# A STUDY AND ANALYSIS OF FAKE INDIAN CURRENCY IDENTIFICATION SYSTEM

**ABSTRACT**

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# ABSTRACT

In the digital era of technology, it is very difficult to identify fake paper currency. Security of currency has gain importance in the field of research. With the advent of technology, color printer and color scanner are the cheapest way for a counterfeiter to produce fake currency. This is a very challenging issue to identify fake currency. The present research work is based on **"A STUDY AND ANALYSIS OF FAKE INDIAN CURRENCY IDENTIFICATION SYSTEM"** has the major contribution is to read the value and extract various features from the currency to increase the accuracy for identifying the fake currency using image-processing tools. This process will help to improve fraud detection and provides faster ways to determine the currency value. In the present work, an image of Indian currency is captured and fed to the system where it goes through several algorithms to read the value from the currency and extract the features like security thread, bill dimensions, serial number, etc. The proposed research has several goals of interest like increasing the speed of identification of fake currency as well as accuracy. In currency identification, there are lots of research papers available in India or other country but after demonetization in India, there is less amount research paper on the newly arrived currency. In another country, there are so many research papers that arrived after the demonetization but in India due to fewer amount of sources available so there is no research paper available. In this way, one can say that after demonetization, research papers on new currency are very less hence, the present research work is an attempt in this direction. The entire thesis work has been organized in eight chapters and is briefly discussed below:

Chapter I provides an introduction to the currency and its importance worldwide. The evolution of currency and its denominations in detail respect of foreign and India.

It also highlights the important security feature of Indian currency. Lots of researchers have done work in the field of identification of currency. Demonetization is play the important role in the field of currency. The old note will be replaced by the feature of a new note. Many countries have changed the currencies generally after ten years. Recently, the Indian Prime Minister has changed the currency of note of Rs 10, Rs 20, Rs 50, Rs 100, Rs 200, Rs 500, and Rs 1000 and issued a new direction for new currencies. As per RBI guidelines currency in the Indian scenario has to be changed after an interval of every 10 years therefore different designs of the notes along with new series have appeared in the Indian Business market and the old series has been eliminated by RBI. This chapter also contains the introduction of computational methods and tools for currency identification.

Chapter II deals with the previous work available on the currency in respect of foreign and Indian fake currency identification. Indian currency is also divided into old and new currency identification. From the literature, it is revealed that many researchers have done work on the identification of fake currency. Several reputed journals, e-books, Wikipedia, etc. are consulted for understanding the new research problems and more than 180 references are given in the thesis. During the initial stage of the present work, a lot of research papers have been consulted and more than five years' papers have been discussed in the present chapter. Exhaustive kinds of literature have been discussed related to all the problems sort out in the present work.

In Chapter III, an object-oriented model is designed to represent the dynamic aspects for identification of fake currency and successfully implemented on newly launched a note of Rs 2000 by an Indian Government. A MATLAB code is generated and through a code, we got class descriptions for real and fake Images of the currency. Results are produced in the form of tables and graphs.

Chapter IV deals with the study of a well-known method PCA, which is an excellent approach for the detection of fake currency in the Indian scenario as well as worldwide. Many researchers have implemented this approach on notes of various kinds but not for the Indian currency. In the present work, an efficient model is proposed through which results are presented in the form of a graph. The converged result has been obtained by computing mean, covariance, eigenvalues, eigenvectors and new data set has been generated for the identification of fake currency.

In Chapter V, a well-known method, Feature extraction is the most important technique in paper currency recognition. According to the reviewer, texture feature plays an important role in paper currency detection. Texture feature is generally a statistical-based approach and in the present work, a new model is proposed for paper currency detection. The presented model is computing the texture properties like Gray Level Co-occurrence Matrix (GLCM) of Rs 500 for real and fake currency. The Principle Component Analysis (PCA) is used for the reduction of a higher dimension of an image. The proposed work provides a better result with the collaboration of PCA and GLCM. The texture properties have been used and GLCM measured the variation in intensity at a pixel of interest of the currency. The computed results have been presented in the form of tables and graphs.

Chapter VI deals with an application of the Genetic Algorithm is applied for fake currency identification based on feature extraction. The steps of the Genetic algorithm are used for the solution of currency identification problems will the current problem. From time to time there is the arrival of new currency in the form of different currency along worldwide. In India demonetization was recently applied in 2016 and later there was the arrival of new notes of Rs. 50, Rs 100, Rs. 500, Rs. 2000. Although it minimizes

the use of fake currency, hackers and intruders generate the fake currency via the use of a high-quality scanner and printer.

Chapter VII deals with a novel method for currency identification based on the feature extraction method using Machine Learning Algorithm. The proposed system can identify the legitimacy of currency by checking specific security features such as watermarks, latent images, security threads, etc. Identification of counterfeit currencies is done using Machine Learning Techniques. The methodology involves extracting and encoding these security features. Security features are extracted from the input image, feature detection and classification are performed using different Machine Learning Algorithms. The ultimate aim of this approach to calculate the accuracy of the distinct method of Machine Learning. In the end, this method improves the accuracy of currency identification.

The last chapter of the presented work i.e. Chapter VIII is related to the conclusions and future perspectives of the work. The present work emphasized the security strength for the new arrival notes of currency in the Indian scenario. Although the digital transfer of money is very easy it may lack security features as nowadays as internet frauds are increasing. The work shall also be emphasized on this approach. The outcome of the work shall be helpful for software industries for implementation of the proposed research models in the Indian Market. From future perspectives, this work can be extended for newer Indian currency with the other important security features of currency.