

# How to remove shadow from scanned images using OpenCV?

Asked 5 years, 2 months ago   Modified 2 years, 3 months ago   Viewed 45k times

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I'd like to remove shadow before image binarization using OpenCV. I've tried Otsu Method and adaptive thresholding, however for images where there are large regions of shadow, these two methods will not give good results.



Any better solutions? Thanks in advance.

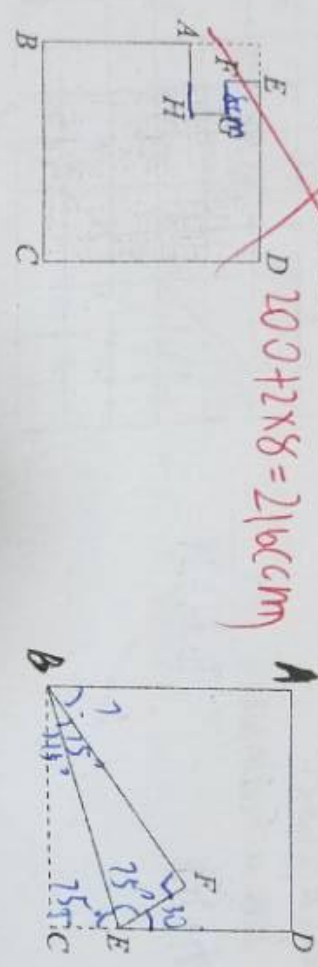


24



15. 如图,  $l \parallel m$ ,  $\angle 1 = 120^\circ$ ,  $\angle A = 55^\circ$ , 则  $\angle ACB$  的大小是         .

14. 如图是一块从一个边长为 50 cm 的正方形材料中剪出的垫片, 现测得  $FG = 8$  cm, 则这个剪出的图形的周长是 184 cm.



15. 如图, 将正方形纸片 ABCD 沿 BE 翻折, 使点 C 落在点 F 处, 若  $\angle DEF = 30^\circ$ , 则  $\angle ABF$  的度数为 150.

$$90^\circ - 30^\circ = 60^\circ$$

16. 计算:  $\frac{2015^2}{2014^2 + 2016^2 - 2} = \frac{1}{2}$

### 三、解答题

17. 计算: (本题 12 分)

(1) (4 分)  $-2^2 + 3^0 - (-\frac{1}{2})^{-1}$ ;

$$\text{解: 原式} = -4 + 1 - (-2)$$

$$= -4 + 1 + 2$$

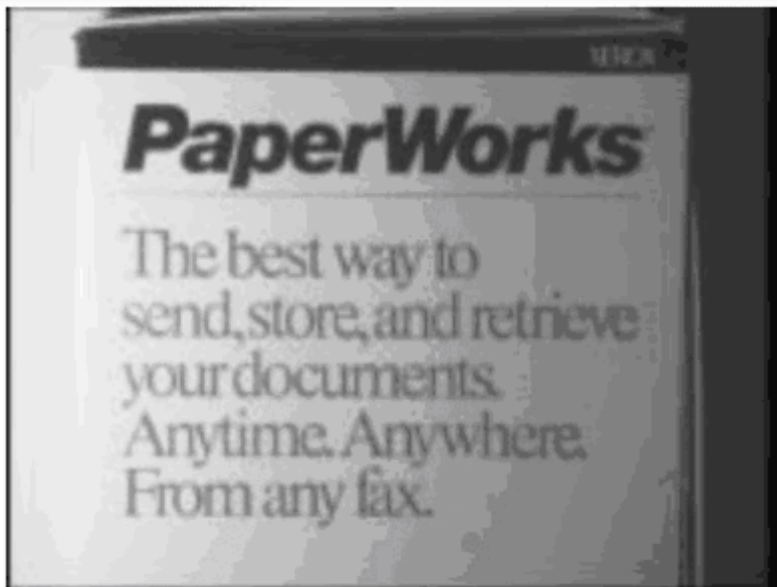
$$= -1$$

(2) (4 分)  $(x+2)(x-1) - 3x(x+1)$ ;

$$\text{解: 原式} = x^2 - x + 2x - 2 - (3x^2 + 3x)$$

$$= x^2 - x + 2x - 2 - 3x^2 - 3x$$

$$= -2x^2 - 2x - 2$$



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[python](#) [opencv](#) [image-processing](#)

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edited Sep 12, 2018 at 23:23



Dan Mašek

16.6k 6 56 83

asked Jun 26, 2017 at 1:56



Liu Zhiyuan

469 1 4 5

1 Answer

Sorted by:

Highest score (default)



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Since you didn't specify any language, I'll assume Python to illustrate.

