CASH VALIDATION AND EXCHANGE USING ARM 7

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ABSTRACT

"Fake currency detection" is important factor in worldwide. Affects of that scams, Bank Robbery , corn and so many unfair happening."It is estimated that around 1,69,000 crores of fake rupees are in circulation all over India. Both government and banks are in a denial mode, because probably they do not know what to do." Fake currency changes from low quality colour scanner based notes to high quality counterfeits whose production is sponsored by unfriendliness. Due to their harmful effect on the economy, detecting fake currency notes is a work of national importance. However, automated approaches for fake currency detection are effective only for low quality fraudalent; manual examination is required to detect high quality fraudalent. Furthermore, no automatic method exists for the more complex – and important – problem of identifying the source of fake notes. This paper describes an efficient automatic framework for detecting fake currency notes. Also, it denotes a classification framework for linking original notes to their source printing presses. Experimental results demonstrate that the detection and classification frameworks have a more number of accuracy. Moreover, the approach can be used to link high quality fraudalent Indian currency notes to their unauthorized sources.

KEYWORDS: *unfriendliness,counterfeit,framework etc.*

1. INTRODUCTION:

With the development of sophisticated printing methods fake currencies have become on- par with the original currency. One of the earliest processes was to use Ultra Violet (UV) detection. It is based on the principle of detection of special kinds of inks that are only visible under Ultra Violet(UV) light. Since this method is slow, automation is introduced using NI-IMAQ. The polarization is depend on the principle that, the Indian currency is not made of paper, but is a blend of cotton, paper and linen.

Moreover the tree bark from which the currency is made is known as the Balsam figure which also contains a huge percentage of cellulose. Cotton is the purest form of cellulose. Thus it is safe to say that Cellulose contains a considerable composition of the currency. Although the other ingredients will have some cause on the polarization angle, the polarization angle of the currency is almost close to that of cellulose, and the angle obtained by passing laser through the currency is unique thus it is made use of validation of the original currency from the forged ones.

Fig . Different Parameters For Note Detection

The currency counting machine (CCM) is one of the miracle of the science. The CCM works on the principle on the breadth of the bundle of currency and there in a roller which has rods in an continuous pattern and the roller moves these rods with a particular speed.

The speed remains same as like in the ATM machine counting machine and these rollers moves on the bundle of the currency and move out the single currency one by one at a same and high speed and there is an transducers which to discover that how many single currency has passed out in front of it.

Different range of counting machines like Basic Note counter, Counting cum fake detection machines and Hi Speed Heavy duty cash counting machine are available to suit different type of customers. Highly dependable and ideal for Banks, Big & small business houses, Retailers, jewelers,traders and almost all types of business establishment can use them according to their convenient. The machine meant for detection of fake notes as prime function non variably should be ability of not allowing any fake note to pass as original. It is possible only with the detectors specially developed considering the huge number of intricacies concerning to Indian notes.

The some kind of machines Indian Banks at cash counters needed are the machine which can verify not only the images but also can check the physical and chemical properties of papers, inks, resins and other materials used in production of note. The machine should ability of not allowing any counterfeit note to pass as genuine. It is possible only with the detectors specially developed considering the huge number of intricacies concerning to Indian notes.

