0 votes
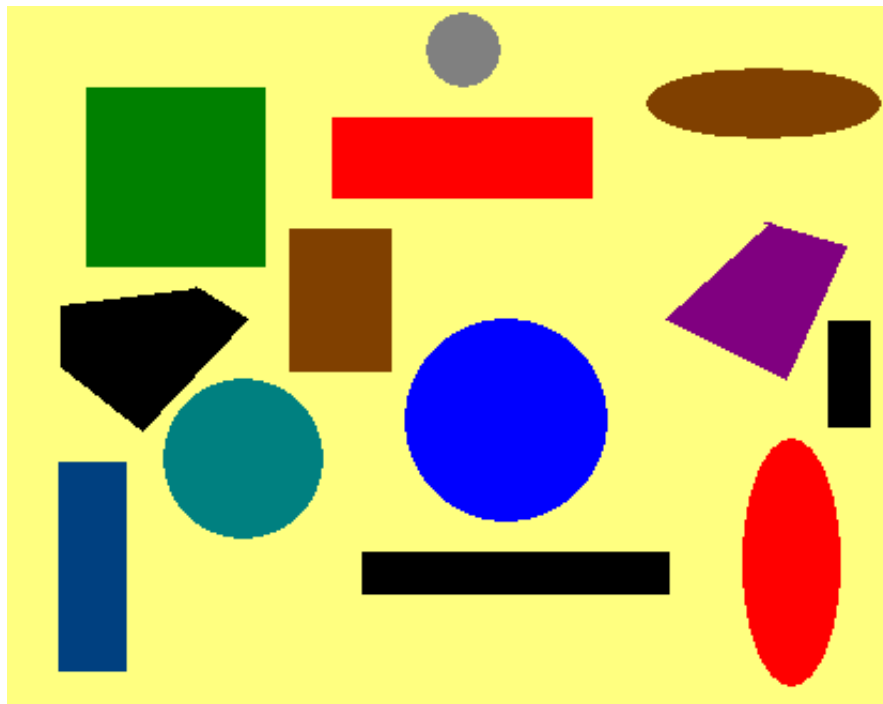
How to detect the shape in matlab?

Asked by saravanakumar D on 27 Dec 2013
Latest activity Edited by Image Analyst on 27 Dec 2013
Accepted Answer by Image Analyst

I can't understand the technique how to analyse the shape. So any please help me to understand this concept.

Code is below

```
function W = Classify(ImageRead)
RGB = imread('test.bmp');
figure,
imshow(RGB),
title('Original Image');
```

```
GRAY = rgb2gray(RGB);
figure,
imshow(GRAY),
title('Gray Image');
```

```
threshold = graythresh(GRAY);
BW = im2bw(GRAY, threshold);
figure,
imshow(BW),
title('Binary Image');
```

```
BW = ~ BW;
figure,
imshow(BW),
title('Inverted Binary Image');
```

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

```
STATS = regionprops(L, 'all'); % we need 'BoundingBox' and 'Extent'
```

```
% Step 7: Classify Shapes according to properties
% Square = 3 = (1 + 2) = (X=Y + Extent = 1)
% Rectangular = 2 = (0 + 2) = (only Extent = 1)
% Circle = 1 = (1 + 0) = (X=Y , Extent < 1)
% UNKNOWN = 0
```

```
figure,
imshow(RGB),
title('Results');
hold on
for i = 1 : length(STATS)
  W(i) = uint8(abs(STATS(i).BoundingBox(3)-STATS(i).BoundingBox(4)) < 0.1);
  W(i) = W(i) + 2 * uint8((STATS(i).Extent - 1) == 0 );
  centroid = STATS(i).Centroid;
  switch W(i)
      case 1
          plot(centroid(1),centroid(2),'wO');
      case 2
          plot(centroid(1),centroid(2),'wX');
      case 3
          plot(centroid(1),centroid(2),'wS');
  end
end
return
```
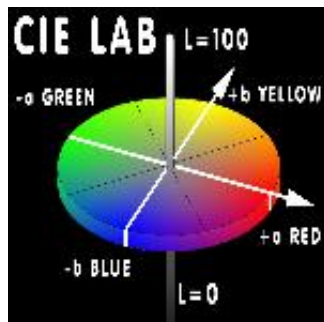
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Tags

image processing shape detection

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🗨 1 Answer

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Answer by Image Analyst on 27 Dec 2013

✔ Accepted answer

What are the kinds of shapes you have there?

1. polygons (everything is a polygon)

2. quadrilaterals, polygons, and ellipsoids

3. quadrilaterals, rectangles, polygons, and ellipsoids

4. quadrilaterals, rectangles, polygons, circles, and ellipsoids

5. quadrilaterals, rectangles, squares, polygons, circles, and ellipsoids

You might look at the solidity, area, and perimeter. And the circularity = perimeter.^2 ./ (4*pi*area).

You may also find this useful to determine how many sides a polygon has:
http://matlab.wikia.com/wiki/FAQ#How_do_I_find_.22kinks.22_in_a_curve.3F

💬 **3 Comments**

saravanakumar D on 27 Dec 2013
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> i want to know why programmer using boundingbox in this programme. what is meaning of BoundingBox(3)and BoundingBox(4)
>
> hold on for i = 1 : length(STATS) W(i) = uint8(abs(STATS(i).BoundingBox(3)- STATS(i).BoundingBox(4)) < 0.1); W(i) = W(i) + 2 * uint8((STATS(i).Extent - 1) == 0); centroid = STATS(i).Centroid; switch W(i) case 1 plot(centroid(1),centroid(2),'wO'); case 2 plot(centroid(1),centroid(2),'wX'); case 3 plot(centroid(1),centroid(2),'wS'); end

Marc on 27 Dec 2013
🔗 Link

> Boundingbox is a property from regionprops. It's being stored in the structure STATS.
>
> doc regionprops
>
> I assume you have the image processing toolbox?

Image Analyst on 27 Dec 2013
🔗 Link

> bounding box won't help unless one of the shape classes bounding box size is known in advance and specified as a characteristic of that shape. In other words "if the width of the bounding box is this and the height of the bounding box is that, then the shape *must* be this (circle or whatever)."

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