

INTELLIGENT MARK ENTRY SYSTEM

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Abstract:

This paper describes direct entry of student's marks into excel sheet. After checking answer sheet, examiner have to fill up marks in excel by hand. Therefore there might be mistake during entering the marks. To minimize this problem we are going to make one system which directly enters the marks into excel from answer sheet.

We are developing a system to reduce the efforts entering marks manually. Here answer sheet code and total marks will be taken to excel sheet automatically by sensing marks filled on the answer sheet by exam supervisor. Marks captured by web cam. Then image of marks is converted to matrix and at the end after comparing with standard database these marks are saved to excel sheet.

Keywords:

Matlab, excel sheet, camera, gray scale, co-relation, morphology.

Introduction:

In conventional system of entering the marks from answer sheet to the data base is done manually. This method can introduce the error.

Manually typing the marks from answer sheet to excel sheet might be introducing error. In manually typing process man power is require reading the marks from answer sheet and then type into excel sheet. Therefore there might be introducing human errors. One is type wrong marks and another is type marks to wrong number. To overcome this problem we are introducing this paper.

Digit recognition refers to the process of translating images of handwritten, typewritten, or printed digits into a format understood by the user. Digit recognition can be online or offline. In online digit recognition images are captured during the writing process with the help of special pen and electronic interface. Offline documents are scanned images of prewritten text, generally on sheet. Offline number recognition is significantly different from online digit recognition. In this paper, we work with offline numerals.[1]

To sense the marks from answer sheet we are going to use web camera to capture the image from answer sheet. This image then proceed to enter the

marks to excel sheet. In this paper first we store the standard database to compare input image for further process and recognize digits which are marks to enter into excel sheet. In this paper we capture the input image from web camera and this image will save in our computer then we read the image and resize for better comparison with standard database. After that we will convert this image into gray scale and then convert into binary image. For edge detection of numerals we have to do morphological operation on that image. Then calculate the co-relation value of input image and compare with all co-relation values of database. After compare this co-relation values we will get some which indicate the matching value. Then select the image which has maximum value and then convert this image into string. Then send this string to excel sheet.

Convert image into gray scale and BW (binary) image:

Image formation using sensor and other image acquisition equipment denote the brightness or intensity of the light of an image as two dimensional continuous function $F(x,y)$ where (x,y) denote the spatial coordinates when only the brightness of light is considered. Sometimes three-dimensional spatial coordinate are used. Image involving only intensity are called gray scale images.

Average method

Average method is the simplest one. You just have to take the average of three colors. Since its an RGB image, so it means that you have add r with g with b and then divide it by 3 to get your desired grayscale image. It's done in this way.

$$\text{Grayscale} = (R + G + B) / 3$$

For example: If you have an color image like the image shown above and you want to convert it into grayscale using average method. The following result would appear.

Explanation

There is one thing to be sure, that something happens to the original works. It means that our average method works. But the results were not as expected. We wanted to convert the image into a grayscale, but this turned out to be a rather black image.

Problem

This problem arises due to the fact, that we take average of the three colors. Since the three different colors have three different wavelengths and have their own contribution in the formation of image, so we have to take average according to their contribution, not done it averagely using average method. Right now what we are doing is this, 33% of Red, 33% of Green, 33% of Blue We are taking 33% of each that means, each of the portion has same contribution in the image. But in reality that's not the case. The solution to this has been given by luminosity method.

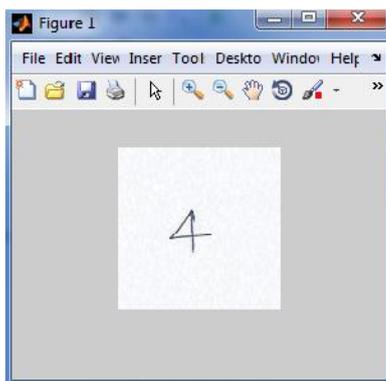
You have seen the problem that occurs in the average method. Weighted method has a solution to that problem. Since red color has more wavelengths of all the three colors, and green is the color that has not only less wavelength then red color but also green is the color that gives more soothing effect to the eyes. It means that we have to decrease the contribution of red color, and increase the contribution of the green color, and put blue color contribution in between these two.

