Unsharp Mask Sharpening

Description

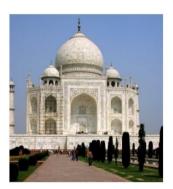In this project, we will apply unsharp mask sharpening techniques to improve the sharpness of images.

Figure 1 Sharpen filter effect. Left: original. Right: sharpened

The procedure of unsharp mask sharpening will be 1) Blur the image using Gaussian Blur with 'radius'/ ('sigma '+'kernel size') and 'threshold' settings. 2) Subtract the value of original image by the value of blurred image to get the difference. 3) Multiply the difference according to 'amount' setting. 4) Add the multiplied difference back to the original image to increase image sharpness.

Functionalities

• An additional 'Unsharp Mask Sharpening' tab will be added in the interface.

• A select box for choosing gaussian blur mode.

  Default mode: A slider to set the radius (1-16) - how many pixels on either side of an edge will be affected by sharpening.

  Customized mode: A slider to set the sigma (0.1-10) and kernel size (3-33)

• A slider to set the amount (0-300) - strength of sharpening

• A slider to set the threshold (0-255) - minimum difference in pixel values that indicates an edge where sharpen will be applied.