2. PROPOSED SYSTEM:

Cash Validation is made for commercial as well as industrial purposes. It reduces the effort of human being in addition to increasing the speed and accuracy of the work. It does different functions that include exchange. And they increases accuracy in application and enhance working safety. We developed a system to manage different notes for identifications of different parameters. In our system the captured images from camera processed by using image processing technique, the proposed result are then transfer into RGB Pattern and given it to the microcontroller unit.
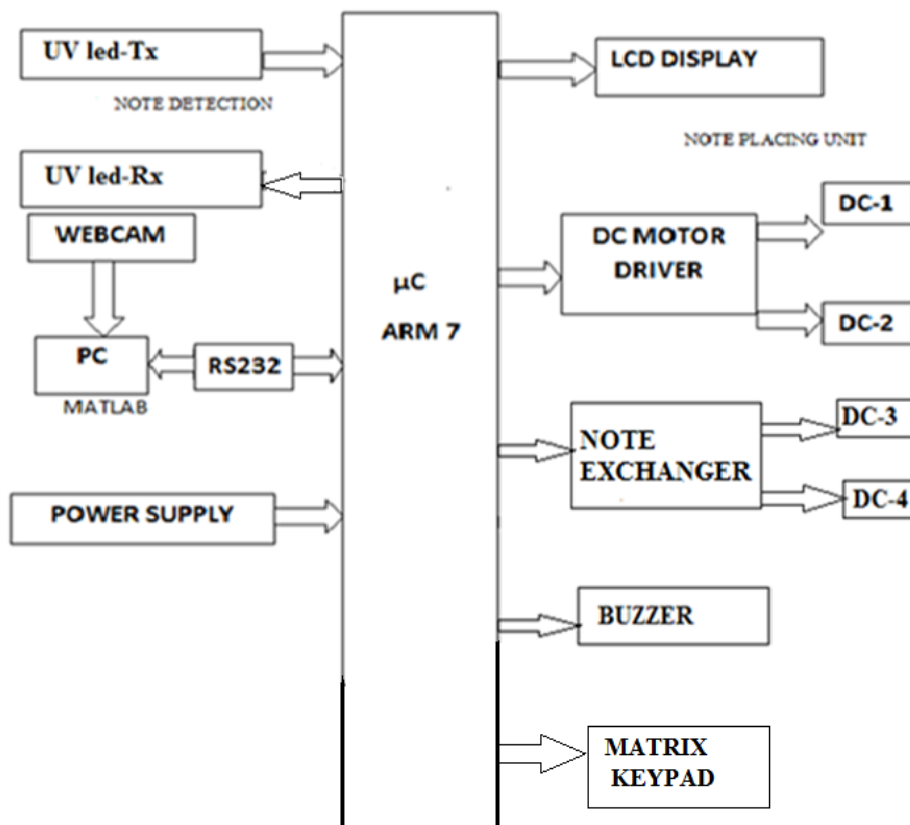

Fig : System Architecture

The micro controller unit is programmed to control the whole system. To rolling and controlling the notes. DC motors are used. Some dc motor used to exchange purpose. The control of validation mechanism is done by the micro controller unit. The validation unit contain to specify parameters such as watermark, security thread etc. Then we determine the given note is fake or not. The DC motors are electronically controlled by micro controller with the help of L293D driver. By receiving the signal, DC motor is turned on and off to enable selective number with the help of matrix keyboard. Then finally we get exchange the sum of money for currency or smaller units by using exchange unit.

3. COUNTERFEITING TECHNIQUES

Fraudalent, of whatever kind, has been occurring ever since humans captured the concept of valuable items, and there has been an ongoing race between certified and froger ever since.

- ➢ First-Line Inspection Methods

  - • Varied-Density Watermark

  - • Ultraviolet Fluorescence

  - • Intaglio Printing

  - • Micro text

  - • Holograms and Kind grams

- ➢ Second-Line Inspection Methods
  - • Isocheck / Isogram
  - • Fibre-Based Certificates of Authenticity
  - • Color and Feature Analysis

1)First-Line Inspection Methods

First-line inspection processes are used on-the-spot by retailers and vendors to determine, at best guess, the validity of currency being exchanged. The drawbacks of these processes are that they are generally easier to counterfeit than second-line inspection characteristics, since they're just as seen to the counterfeiter as to the justifier, and the processes used to apply them are usually low in price. However, the visibility of these features means that the general population is aware of the security measures and can spot many fake notes quickly. [9]

2)Varied-Density Watermarks

By varying the density of the paper a bank note is printed on in a controlled manner, thin watermarks can be applied. These are display when a bright light shines onto the rear of bank note, and the varied paper density affected on varying intensities of light to pass, causing the watermarked image to appear on the other side of the note. [10]

3)Ultraviolet Fluorescence

Embedding fluorescent fibers into the paper, or printing ultra-violet (UV) ink onto the paper, generates a form of optical justification easily used at counters, checkouts, etc. By uncovering the note to ultra-violet(UV) light, the ink or fibers fluorescent, clothing a colored pattern not seen under natural light.[10]

4)Intaglio Printing

This gives a more reliable and complex first-line inspection method, since it is the printing process itself that serves to support for the authenticity of the document. The note is subjected to a high-pressure printing method that strengthens and slightly increases the paper's surface structure. Using different alignments of lines printed in this manner, a latent image can be developed which changes appearance depending on the angle at which the note is seen. This method can also be used with optically-variable ink to generate interference which shows different spectral colors when seen from different angles. [10]

