

Assignment 2

Question 1)

Part A:

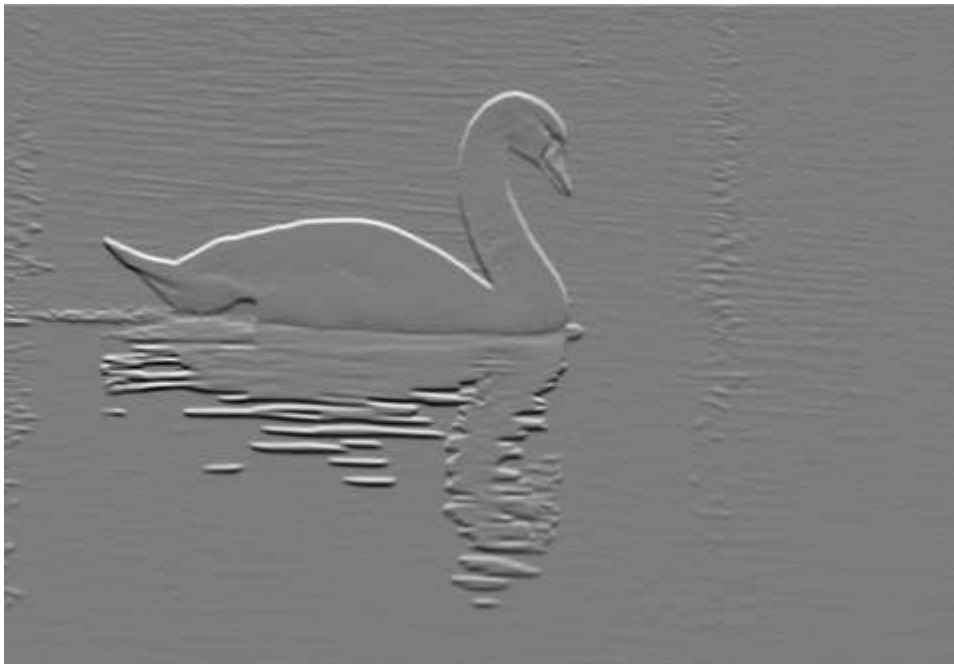
Code can be found in file **applyFilter.m**

Part B:

The sum of absolute values in the output image was: **7227422**

The filter F applied in this question is useful for edge detection of horizontal edges.

The image can be seen in image file **swanFiltered.png**



Filter $F = \begin{bmatrix} -1 & -3 & -1 \\ 0 & 0 & 0 \\ 1 & 3 & 1 \end{bmatrix}$

Question 2)

Part A:

Code can be found in file **computeEngGrad.m**

Part B:

The sum of all values was: **3.522015783010032e+06**

The image generated can be seen in image file **faceEngG.jpg**



Question 3)

Part A:

Code can be found in file **computeEngColor.m**

Part B:

The sum of all values was: **-58999407**

The image generated can be seen in image file **catEngC.png**



Question 4)

Part A:

Code can be found in file **computeEng.m**

Part B:

Code can be found in file **removeSeamV.m**

Part C:

Code can be found in file **addSeamV.m**

Part D:

Code can be found in file **seamV_DP.m**

Part E:

Code can be found in file **bestSeamV.m**

Part F:

Code can be found in file **reduceWidth.m**

Part G:

Code can be found in file **reduceHeight.m**

Part H:

Code can be found in file **increaseWidth.m**

Part I:

Code can be found in file **increaseHeight.m**

Part J:

Code can be found in file **intelligentResize.m**

Part K:

The total cost for resizing **cat.png** to **catResized.png** was: **-1.010948264155487e+06**



Becomes:



The total cost for resizing **faceMask.png** to **faceResized.png** was: **-4.025690526757637e+05**



My example first used $v = -80$ $h = -10$ $w = [1 \ 1 \ -3]$ and a zero mask.

For this example I attempted to remove the blue sided die in the original image (**dice2.png**) and generated image **diceResized.png**.

I set the energy values so that blue (from the blue die) was -3 and would be most likely part of every seam. To achieve this about 80 vertical seams were removed along with 10 horizontal seams. More vertical seams were used than horizontal seams because on a horizontal seam it likely pass through the red foreground dice more often than on a vertical.

Dice Image Cost: **-5.467999929636082e+06**



My second example used $v = 15$ $h = 0$ $w = [-3 \ 1 \ 1]$ and a zero mask.

For this example I attempted to remove a red hat from **dog.png** to and generated image **dogResized.png**.

I did a combo of vertical and horizontal seams here. This is because the hat was round so it made sense to try and remove it horizontally and vertically but there was more surface area in the vertical so more verticals were used. Red (R in RGB) was set to -3 in W to make the seam target that hat most frequently.

Couple image cost: **-4.108297707399441e+06**



Part L:
dogResized.png is submission

Question 5)

Part A:
Code attempt in file: **segmentGC.m**

Part B:
Not completed. Couldn't get code to work

Question 6 EXTRA CREDIT)
Did not attempt.

Question 7 EXTRA CREDIT)
Did not attempt.