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A decent starting point might be taking the approach I show in [this answer](#) and expand it to work with multiple channels.



Something along the lines of



```
import cv2
import numpy as np

img = cv2.imread('shadows.png', -1)

rgb_planes = cv2.split(img)

result_planes = []
result_norm_planes = []
for plane in rgb_planes:
    dilated_img = cv2.dilate(plane, np.ones((7,7), np.uint8))
    bg_img = cv2.medianBlur(dilated_img, 21)
    diff_img = 255 - cv2.absdiff(plane, bg_img)
```

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```
result_norm_planes.append(norm_img)
```

```
result = cv2.merge(result_planes)
result_norm = cv2.merge(result_norm_planes)
```

```
cv2.imwrite('shadows_out.png', result)
cv2.imwrite('shadows_out_norm.png', result_norm)
```

The non-normalized result looks as follows:

15. 如图，将正方形纸片  $ABCD$  沿  $BE$  翻折，使点  $C$  落在点  $F$  处，若  $\angle DEF = 30^\circ$ ，则  $\angle ABF$  的度数为 150。

16. 计算： $\frac{2015^2}{2014^2 + 2016^2 - 2} = \frac{1}{2}$

三、解答题

17. 计算：(本题 12 分)

(1) (4 分)  $-2^2 + 3^0 - (-\frac{1}{2})^{-1}$ ;  
 解：原式  $= -4 + 1 - (-2)$   
 $= -4 + 1 + 2$   
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(2) (4 分)  $(x+2)(x-1) - 3x(x+1)$ ;  
 解：原式  $= x^2 - x + 2x - 2 - (3x^2 + 3x)$   
 $= x^2 - x + 2x - 2 - 3x^2 - 3x$   
 $= -2x^2 - 2x - 2$

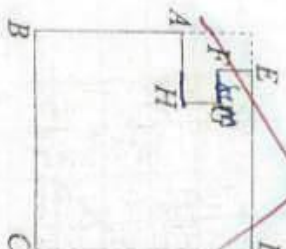
14. 如图是一块从一个边长为 50 cm 的正方形材料中剪出的垫片，现测得  $FG = 8$  cm，则这个剪出的图形的周长是 184 cm。  
 $200 + 2 \times 8 = 216 \text{ cm}$

15. 如图， $l \parallel m$ ， $\angle 1 = 120^\circ$ ， $\angle A = 55^\circ$ ，则  $\angle ACB$  的大小是 65。

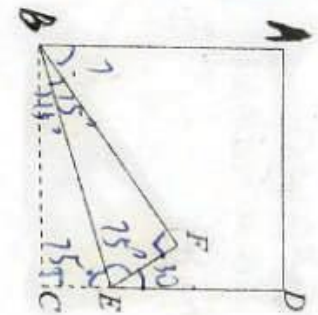
And the normalized result:

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(2) (4 分)  $(x+2)(x-1) - 3x(x+1)$ ;  
 解: 原式  $= x^2 - x + 2x - 2 - (3x^2 + 3x)$   
 $= x^2 - x + 2x - 2 - 3x^2 - 3x$   
 $= -2x^2 - 2x - 2$

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edited Sep 16, 2019 at 9:17



varsh

191 4 11

answered Jun 26, 2017 at 2:28



Dan Mašek

16.6k 6 56 83



be Colored. Just need to remove the Shadow Only. If you help that would be much appreciated. Thanks.  
– [krunal](#) Oct 25, 2018 at 11:39

@krunal You should post a new question then, and include some example input that causes issues as well as a MCVE in ObjectiveC. – [Dan Mašek](#) Oct 25, 2018 at 18:19

@DanMašek Any luck? :\ – [jtlz2](#) Feb 5, 2019 at 8:52

1 @jtlz2 Uh, any luck with what exactly? – [Dan Mašek](#) Feb 5, 2019 at 17:00

Apologies - was meant for @krunal... :/ I wanted to know whether they had been able to get it working for colour – [jtlz2](#) Feb 5, 2019 at 18:06



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