5)Micro text

It is very common for bank notes to have small text printed at larger resolutions than commercial copiers, scanners or printers having ability of. When a copying or scanning attempt is made, the insufficient resolution causes the text to become illegibly blurred, declaring the illegitimacy of the note. This method requires specialized printing instrument but ultimately adds very small cost to the manufacture of the currency. [10]

6)Holograms and Kin grams (DOVIDs/ISIS)

These methods are becoming more and more regularly used in modern anti-fake measures, once used mostly on debit/credit cards but now varyingly on new bank notes and cheques. In producing diffractive optically variable image devices , lustrous foils are added to the printed currency usually after printing. Kin grams and holograms used in diffractive optically variable image devices are developed by embossing micro profiles with thermoplastic films.

The hologram itself is to put using the interference of light from different sources in a specific pattern, and kin grams are developed with a chromatic and polarization effects. The result is a 3D full-color image when brightened with light from different angles. ISIS uses stacked quantities of thin films to design a similar effect, with each layer having different refractive properties. The refraction of light when seen is such that a spectral pattern has been removed and a full-color image is obtained which varies under different seeing angles. [10]

7)Second-Line Inspection Methods

A second-line inspection method is one that can not be justified by the naked eye alone, and requires an e device to perform justification function. These are more secure and harder to counterfeit than visual methods, but the extra security adds extra price at both the manufacturing and justification ends. [9]

8)Isocheck/Isogram

Regarding to intaglio printing , these processes rely on a specific pattern of dots or lines to affect a moré pattern when printed . Hidden watermarks can be applied in these patterns such that when a special filter is placed between the viewer and the note, the hidden justification is revealed and justifies the note as genuine. [9]

9)Fibre-Based Certificates of Authenticity

Depend on the characteristics of fiber-optic light transmission, this method makes use of unique configurations of fibers embedded in the paper. Using a scanner to brighten with light one end of an embedded fiber, the other corresponding of that fiber will become irradiated by light. By using the position of both iirradiated by light ends, the certified has a fiber signature‖. [9]

This string can then be converted into a bit string and combined with any data that is required . This is in turn together with a cryptographic hash of itself and is signed using a private key, with the regarding public key made present. The final result of these steps can then be encoded onto the bank note in the form of a barcode or justification number of some kind.

Identifying the authenticity merely involves inverting the above method. The control number is justified. using the public key regarding to the private key initially used. The hash function is inverted and the original data string removed. The note is then scanned using the same fiber illumination process discussed above, and if the removed data.[11]

4. ALGORITHM FOR CASH VALIDATION AND EXCHANGE USING IMAGE PROCESSING:

A efficient and speedy image processing algorithms was developed using MATLAB software. The first phase of algorithms deals with cash validation and second phase contain exchange algorithm.
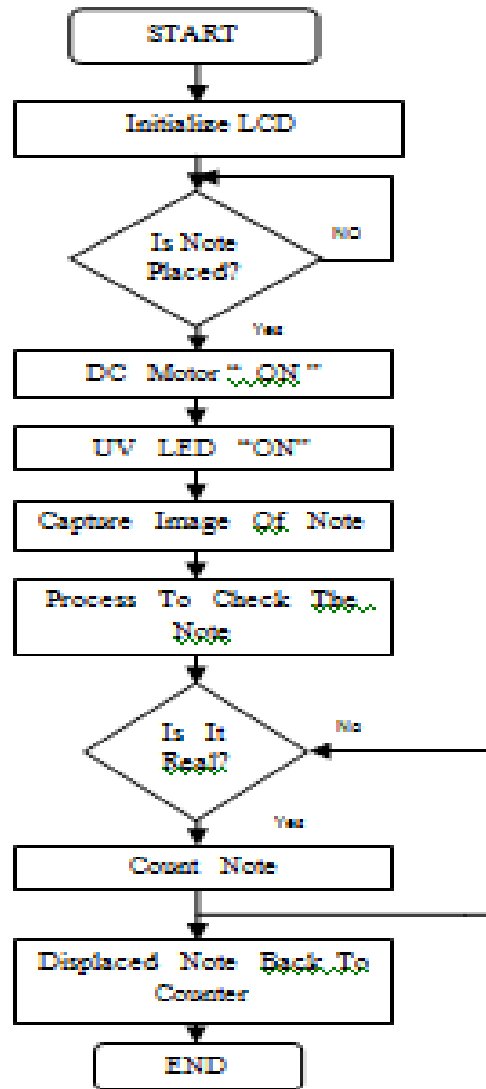
Fig. Flowchart of algorithm for cash validation

