

A Region Boundaries Algorithm for Ear Authentication Based on Plots

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Abstract: Ear recognition methods in image processing become a key issue in ear identification and analysis for many geometric applications. Actually, the Captcha as graphical password methods like click text, click animal, and animal grid are used to provide authentication web applications. These methods results to security attacks. So, ear recognition methods are helpful when a RBA, converts the original image to inverted binary image to plot the boundaries of the ear. The obtained image, shows the plots like circles, Rectangular, and Squares. This paper hence proposed an RBA method, which provides more Authentication than CaRp method.

Keywords: Recognition, Authentication, RBA, Boundaries, Plots

1. Introduction

The click text, click animal and animal grid are the methods to authentication [1]. It is important to verify that people are allowed to pass some points or use some resources.

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Now a days there is emerging need to automatically authenticate the human. Due to this, biometrics has become the active research field of modern era. Traditional recognition systems such as cards with identity number and password can be forgotten, stolen or lost [3]. This detector is chosen as it is fully automatic and also due to its speed and high accuracy of 99.89% on the UND profile face database with 942 images of 302 subjects [4]. The extracted features are stored in a database in the form of a vector, each vector corresponding to a particular image [5].

Ear Recognition has certain advantages over the more established biometrics, as ears have stable structure that does not suffer from the changes of age, emotions, skin-color, cosmetics and hairstyles [6]. Human identification has been a subject of intensive research for the few decades because of its applications in almost all aspects of secure surveillance [7]. The ear is much smaller in size but has a rich structure and a distinct shape which remains unchanged from 8 to 70 years of age [8].

2. Proposed Work

Step 1: Read Original image
for i = 1:nimages

```
image{i} = double(imread(img{i}))  
end
```

Step 2: Convert image from rgb to gray
rgb2gray(RGB)
Converted the original rgb image into the Gray image.

Step 3: Threshold the image Convert the image to black and white in order to prepare for boundary tracing using bwboundaries.
BW = im2bw(gray,graythresh(gray))

Step 4: Invert the Binary Image
BW = ~ BW

Step 5: Find the boundaries Concentrate only on the exterior boundaries. Option 'noholes' will accelerate the processing by preventing bwboundaries from searching for inner contours.

```
[B,L] = bwboundaries(BW, 'noholes')
```

Step 6: Determine objects properties

```
STATS = regionprops(L, 'all')
```

Step 7: Classify Shapes according to properties.

```
Square= (X=Y + Extent = 1)
```

```
Rectangular=(only Extent = 1)
```

```
Circle=(X=Y , Extent < 1)
```

3. Ear Recognition

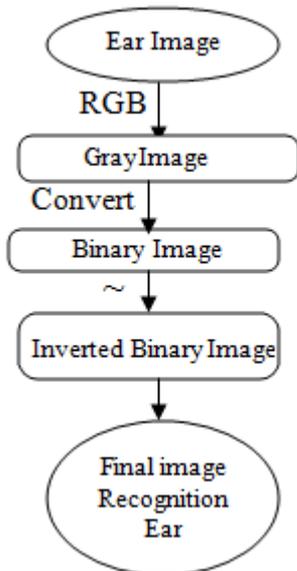


Figure 7: Ear Recognition

The Ear image is converted to the gray image, Binary image and also Inverted image to recognition the original image to other ear images. We have to compare the original image with the other ear images to recognition the particular user. It provides more security to the users and more accuracy to the images than the existing methods.

4. Experimental Results



Figure 1: Original Image



Figure 2: Gray Image

The Original Image had been converted into the Gray image as shown Fig 2.



Figure 3: Binary Image

Gray Image is converted into the Binary Image as shown Fig 3.

Again Binary Image is inverted.



Figure 5: Result of First Image.



Figure 6: Result of Second Image.

Compare Fig 5 and Fig 6 images then we can come to know these plots of the images are same.

5. Conclusion

In this paper we are plots the boundaries of the image without loss of accuracy of that image. Here we conclude that in future, to improve boundaries angle from the plots to the center of the ear. If any ear rings presents also we have to maintain same accuracy and avoiding occlusion of that image.

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