**Identification of Counterfeit currency and denomination using Raspberry pi**

**Abstract:**

Advancement in technology leads towards many automated systems which are capable of performing tasks without interference of humans. Money deposit machines, automatic ticket machines are one of such automated systems. In such systems it is necessary to identify the counterfeit and denomination of currency automatically. But available automated currency detection system uses computers and other processors which are bulky in size and cost of the overall system is also more. So it is necessary to develop a system which is capable of identifying the denomination of currency for small scale applications. In this paper, the proposed model will automatically identify the denomination and counterfeit of currency using raspberry pi. Identification of counterfeit and denomination is achieved with the help of basic image processing algorithms such as HSV conversion, template matching, aspect ratio identification, dominant colour and feature extraction.

**Keywords**: Counterfeit currency, denomination, HSV conversion, dominant colour.

**INTRODUCTION**

In the year of 2011 RBI conducted a survey for counterfeit currency and results of survey shows that there are nearly 69382 million counterfeit notes are in circulation. Counterfeit currency directly affects the financial system of country. To maintain the social harmony and for protection of economic prosperity it is necessary to identify and destroy the fake currency. Normally human brain is capable of identifying the fake currency on the basis of check points printed on the currency. But same task is much more difficult for machine which will identify the originality of currency. At present days, different types of systems are available which identify the fake currency but cost of such systems is much higher. So it is necessary to develop a system which can automatically recognize the denomination of currency and check whether the currency is real or fake. Such type of system is useful for automatic vending machine, automatic mobile currency recharge, and in automatic ticket counter.

Here in this paper I am presenting a method for development of fake currency detection system using raspberry pi which is low cost and which will effectively identify the denomination and counterfeit of currency[1]. The approach consist of several steps including image capturing with the help of camera, pre-processing of an image and other algorithms to identify originality and denomination.

EXISTING SYSTEM

Money deposit machines, automatic ticket machines are one of such automated systems. In such systems it is necessary to identify the counterfeit and denomination of currency automatically. But available automated currency detection system uses computers and other processors which are bulky in size and cost of the overall system is also more. It can only used for ticket machine. And it only check the ratio of rupee note and size of coins. It is huge in size and difficult user interface.

EXISTING SYSTEM DISADVANTAGE

* Huge in size
* Require more power
* Only automated ticket is used
* Easily manipulated
* No protection for fake currency.

PROPOSED SYSTEM

Here raspberry pi is used as a processor which process the image of currency captured by web camera. To check counterfeit and denomination of currency, currency has to be placed under the web camera. Once currency is placed raspberry pi will enable the web camera and web camera starts capturing the images, web camera can be easily configured to raspberry pi and controlling code for web camera is written and stored in processor. Captured image is send to processor and it is stored in processor memory, now raspberry pi which will process the image to identify the denomination and counterfeit of currency.

The processing algorithm consist of pre-process of image to reduce the size and noise present in an image, image localization, feature extraction and template matching.

BLOCK DIAGRAM

**RASPBERRY PI**

**CAMERA**

PROPOSED SYSTEM ADVANTAGES

* Small in size
* Require less energy
* Easy human interface
* Both identify the denomination and counterfeit of currency

can be done

* Fake currency also detected.
* Low cost .

CONCLUSION

With the help of above proposed method, it is possible to develop a system which will easily detect the denomination of Indian currency and also it checks the originality of Indian currency with the help of basic image processing algorithm. The proposed system can be implemented for real time applications such as automating vending machines, automatic ticket counters. This can be achieved with the help of low cost processor like Raspberry pi.