracted features either genuine or fake. Without classifiers we can cross check with the original note's region with the segmented currency image. But that alone can't help to identify the authentication of the particular image. Alignment and edges may not be same if we segment the important portions, so fake currency note image(s) may be considered as original in some cases. To avoid that extracted features has to be process by classifier(s) to get better results. In this paper, the comparative study of image segmentation or thresholding, feature extraction, classification and finally selection approaches also included. And also added some analysis work which is possible based on some existing methods.

2. **S. Arya, M. Sasikumar, Fake currency detection, in 2019 International Conference on Recent Advances in Energy-efficient Computing and Communication (ICRAECC), Feb 2020.**

Fake currency notes are increasing day by day, in order to overcome this we proposes a very helpful and efficient system to detect the fake currency. For detecting the fake currency note is done by counting the number of interruptions in the thread line. For predicting the note is real or fake on the basis of number of interruptions. If the number of interruption is zero, if it is real note otherwise it is fake. And also we calculate the entropy of the currency notes for the efficient detection of fake currency note. MATLAB software is used to detect the fake currency note.

3. **A. Singh, K. Bhoyar, A. Pandey, P. Mankani, A. Tekriwal, Detection of fake currency using image processing. Int. J. Eng. Res. Technol. (IJERT) 8(12) (2019).**

In recent years a lot of fake currency note is being printed which have caused great loss and damage towards society. So, it has become a necessity to develop a tool to detect fake currency. This project proposes an approach that will detect fake currency note being circulated in our country by using their image. Our project will provide required mobility and compatibility to most peoples as well as credible accuracy for the fake currency detection. We are using image processing and cloud storage to make this app portable and efficient.

4. **S. Shaker, M.G. Alawan, Paper currency detection based image processing techniques: a review paper**

The currency has a great meaning in everyday life. Thus currency recognition has gained a great interest for many researchers. The researchers have suggested diverse approaches to improve currency recognition. Based on strong literature survey, image processing can be considered as the most widespread and effective technique of currency recognition. This paper introduces some close related works of paper-currency recognition. This paper has explained a variety of different currency recognition systems. The applications have used the power of computing to differentiate between different types of currencies with the appropriate layer. Choosing the proper feature would improve overall system performance. The main goal of this work is to compare previous papers and literatures through reviews these literatures and identify the advantages and disadvantage for each method in these literatures. The results were summarized in a comparison table that presented different ways of reviewing the technology used in image

processing to distinguish currency papers.

5. **A. Upadhyaya, V. Shokeen, G. Srivastava, Analysis of counterfeit currency detection techniques for classification model (2018).**

Counterfeit currency is one of the threats which creates vice to nation's economy and hence impacts the growth worldwide. Producing forge currency or fabricating fake features in the currency considered to be a crime. Currency crime comes under the criminal law and known to be as Economical crime. Over the past few years many researchers have proposed various techniques to identify and detect forged currency. The serious problem has been come up with variety of solutions in terms of hardware related techniques, Image processing and machine learning methods. Advancements in printing and scanning technology, trading of material are some of the problems in germinating counterfeit currency. The study presents various fake currency detection techniques proposed by various researchers. The review highlighted the methodology implemented on particular characteristics feature with success rate of each method to detect counterfeited currency. Moreover, the study includes the analysis of widely acceptable statistical classification technique for currency authentication. The comparative analysis of Logistic Regression and Linear Discriminant Analysis (LDA) was performed to realize the better model for currency authentication. It has been found that classification Model using Logistic regression shows better accuracy of 99% then LDA. The study will benefit the reader in identifying most feasible technique to be implemented based on the accuracy rate.

6. **T. Kumar, T. Subhash, D. Regan, Fake currency recognition system for Indian notes using image processing techniques (2019).**

In the point of economic stability of a nation, circulation and use of the fake currency notes pose major threats. Curbing the use of fake currency notes nowadays becomes digitalized with use of digital image processing algorithms. Counterfeit notes are printed with the utmost precision level to par with the original. So fake currency detection is a difficult task by simple visual inspection and use of digital image processing algorithms come to play a vital role. The conceivable arrangements are there, to utilize either chemical properties of the currency or to utilize its physical appearance for detection. The methodology exhibited in this paper depends on physical appearance of the Indian currency. Image processing algorithms have been embraced to expose the highlights of Indian currency notes, for example, security thread, intaglio printing (RBI logo) and distinguishing proof imprint, which have been received as security highlights of Indian currency. To make the framework increasingly robust and exact, the definitive score of all the three highlights has been intertwined to separate among genuine and fake monetary standards. Another parameter used to quantify the execution of the proposed framework is mean square error, which is roughly 1%. It might be embraced by the everyday citizens too, who frequently face the issue of separating among genuine and fake monetary standards

7. **S. Gothe, K. Naik, V. Joshi, Fake currency detection using image processing and machine learning (2018).**

With the increase in the technology, the convenience and ease of people to carry out various task is increasing on a large scale. But with the advancement in technology, the amount of crime carried out due to wrong use of these technologies is also increasing on a large scale. Similar thing