Assignment 2

1- Explain how the equation given above increases the contrast of images.

Answer:

The expression I – Opening(I,B) gives us the bright features in the image and the expression Closing(I,B) – I gives the dark features in the image, So when we add the bright features to the image and subtract the dark features as shown in the equation we brighten the bright areas and darken the dark ones which means the contrast is increased.

2- Comment on the effect of increase the structuring element size on the output image.

Answer:

In this particular case, there is a loss of details when the structuring element increased, but that might not always be the case.

3- Comment on the effect of increasing or decreasing a and b on the output image.

Answer:

The values a and b act like weights, when a increases that means the bright features added to the image will have more brightening effect, as for when b increases it will have more of a darkening effect on the image and vice versa. So it is better to make a and b be equal, so that the increase in contrast effect appears without any favouring to either the brightening or darkening effects.

4-Suggest an expression that could decrease the contrast using morphological operators.

Answer:

If we reverse the expression by making it:

Output = I – a\*(I-Open(I,B)) + b \* (Close(I,B)-I)

that will increase the dark features and decrease bright ones, as the original expression it is better to let a and b be equal.