KRISHNAIK ACADEMY KRISHAI TECHNOLOGIES

Image Resizing, Scaling & Interpolation

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Image Resizing

- Adjusting image dimension

640 x 480 ⇄ 1280 x 720

4 : 3 16 : 9

Image Scaling

- Adjusting image dimension but maintaining aspect ratio.

HD ⇄ Full HD

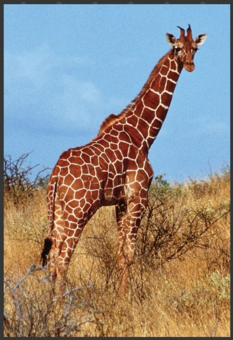
16:9 16:9

1280x720 → 1920 x 1080

Interpolation

- Determines how pixel values are computed when decreasing or increasing the size of an image.

Image Resizing →



Original Image

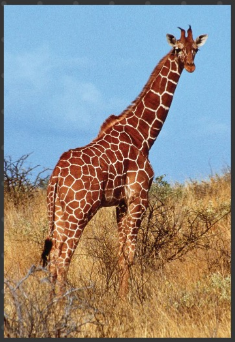
1067 x 1704

→

Resized Image

1067 x 1067

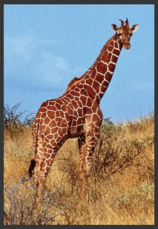
Image Scaling →



Original Image

1067 x 1704

→ Maintaining Aspect ratio



Scaled Image

533 x 852

Scaled down by factor of 2

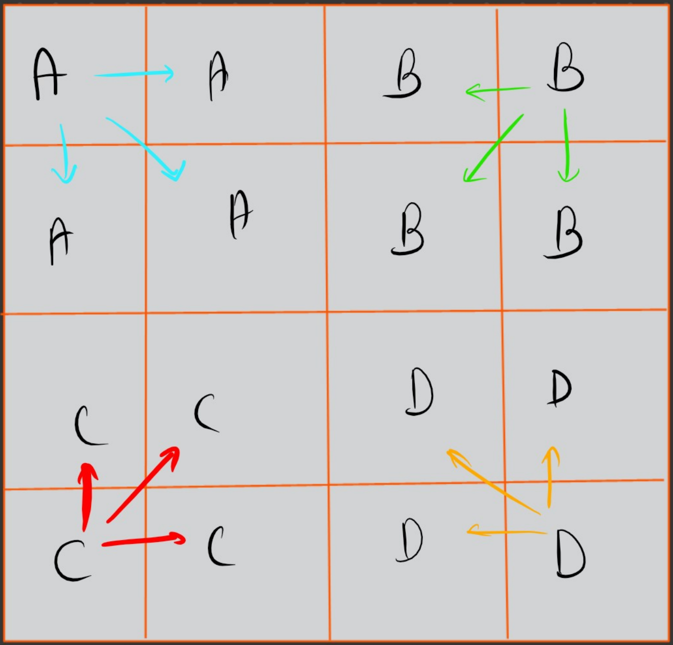
Interpolation

cv2.INTER_NEAREST : Simplest method. Each pixel in the resized image is assigned the value of the nearest pixel in the original image.

A	B
C	D

Input Image

2 x 2



A	A	B	B
A	A	B	B
C	C	D	D
C	C	D	D

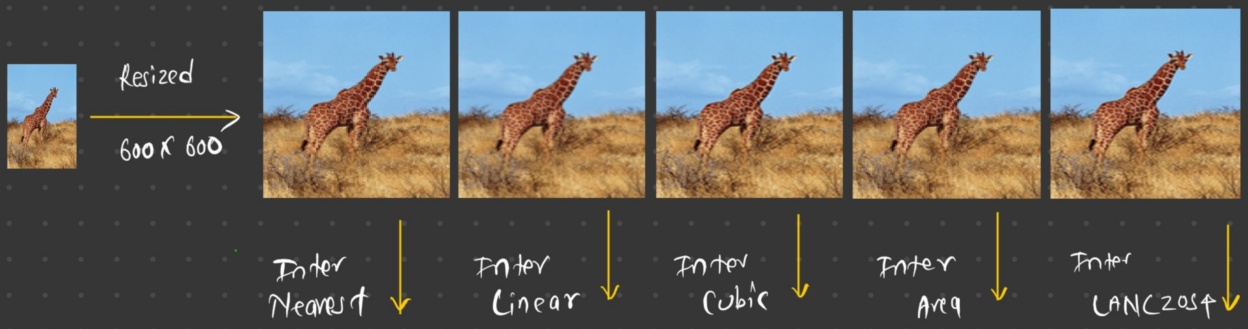
output Image – 4 x 4

cv2.INTER_LINEAR : Uses the average of the nearest four pixels to calculate the new pixel value.

cv2.INTER_CUBIC : Considers the nearest 16 pixels to calculate the new pixel value, providing smoother results.

cv2.INTER_AREA : Calculates the average pixel value in the area of the original image that maps to a single pixel in the resized image.

cv2.INTER_LANCZOS4 : Uses a mathematical formula (Lanczos kernel) to consider the nearest 8x8 pixel neighborhood for each pixel. Produces high-quality results but is computationally expensive.


Resized
600 x 600
Inter Nearest
Inter Linear
Inter Cubic
Inter Area
Inter LANCZOS4