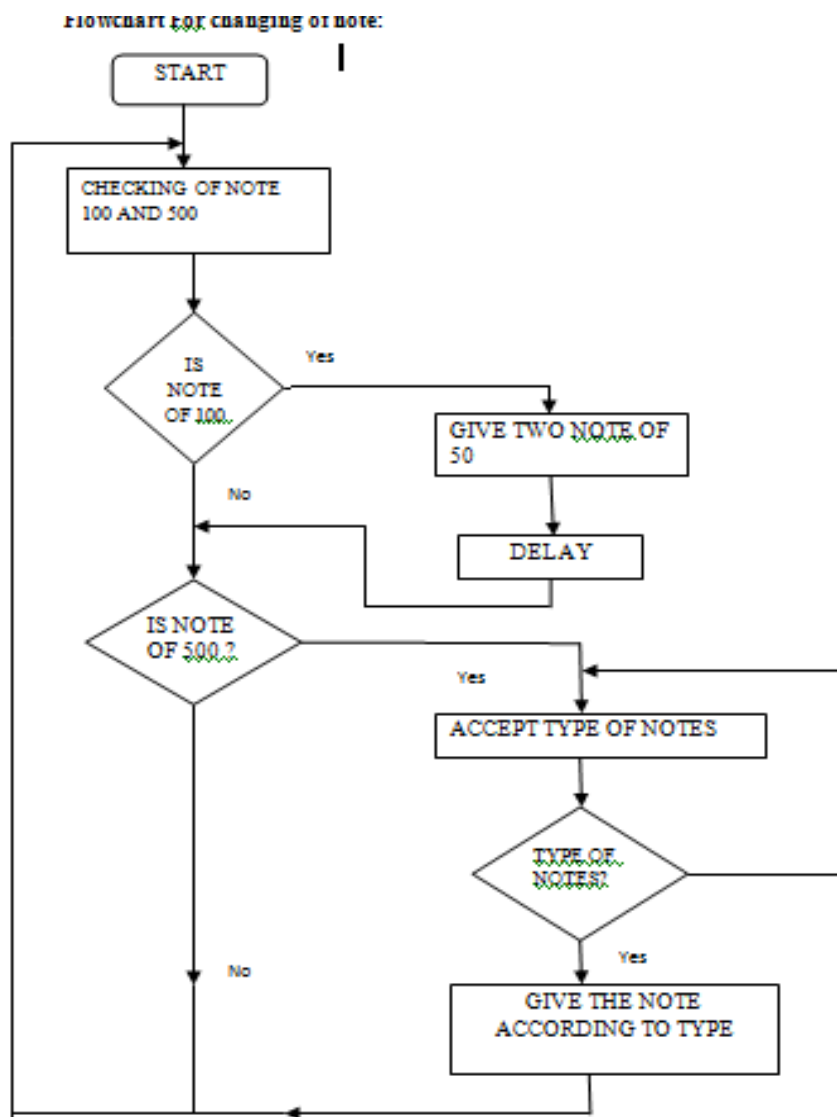Flowchart for changing of note:

Fig. Flowchart of algorithm for note exchange

In image processing , sometimes we have to convert the image from one color space to other. MATLAB contain tools demand for image processing which covers all color area transformation. Input color images have primary colors green, blue and red. It is able to implement the applications using RGB because of their range i.e. 0 to 255.


