CSC320: Assignment #2

Due on Monday, Februrary 23, 2015

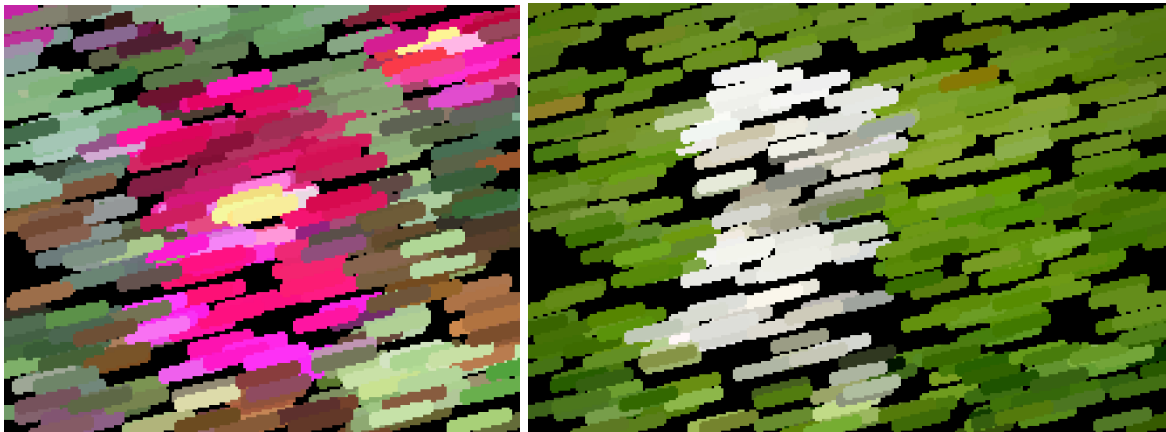**Ying Qi He**

February 23, 2015

Part 0

Purpose
The purpose of this assignment is to implement a basic system to produce a rendering of an input image in the style of a painting.

Images description
The image we was given is a photo of an orchid, and another image I chose is a photo of a dog.
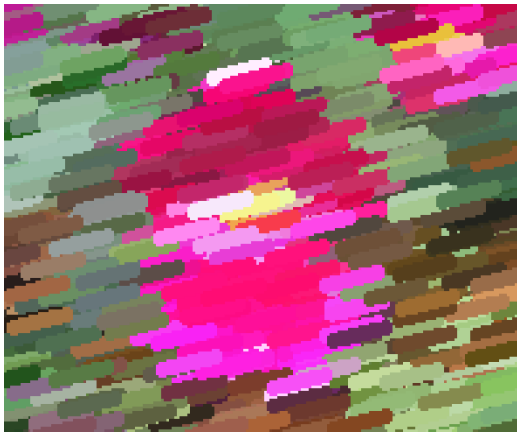

Running the handout code produces the result shown below:

Part 1

Fills out all pixels with random strokes:
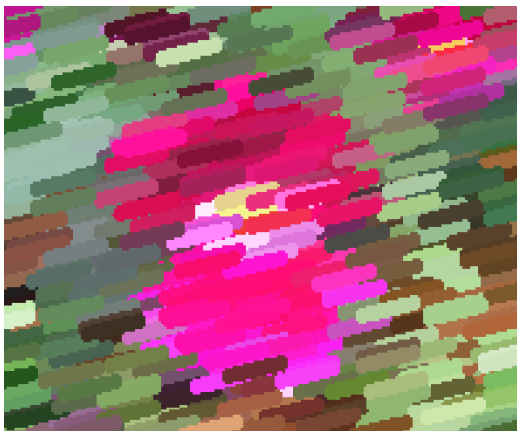

(a) with 3130 strokes

(b) with 4778 strokes

With random strokes, there are lots of repeated strokes.

Part 2

Replace the blind random sampling of center pixels by a more systematic sampling of unpainted pixels. Randomly select one of unpainted pixels as the center of the next paint stroke, and then paint the corresponding stroke on the canvas.

