

Note To Coin Exchanger

Shraddha S. Kundale,
UG Student, Department of Electronics and
Telecommunication Engineering,
Sanjay Ghodawat Institute of Engineering & Technology,
Atigre-,(Maharashtra-INDIA)

Mitali M. Patil,
UG Student, Department of Electronics and
Telecommunication Engineering,
Sanjay Ghodawat Institute of Engineering & Technology,
Atigre-,(Maharashtra-INDIA)

S. C. Deshmukh
Department of Electronics and
Telecommunication Engineering,
Sanjay Ghodawat Institute of Engineering & Technology,
Atigre-,(Maharashtra-INDIA)

Abstract:- We have suffer a lot of problems due to lack of coins at places like bus station, railway station, mall , grocery shop. Our main motive of developing user friendly and simple machine which will fulfill need of coins for transactions so that people will not suffer problems due to lack of coins. Presented project output provide us coins, for this purpose we have developed mechanical coin dispensing model which takes the note inside and checks whether note is fake or real, if note is real camera takes picture of it. After that it will find out its value using image processing technique and then, if the amount is match then according to the amount coins will dispense. In this project we have developed a MATLAB program for image detection, and to find the value. and we have implemented a fake note detection unit using UV light. Manual testing of all notes in detection is very time consuming and untidy process and also there is a chance of tearing while handling notes. Therefore automatic methods for bank note recognition are required in many applications such as automatic selling goods and vending machines.

Keywords:- Note Placing Unit, Microcontroller, LCD, Coin dispensing Model.

I. INTRODUCTION

The main motive of this project is to provide coins equal to amount of note. The circuit uses microcontroller with mechanical design which have motors to complete required operations. Here note placing unit accepts note and checks whether a note is fake or true. If a note is real, camera takes picture of note and with help of computer having MATLAB program checks the amount of note (Rs 10 or 20).

Once the note is identified, coins will be dispensed by coin dispensing unit. In all walks of life, machine automation is needed to make sophisticated approach to the mankind. Of course the humans cannot work as like machines. Now a days, most of the work of the human being is replace by machines. The coin classification of various denominations and finding the sum of the coins is lasting for a time process.

As there are lots of techniques to detect the Indian currency note, these are texture based, pattern based, checking

by the watermarking, checking the micro lettering, color based recognition technique .The most preferable technique along all these is color based recognition . It is constructed by counting the number of pixels of each color. For identifying kind of note the matlab software runs the program and the result is given to the controller which will manipulate the coin container through relays and motors, the user simply press the keypad for which type of exchange he wants whether one rupee coins or five rupee or mixed and hence in the output we get coins as user requirement.

II. RELATED WORK

Presently, as there are lots of techniques to detect the Indian currency note. Scale-invariant feature transform (or SIFT) is an algorithm in computer vision to detect and describe, local features in images. So instead of using above techniques we are going to design a machine to detect if the note is fake or not. Detection is done by using the UV rays .

Along with checking the reality of note it gives its coin equivalent. This project's output will be coins, for this purpose we have designed mechanical coin dispensing model which takes the note inside and checks whether note is fake or true, if note is real camera takes picture of it. Later it will find out the amount using image processing program and then according to the amount equivalent amount of coins are dispensed. In this way we are trying to design user friendly machine which will be having low production cost as compared to other available machines. In this project, to check trueness of note we use MATLAB program. And we have implemented a fake note detection unit using UV Light.

A. Proposed system

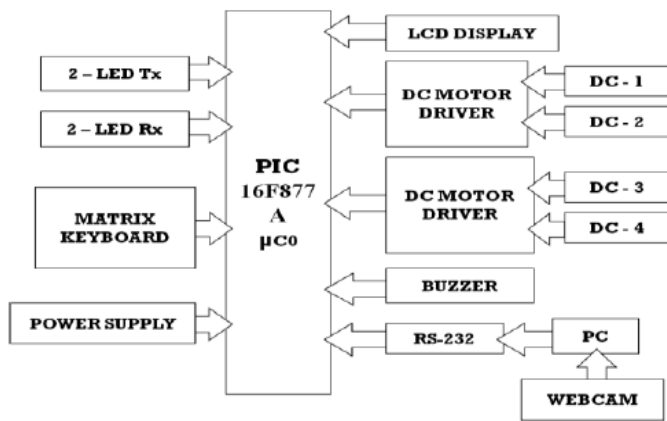


Fig 1:- Block Diagram of Note To Coin Exchanger System.

B. Microcontroller

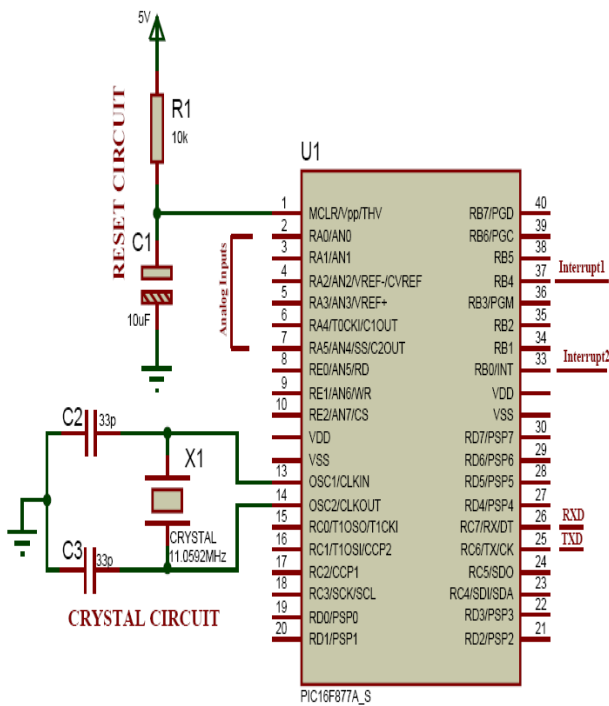


Fig 2:- Microcontroller

This is the main component which performs all controlling. The 40 pins make it easier to use the peripherals as the functions are spread out over the pins. This makes it easier to decide what external devices to attach without worrying too much if there are enough pins to do the job

