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Dyed Banknotes Detection System Using Color Model

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ABSTRACT

Currently, there is a growing demand for automated teller machine (ATM) in the cities. Due to the vast accumulation of banknotes, these devices have been aims at theft with the use of explosives. When this action occurs, generally, the ATM dyes the banknotes using a degradation agent in order to avoid the use of banknotes in the market and helps the police to identify convicts. In this article, we propose a dyed banknotes detection system using digital image processing tools. Y'cbcr color model is used to increase the efficiency. In the experiments performed to test banknotes images and five systems has the best performance to identify error and execution speed.

Keywords: Wiener filter, y'cbcr color model, Efficiency, Error and Runtime.

1. INTRODUCTION

An intelligent banknote neutralization system (IBNS) is a security framework which ensures resources against unapproved access to its substance by interpreting it as unusable money as stolen by a corruption specialist when an endeavored assault of the framework is distinguished. Such dyed banknotes are distinguished from normal notes and cannot be easily rotated among the public. Well neutralized banknotes cannot be brought back into circulation easily. They can be connected to the debasement part and ATM robbery can be controlled and easily recognize them as hoodlum. This makes taking killed banknotes wasteful and inconceivable. The IBNS takes out the ordinary reward of the wrongdoing and assembles the risk of being caught. Ink is an well-known, which works by passing on the money with a y,cbcr shading model. Such checked banknotes is very obvious and can't be sharp used .One possibility is to explore the visual properties through automatic inspection using banknotes dyed areas detection. In this paper, we present five systems that use y'cbcr color model algorithms and digital image processing techniques developed to evaluate the efficiency in the dyed banknotes area detection. The algorithms and techniques were tested using a color model to increase the speed and runtime. This color model has less noise and good segmentation.

2. EXISTING SYSTEM

In existing paper we have two input image, one is original banknotes another one is dyed banknotes. Original banknotes character is stored in database. Then two images are splitted into the three channels of color model HSV (Hue, Saturation and Value). At that point the force picture of each channel are connected to HSV aggregates the total difference. After the determining and gathering the every one of the three channels, in this progression can have an insights about the identification effectiveness of the withering area. Finally we played out the post preparing by utilizing limit segmentation. Finally the outcome of information banknote picture and yield banknotes picture is paired esteem where the esteem is 1 is speak to colored territory and the esteem is 0 speak to the undyed zone.

3. PROPOSED DYED BANKNOTES AREA DETECTION SYSTEM

In this project, five different systems was applied for the dyed banknotes area detection .The system has common steps, however the conformation variable and the image processing algorithms/techniques employed are different. The system has one inputs image, and dyed banknote. This dyed banknotes are divided into three channels of color model in y,cbcr (luminance, chrominance red, chrominance blue). Wiener filter is used to removing the multiple noise input and output image .The color model is used to getting the efficiency and fast runtime. In this project the dyed banknotes. For finding the detection error in final output image.

4. SYSTEM SPECIFICATION

1. Input Image

In this project wiener filter is applied both input and output images. This filter reduces noise present in the input and output images. This is an advanced filter used in removing multiple noise like pepper noise, solt noise etc. The filter is applied frequently to the input and output banknotes in order to reducing noise and segmentation are used to set the threshold value.

2. y'cbcr colored model

Y'cbcr is y is representing luminance, cb is representing chrominance red, cr is representing chrominance red. This color model is more efficient. This project contrast to adjust was applied for a histogram with sliding window with different sizes and window borders with higher data density that define the contrast set limits. The threshold values to get changed into the dyed and undyed area.

3. Absolute difference

The absolute difference is to find the difference between the dyed and undyed area. The threshold values to get change in colored and uncolored area in the banknotes.