**Fig.** Original image taken by the Camera.Image after applying localization technique

After segmentation we identify note parameters such as watermark, security thread etc. then we determine these note is real or fake.
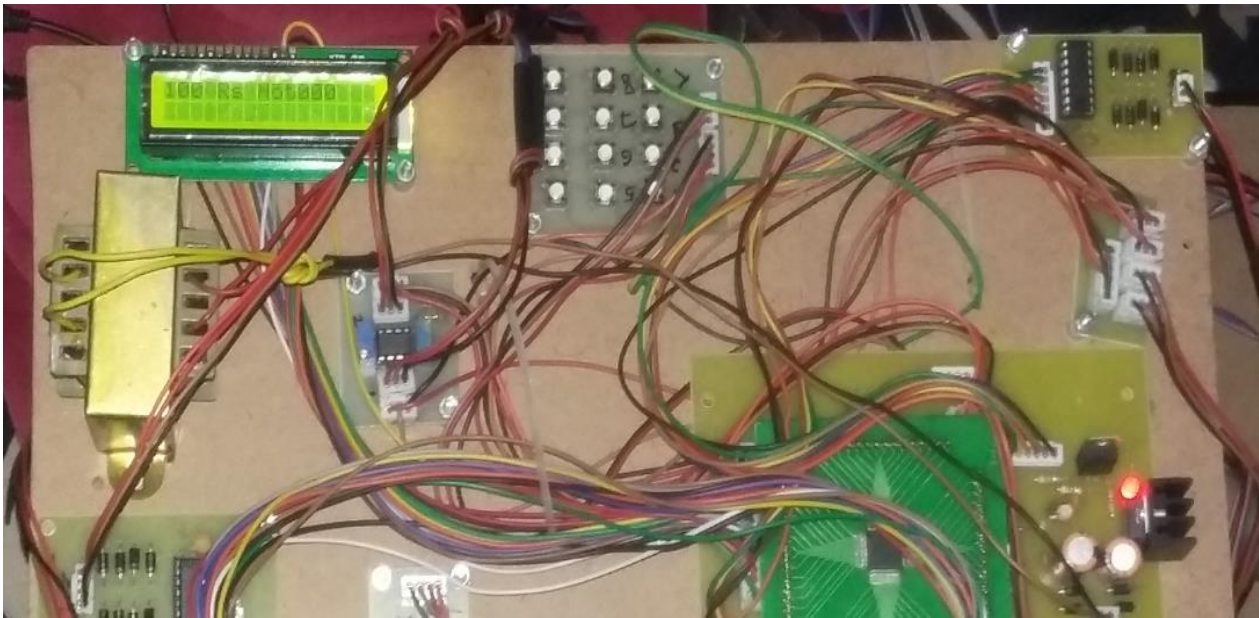
5.RESULTS:

We apply all the steps of image processing in MATLAB on input samples. When the notes are given as input data that result in detection of corresponding note as shown in following.
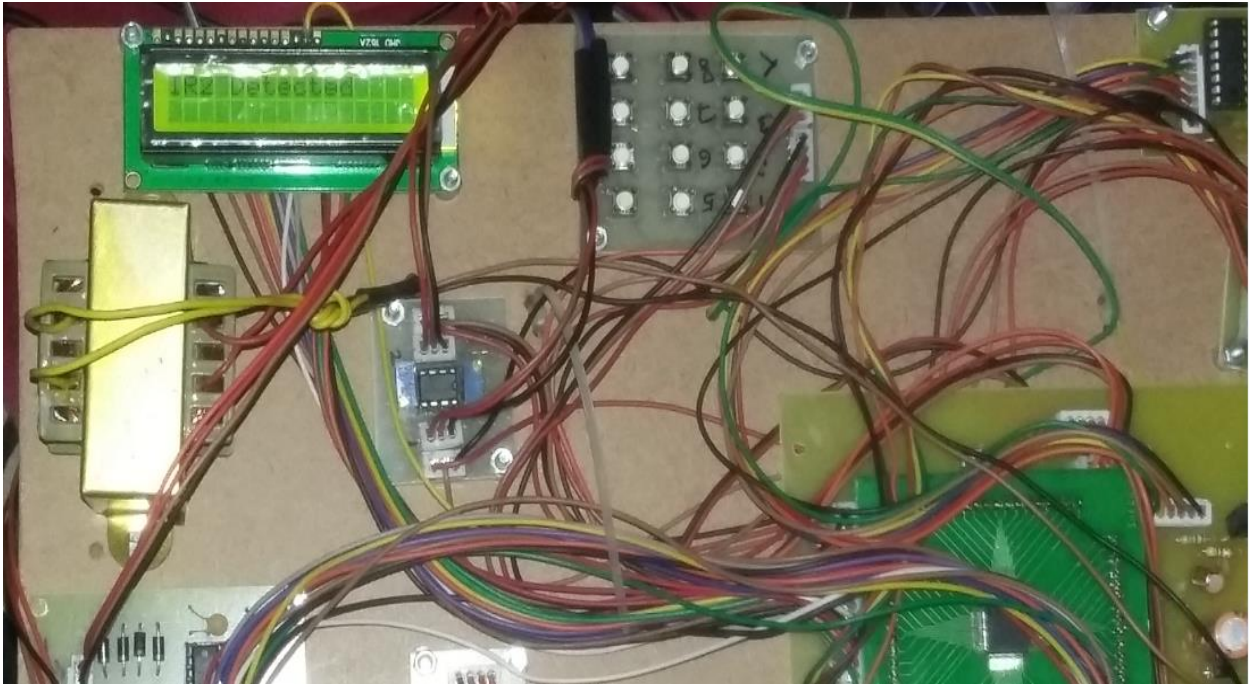
Fig.IR Detection
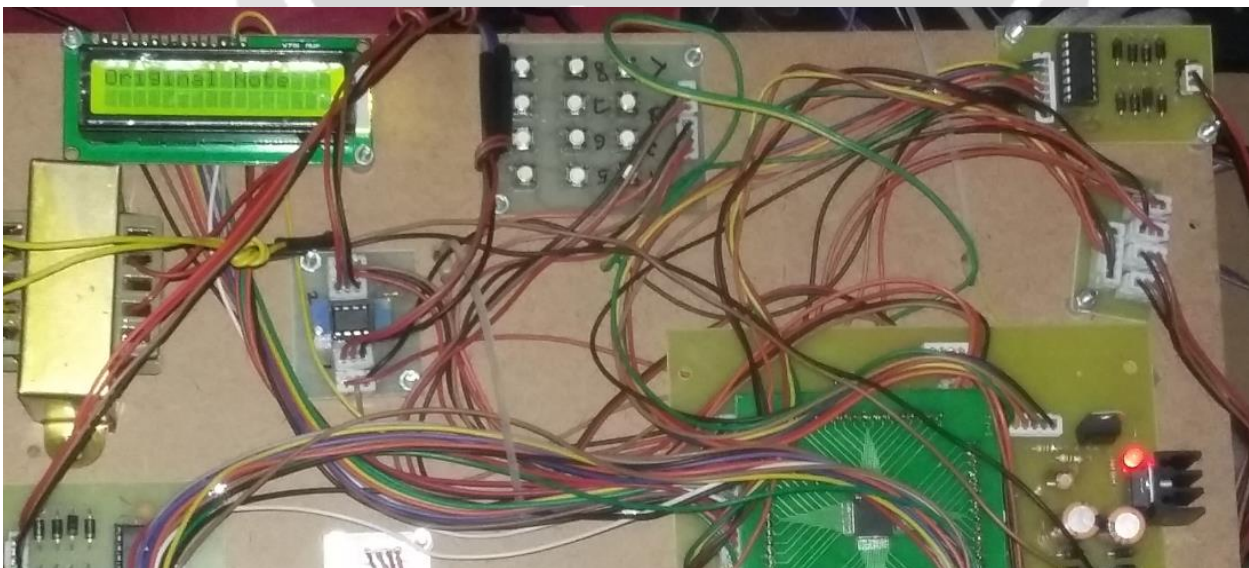
Fig. Note Detection

Fig. Note Exchange

6.CONCLUSION:

Fake currency poses a destruction threat to national security and could also result in frugal destabilization. According to anti crime branch, anti national elements and crime syndicates open several accounts and use the ATM's to borrow the fake currencies. If they see that the amount has been attributed to their account, they continue to borrow fake money. If the amount is not attributed they know that their work is up and no longer operate that account. In the past, it was easy to discover fake currencies as they were printed by people with limited knowledge, using crude facilities.

The situation is scary, especially after the recent detection of Rs 400 million from the State Bank of India(SBI) chest at one of its branches in the northern Uttar Pradesh (UP) state. Not only the fake notes were of high quality, but they also had the same serial numbers as the original notes kept at the bank. It is estimated that around 1,69,000 crores of fake currencies are in circulation all over India. Both Banks and Government are in a denial mode, because possibly they do not know what to do.

7. FUTURE WORK

 A. ARM Based Embedded Software Design:

- This software implemented using micro-controller so that it can integrate with different embedded devices.

B. Hardware Complexity Reduction*:*

- The complexity that introduce during real time fake currency detection due to hardware components will be resolved in future up-gradations.

C. Bengali Language Support:

- Bengali Character support in Optical Character Recognition systems of this software will be implemented in future versions.

D. Support for All Kinds of Bangladeshi Bank Notes & Other

- Foreign Currencies:
    Support for all kinds of Bangladeshi bank notes and other Foreign currencies like Dollar, Pound, Indian rupee etc. will be provided.

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