cv2 resize interpolation methods

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- **INTER_NEAREST** – a nearest-neighbor interpolation
- **INTER_LINEAR** – a bilinear interpolation (used by default)
- **INTER_AREA** – resampling using pixel area relation. It may be a preferred method for image decimation, as it gives moire'-free results. But when the image is zoomed, it is similar to the `INTER_NEAREST` method.
- **INTER_CUBIC** – a bicubic interpolation over 4×4 pixel neighborhood
- **INTER_LANCZOS4** – a Lanczos interpolation over 8×8 pixel neighborhood

from the official docs.

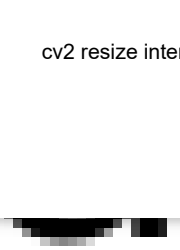
I use this often when using `cv2.resize` method. For example,

```
import cv2

img = cv2.imread("testimage.png")
resized = cv2.resize(img, (100,100), interpolation=cv2.INTER_LINEAR)
```

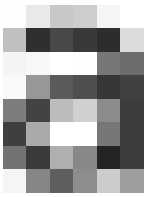
reducing resize results

here is the default image.(50×50)

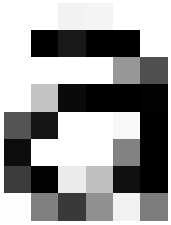


default image

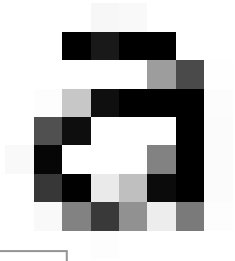
and here are the results of reducing it to 15×15 with various interpolation methods.



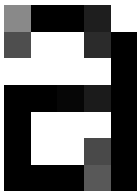
cv2.INTER_AREA



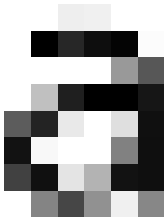
cv2.INTER_CUBIC



cv2.INTER_LANCZOS4



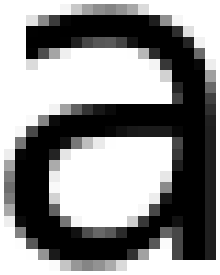
cv2.INTER_NEAREST



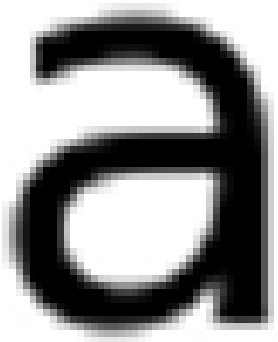
cv2.INTER_LINEAR

enlarge resize results

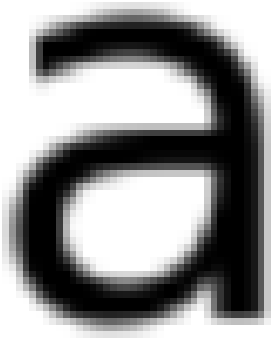
with the same default image used above, here are the results when it is enlarged to 100×100



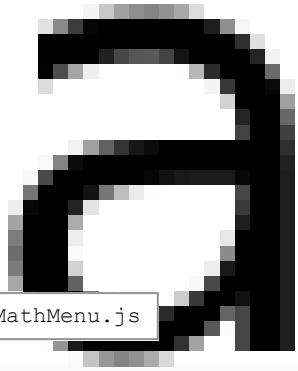
cv2.INTER_AREA



cv2.INTER_CUBIC



cv2.INTER_LINEAR



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9 Comments

makaros · June 3, 2019 at 9:50 pm

How exactly does nearest-neighbor interpolation behaves when you downscale an image from 50×50 to 15×15? How is this 15×15 images filled in with values ?

REPLY

nkumar · September 26, 2019 at 3:48 pm

good discussion. are there any other method that retains the sharpness of edges when compressing? i feel edge detection is compromised when using the standard options.

REPLY

Pierre · May 26, 2020 at 10:24 pm

That’s was useful ! Thanks

REPLY

Anonymous · July 31, 2020 at 7:12 pm

good comparision

REPLY

Shraddha · February 2, 2021 at 7:08 am

Thank you for creating this and showing a clear difference. it was useful.

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REPLY

Ethan · April 30, 2021 at 9:14 pm

REPLY

Dan · May 7, 2021 at 8:14 pm

Which method is the fastest, INTER_LINEAR maybe?

REPLY

Jane Courtney · June 28, 2021 at 8:55 pm

The simplicity of this post is helpful and joyous! Thank you.

REPLY

Anonymous · March 19, 2022 at 9:07 pm

Any paper as referencef?

REPLY

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get rotation angle between two vectors

Getting the angle between two vectors is well known. But finding the 'rotation angle' from one vector to another needs a bit more consideration. The following functions can handle this. This function will use cross Read more…