Image Interpolation & Superresolution (I)

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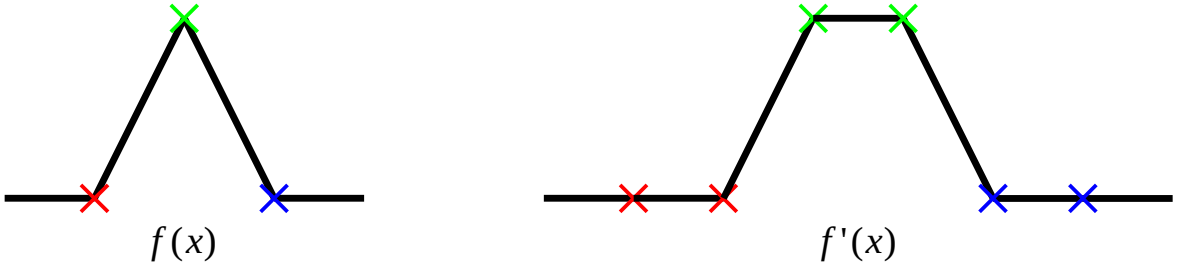
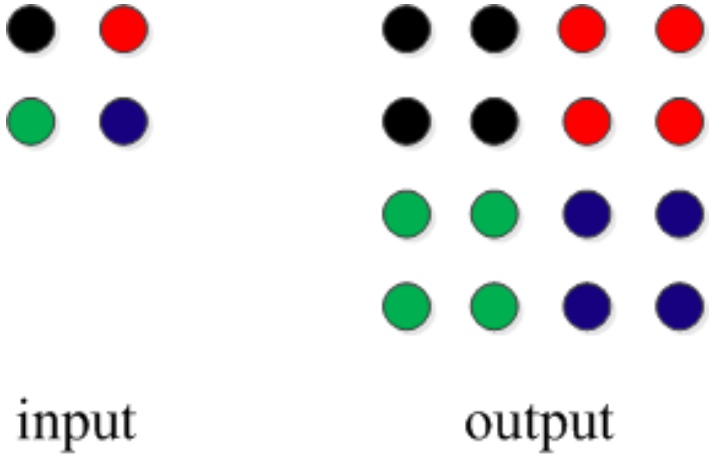
Pixel Replication

- To increase the number of pixels in an image, but without adding any data or detail.
- 1D signal



- 2D image



Interpolated Results (I)

Input image 256×256

Output high-resolution image 512×512

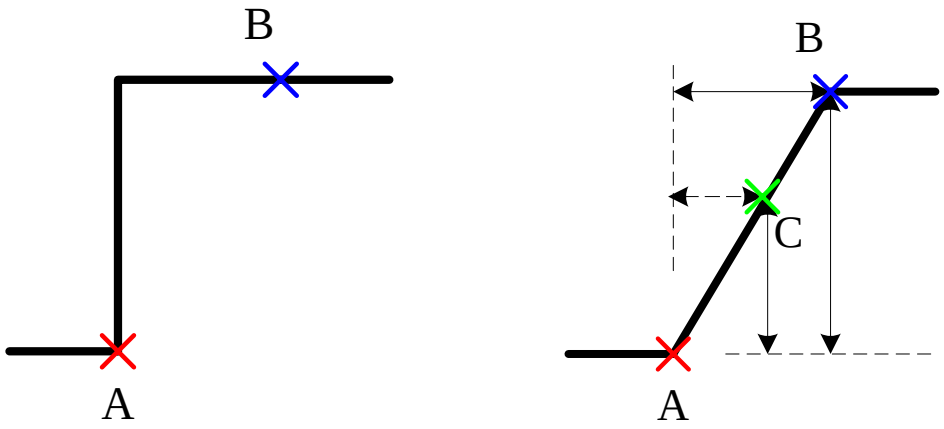
Interpolated Results (II)

Input image 256×256

Output high-resolution image 512×512

Bilinear Interpolation

- To use distance-weighted average of the some nearest pixel values to estimate a new pixel value.



The interpolated value at C is

$$f(x_0 + d) = \frac{f(x_1) - f(x_0)}{x_1 - x_0} \cdot d + f(x_0)$$

Interpolated Results (I)

Input image 256×256

Output high-resolution image 512×512

Interpolated Results (II)

Input image 256×256

Output high-resolution image 512×512

Thank You!

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