PIC 16F877 is one of the best microcontroller from microchip. This controller is mostly used for experimental and modern applications, high quality, and ease of availability.

The work of controller in our project is to identify the data sent by PC MATLAB in the form of 2's & 1's. The controller knows that, (a) 1= 10 rupee note, (b) 2= 20 rupee note. The controller knows that now it has to generate coins in the multiples of 5 & 1 or mix coins.

C. 16x2LCD –

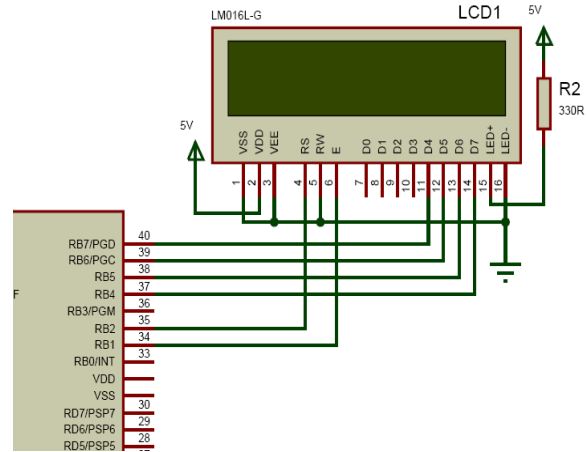


Fig 3:- LCD Display.

It is used to display the name of the project, to display whether the amount of coins is match with the amount of note or not. If the amount of coins present in the container is not according to the requirement, then a message will be displayed on the “LCD” “Insufficient coins”. And if the amount of note and users choice of coins is not match then the message will be displayed on the LCD “Amount not match”.

D. Note Placing Unit

It will accept note from the user. It consists mechanical design of relays to take the respective note from the user. DC motor is used at the user side to take the note inside the machine. This information is sent to the microcontroller for further processing.



Fig 3:- Note in the note placing unit when image will capture



Fig 4:- Note under ultraviolet light

As shown in figure 3. When user place the note in the note placing unit using mechanical relays, camera will takes picture of it and then ultraviolet light will on and takes picture of it to determining the trueness of note.

When camera takes picture of note, then ultraviolet light will on and scans the note as shown in figure 4. if the note is real then the silver strip will illuminate on it and it is clear that this is the real note.

To identify whether the note is fake or real: The specialty of a currency note is that it absorbs the UV light and a fake note reflects the UV light. This work is done by the UV LED transmitter and UV receiver or detector. The UV LED source transmits the UV rays. If the note is real it will absorb the UV rays. If the note is fake then the rays will be reflected towards the receiver or the detector BPW34. This output of the UV detector is given to the inverting trans conductance amplifier ca314. This output is amplified and then given to the single supply comparator LM 311. The output of the comparator is then given to the micro-controller for further processing. Fake note detection, currency note localization and currency note recognition using image processing.

Color Fake note detection which is not performed by general LED illumination because the UV pattern is not reflected under general LED illumination. To inspect paper money using UV-LED, the paper money image must be separated into a pattern and a background. There is a method of separating an image into a pattern and a background using a threshold value. This method finds a histogram of the image, determines the threshold value, and classifies the image.

used to dispense them out of the slots. We have used a switch at the edge in order to give indication to the controller that the exact no. of coins are given.

E. Coin Dispensing Model

After inserting the note, the note goes through various tests like detection of value of the note and then controller will ask the user about the choice of coins. Based on user's choice, indications are given to the driver IC to drive the respective motors and the motor will rotate in such way that it gives desired no. of coins. Coins of 5, 2 and 1 are stored in the slots and motors are



Fig 5:- Coin dispensing model

As in fig.5 here we are using three motors of 10 RPM for the purpose of coin dispensing.

One motor is for 5 rupees coins, other one is for 2 rupees coin, and the remaining is for 1 rupees coins. Suppose

we want 3 coins of 5 rupee and 2 for 1 rupees then the motor of 5 rupee coin will be rotate 3 times and motor of 1 rupee coin will be rotate only one time.

III. ACKNOWLEDGMENT

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IV. CONCLUSION

The basic idea of developing a machine to exchange currency coins instead of notes is very adaptive in implementation. It's a fully automated system. This system can be placed at railway stations, bus stations, malls and parks, etc. It will be quite beneficial for the person to check their banknotes and avoid being a fool. This technique is very adaptive to implement in the real-time world.

Further it may be developed to exchange 2000 rupee, 500 rupee notes with various Indian currency coins, such as 10 rupee coins which will be available henceforth. Simultaneously, fake note identification will be easily known to all.

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