

## EVALUATION OF MACHINE LEARNING ALGORITHMS FOR THE DETECTION OF FAKE BANK CURRENCY

QAMAR AHMED<sup>1</sup>, PABBOJU LAXMINATH<sup>2</sup>, THANIPARTHI MADHURI<sup>3</sup>, GULLA  
PRASHANTH KUMAR<sup>4</sup>, BAGAM RAGHAVA<sup>5</sup>

<sup>1</sup>Assistant Professor, Department of CSE, Malla Reddy College of Engineering Hyderabad,  
TS, India.

<sup>2,3,4,5</sup> UG students, Department of CSE, Malla Reddy College of Engineering Hyderabad, TS,  
India.

### 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 project six supervised machine learning algorithms are applied on dataset available on UCI machine learning repository for detection of Bank currency authentication.

**Keywords:** *UCI, ATM, fake, weather, original.*

### 1. INTRODUCTION

Financial activities are carrying out in every second by many persons in which one most important asset of our country is Banknotes [3]. Fake notes are

introduced in the market to create discrepancies in the financial market, even they resemble to the original note. Basically they are illegally

created to complete various task Government have designed [12]. In 1990 forgery issue is banknote with some features by not much of concern but as in which we can identify genuine late 19th century forgery has [9]. But frauds are creating fake been increasing drastically [13]. note with almost same features In 20th century technology is with nice accuracy that make it increasing very vastly that will very difficult to identify genuine help the frauds to generate fake note [5]. So, now a days it is note whose resemblance is like required that bank or ATM genuine not and it is very machines must have some difficult to discriminate them system that can identify the [1]. This will lead to financial forged note from the genuine market to its lowest level. To note [12]. To determine the stop this and to conduct smooth legitimacy of the banknote transaction circulation forged artificial intelligence and bank currency must be Machine learning(ML) can play a conserved [16]. As a human vital role to design such a system being it is very difficult to that ca identify forged note identify between genuine and from the genuine bank forged bank currency. currency[6,7,12]. Now a days,

supervised machine learning we can see that not much of (SML) approaches for work is done on this side.

classification problem is widely used. For medical disease its shows even promising results [2]. Few authors have only applied SML algorithms on bank currency authentication [6-9, 12]. To identify whether a note is genuine or fake we have to develop an automation system. Initially, the input is an image of note and from different image processing techniques we can extract the features of note. Further these images are given as an input to the SML algorithms to predict whether note is original or fake. In review

## 2. SURVEY OF RESEARCH

**2.1 Tushar Agasti, Gajanan Burand, Pratik Wade and P Chitra, —Fake currency detection using image processing|| 14th ICSET-2017**

Fake Currency has always been an issue which has created a lot of problems in the market. The increasing technological advancements have made the possibility for creating more counterfeit currency which are circulated in the market which reduces the overall economy of the country. There are machines present at banks and other commercial areas to check the authenticity of the currencies. But a common man does not have access to such systems and hence a need for a software to detect fake currency arises, which can be used by common people. This proposed system uses Image Processing to detect whether the currency is genuine or counterfeit. The system is designed completely using Python programming language. It consists of the steps such as gray scale conversion, edge detection, segmentation, etc. which are performed using suitable methods

**2.2 Eshita Pilania, Bhavika Arora, —Recognition of Fake Currency Based on Security Thread Feature of Currency||**

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In the last few years a great technological advances in color printing, duplicating and scanning, counterfeiting problems have become more serious. In past only authorized printing house has the ability to make currency paper, but now a days it is possible for anyone to print fake bank note with the help of modern technology such as computer, laser printer. Fake notes are burning questions in almost every country. Counterfeit notes are a problem of almost every country but India has been hit really hard and has become a very acute problem. Fake Indian currency of 100, 500 and 1000 rupees seems to have flooded the whole system and there is no proper way to deal with them for a common person. There is a need to design a system that is helpful in recognition of paper currency notes with fast speed and in less time. Our system describes an approach for verification of Indian and other countries currency banknotes. The currency will be verified by using image processing techniques

**2.3 Nayana Susan Jose, Shermin Siby, Juby Mathew, Mrudula Das, Android Based Currency Recognition System for Blind, International Journal of Engineering Research in Computer Science and Engineering (IJERCSE) Vol 2, Issue 4, April 2015.**

in recent years, a lot of illegal counterfeiting rings manufacture and sell fake coins and at the same time fake note currency is printed as well which have caused great loss and damage to the society. Thus it is imperative to be able to detect fake currency. We propose a new approach to detect fake Indian notes using their images. Currency image is represented in the dissimilarity space, which is a vector space constructed by comparing the image with a set of prototypes. Each dimension measures the dissimilarity between the image under consideration and a prototype. In order to obtain the dissimilarity between two images, the local key points on each image are detected and described. Based on the characteristics of the currency, the matched key points between the two images can be identified in an efficient manner. A post processing procedure is further proposed to remove mismatched key points. Due to the limited number of fake currency in real life, SVM is conducted for fake currency detection, so only genuine currency are needed to train the classifier

**2.4 Komal Vora, Ami Shah, Jay Mehta, A Review Paper on Currency Recognition System, International Journal of Computer Applications (0975 –8887) Volume 115 – No. 20, April 2015**

In this paper, an algorithm based on the frequency domain feature extraction method is discussed for the detection of

currency. This method efficiently utilizes the local spatial features in a currency image to recognize it. The entire system is pre-processed for the optimal and efficient implementation of two dimensional discrete wavelet transform (2D DWT) which is used to develop a currency recognition system. A set of coefficient statistical moments are then extracted from the approximate efficient matrix. The extracted features can be used for recognition, classification and retrieval of currency notes. The classification result will facilitate the recognition of fake currency mainly using serial number extraction by implementing OCR. It is found that the proposed method gives superior results.

## EXISTING SYSEYEM:

In existing project, review of those applied machine learning approaches to classify whether not is original or not. Yeh et. al. implemented SVM based on multiple kernels to reduce false rate and compared with SVM (single kernel). To classify real and forged network. Author's Hassanpour et. al. used texture-based feature extraction method for the recognition and to model texture Markov chain concept is used. This method is able to recognize different countries' currencies. To classify whether the note is forged or not global optimization algorithms are applied in Artificial Neural Network (ANN) training phase, and they have observed good success in classification of note.

## DISADVANTAGES:

- Accuracy is Low.
- The technology is increasing very vastly that will help the frauds to generate fake note whose resemblance is like genuine not and it is very difficult to discriminate them.

## PROPOSED SYSTEM:

To identify whether a note is genuine or fake we have to develop an automation system. Initially, the input is an image of note and from different image processing techniques we can extract the features of note. Further these images are given as an input to the algorithms to predict whether note is original or fake. In review we can see that not much of work is done on this side.

## ADVANTAGES:

- Accuracy is Very high.
- Classification of fake and original notes are very easy.

## CONCLUSION

Hand Gesture recognition and voice conversion for dumb and deaf person was successfully executed using image processing. The method takes image as input and gives text and speech as an output. Implementation of this system gives up to 90% accuracy and works successfully in most of the test cases.

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