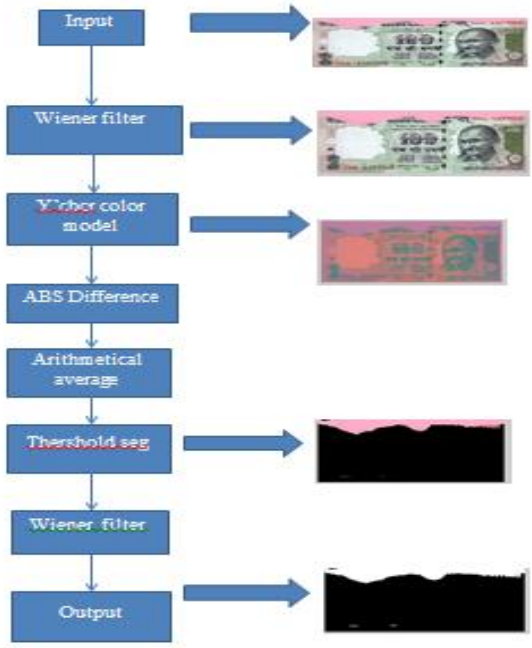
4. Arithmetical average

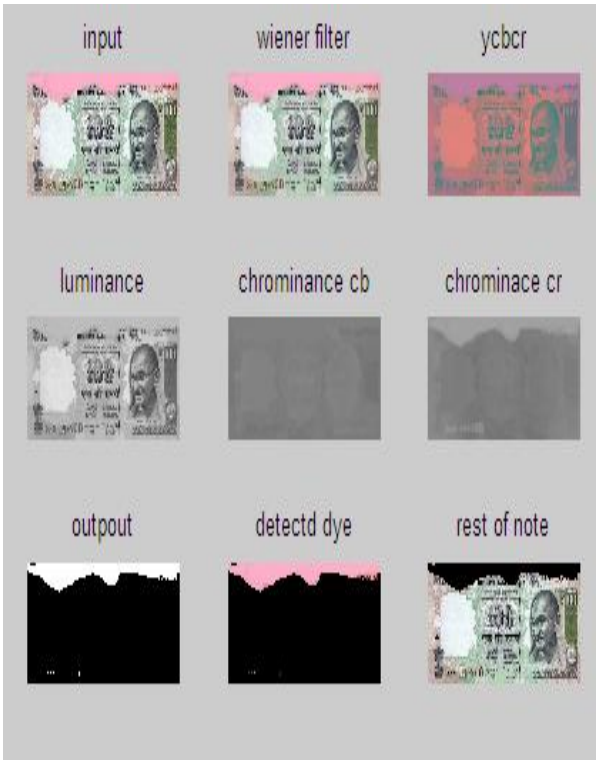
Y'cbcr consists of three channels of (y',cb,cr) by grouping these three channels, the efficiency of dyed are in banknotes will be higher as compared with the HSV color model.

5. Threshold segmentation

Separating the small part from images. This project is to finding the threshold value of the dyed and undyed area. Threshold values were changed into both colored and uncolored area.

5. BLOCK DIAGRAM





Final Output

6. FINAL OUTPUT

The proposed technique, pictures will be changed over from RGB to Y'CbCr shading space before a banknotes division is done. In the Y'CbCr color space, Y demonstrates splendor or luminance part, Cb is a blue contrast chroma segment (B − Y), and Cr is a red distinction chroma segment (R − Y). To accomplish this, the RGB picture must be changed over into Y CbCr shading space. There is the need to part luminance and chrominance segment in light of the fact that the Cr and Cb segment contain the real nature values (chrominance segments) and are not influenced by the luminance (Y) segment. Along these lines, it is well suitable to section the colored banknotes areas from undyed districts. Also, there is a non-direct connection amongst luminance and chrominance of colored banknotes area.

7. CONCLUSION

In this paper, to use the digital image processing to detect the efficiency of banknotes dyed by banknote neutralization system (IBNS) in automated teller machine (ATM) thefts. In this research, we developed five systems with algorithms and digital image processing techniques in order to discover the system with less dyed banknotes error identification and less runtime. The systems were implemented in Matlab platform and a banknotes database with different banknotes value and state condition was created. In the experiments, we discovery that the system 5 has the best performance with respect to identification error and execution speed. The algorithm achieves an average accuracy of 96.73%.

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