Report

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1. Bilateral Filtering:

Bilateral filter weight is a multiplication of range and spatial weights. And the bilateral filter is controlled by two parameters: σs and σr, which represent spatial parameter and range parameter respectively. We need to select appropriate value of range and spatial parameters. In my code, σs = 4, σr = 0.2. And the result as follows: (Figure 1-1: my face image; Figure 1-2: a color image of the french fries in front of the CISE building; Figure 1-3: a color image of the UF century tower building.)
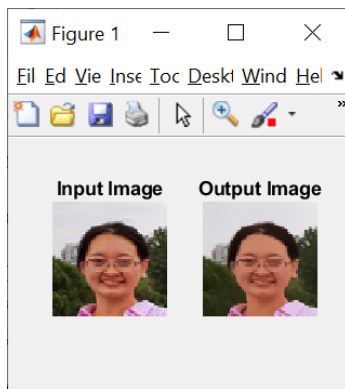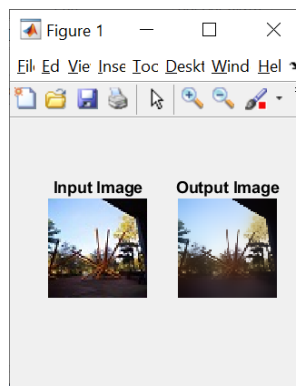

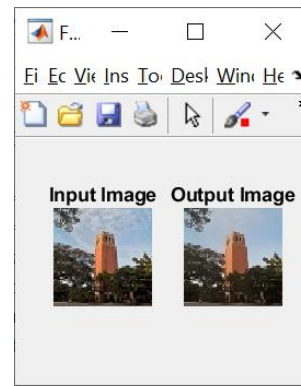Figure 1-1   Figure 1-2   Figure 1-3

2. Halloween Horror Show via Pyramid Blending:

For this problem, here is my procedure:

(a)Build Laplacian pyramid for both images: LA, LB

(b)Build Gaussian pyramid for mask: G

(c)Build a combined Laplacian pyramid: L(j) = G(j) LA(j) + (1-G(j)) LB(j)

(d)Collapse L to obtain the blended image

In procedure reduce, we create Gaussian pyramid to progressively blurred and subsampled versions of the images. In procedure expand, we create Laplacian pyramid to show the information added in Gaussian pyramid at each spatial scale.

The result as follows: (Figure 2-1: the original images (my palm, my face and the binary mask); Figure 2-2: three images showing the image of my palm from the high, mid and low levels of the Gaussian and Laplacian pyramids in two rows; Figure 2-3: three images showing the image of my face from the high, mid and low levels of the Gaussian and Laplacian pyramids in two rows; Figure 2-4: The blended image at the original resolution of the face and palm images.)
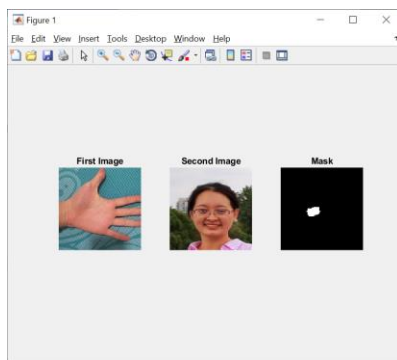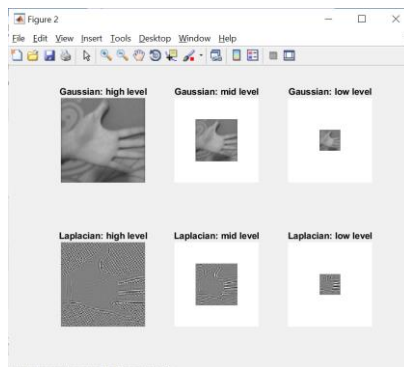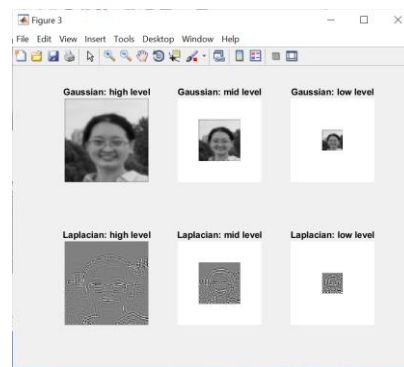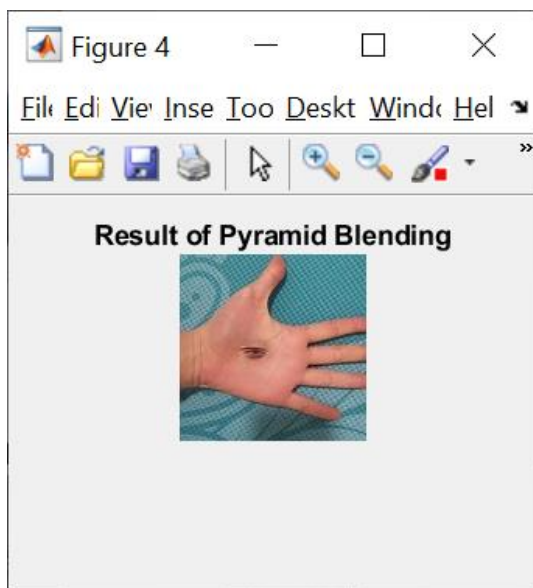
Figure 2-1

Figure 2-2

Figure 2-3

Figure 2-4