So the new equation that forms is:

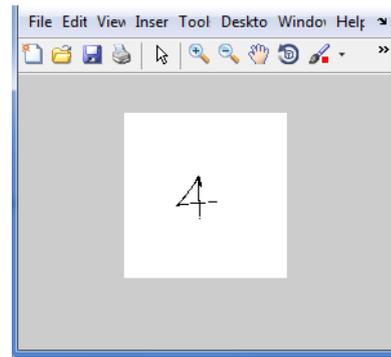
$$\text{New grayscale image} = ((0.3 * R) + (0.59 * G) + (0.11 * B))$$

According to this equation, Red has contribute 30%, Green has contributed 59% which is greater in all three colors and Blue has contributed 11%. Applying this equation to the image, we get this

Original Image:



Grayscale Image:



Gray scale to BW image

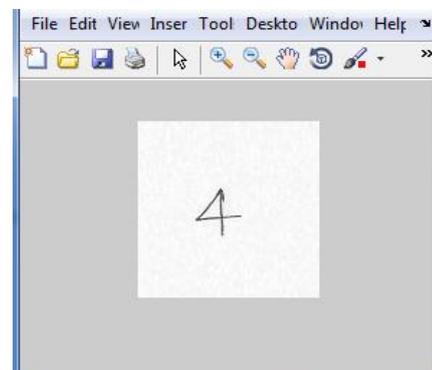
$BW = \text{im2bw}(I, \text{level})$ converts the grayscale image I to a binary image. The output image BW replaces all pixels in the input image with luminance greater than level with the value 1 (white) and replaces all other pixels with the value 0 (black). Specify level in the range $[0,1]$. This range is relative to the signal levels possible for the image's class. Therefore, a level value of 0.5 is midway between black and white, regardless of class. To compute the level argument, you can use the function `gray thresh`. If you do not specify level, `im2bw` uses the value 0.5.

$BW = \text{im2bw}(X, \text{map}, \text{level})$ converts the indexed image X with color map `map` to a binary image.

$BW = \text{im2bw}(RGB, \text{level})$ converts the true color image RGB to a binary image.

If the input image is not a grayscale image, `im2bw` converts the input image to grayscale, and then converts this grayscale image to binary by thresholding.

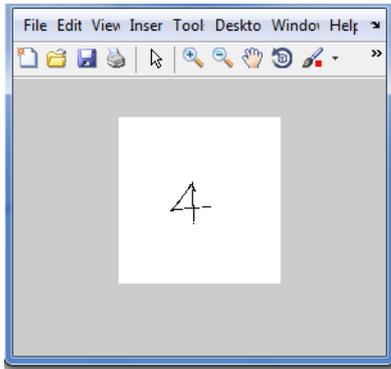
BW image:



Morphological operation: For better comparison we have to do edge detection of image. So we are going to use here morphological operation.

$BW2 = \text{bwmorph}(BW, \text{operation})$ applies a specific morphological operation to the binary image BW.

$BW2 = \text{bwmorph}(BW, \text{operation})$ applies the operation n times. n can be Inf, in which case the operation is repeated until the image no longer changes.[3] There are number of morphological operation from this we are going to use thicken operation to morph the image.



Comparison method:

To compare the input image with standard database there are number of comparison methods. Here we are going to use correlation method for better comparison. Correlation method calculates the matching point between input image and each database. Then we select the image which has maximum correlation value. And create string of that image and send this string to excel sheet. Example: Compute the correlation coefficient between an image and the same image processed with a median filter. $I = \text{imread}(\text{'pout.tif'})$;

$J = \text{medfilt2}(I)$;

$R = \text{corr2}(I, J)$

Transfer to excel sheet: Matched string is enter into excel sheet by using matlab tools. After transferring the string our excel sheet is shown below:

| Roll_No | Marks |
|---------|-------|
| 1 | 55 |
| 2 | 67 |
| 3 | 91 |
| | |

Conclusion:

This paper represents different features extraction method along with different classifier in recent year. This paper introduces simple digit recognition

technique. Now days there are lots of work in image processing for different operations. Digit recognition technique is very difficult to introduce but in this paper it might be very simple.

References:

[1] R. Plamondon and S.N. Srihari., 2000, “Online and off-line handwriting recognition: acomprehensive survey”, Pattern Analysis and Machine Intelligence, IEEE Transac-tions on, vol. 22(1), pp 63–84.

[2] Luminance Based Conversion of Gray Scale Image to RGB Image1G. Jyothi, 2CH. Sushma, 3D.S.S. Veeresh 1,2 ,3 Assistant Professor, Information Technology Bhoj Reddy Engineering College For Women, Hyderabad, India.

[3]IMAGE RESTORATION BASED ON MORPHOLOGICAL

OPERATIONS. A.M.Raid1,W.M.Khedr2, M.A.El-dosuky1 and Mona Aoud1

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