(a) with 494 strokes

(b) with 783 strokes

With a systematic sampling of unpainted pixels, large amount of repeated strokes is reduced.
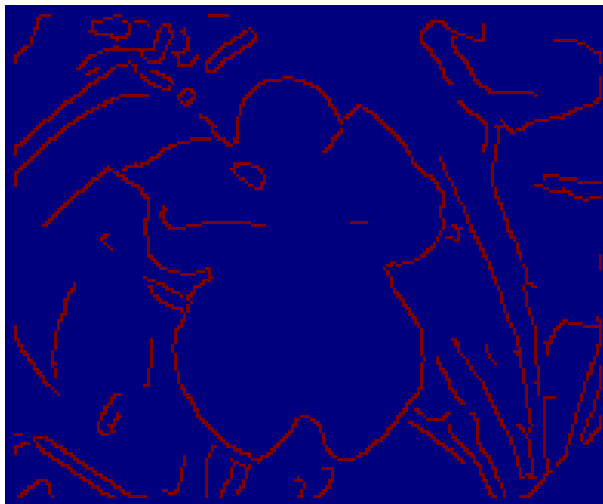
Part 3

Computes a Canny edgel image:

Figure 3: used the single red channal

Figure 4: used the grayscale image

Both image is commputed with parameters: $\sigma = 2$, thresHigh $= 30$, thresLow $= 15$

Part 4

Given the binary image marking the locations of Canny edgels, use this image to clip painted strokes.

Figure 5: rad = 3
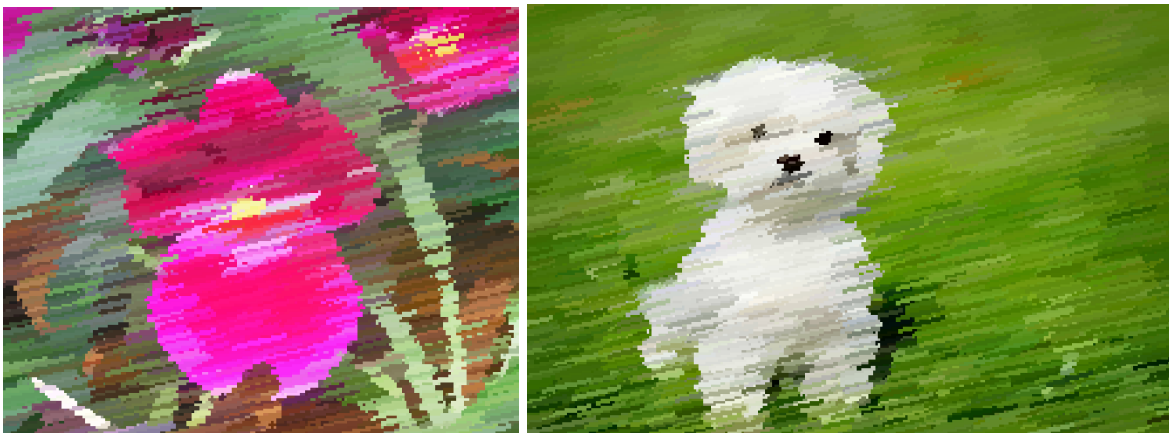

Figure 6: rad = 1

Part 5

Set the orientation of each stroke to be normal to the gradient of image intensity at the initial pixel of the stroke. Makes the strokes tobe roughly aligned with the edge orientation, and with contours of constant intensity
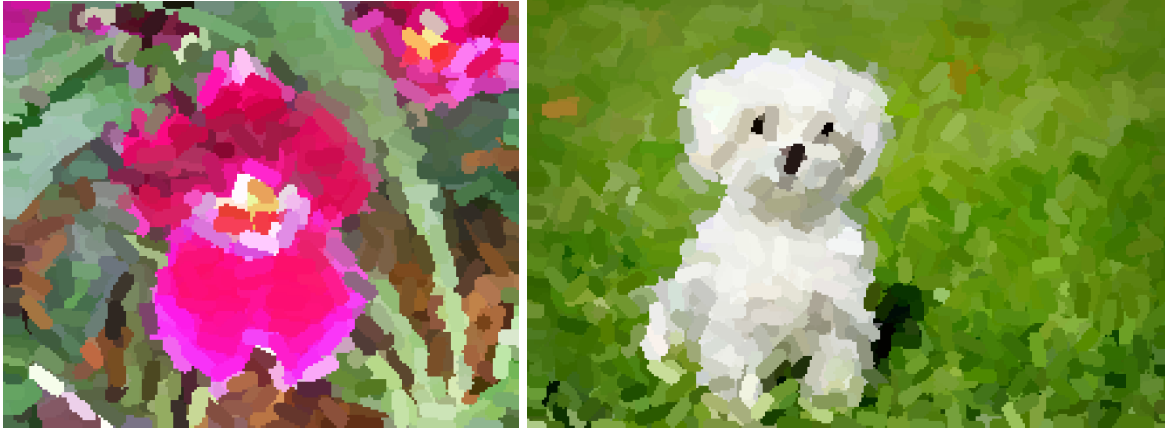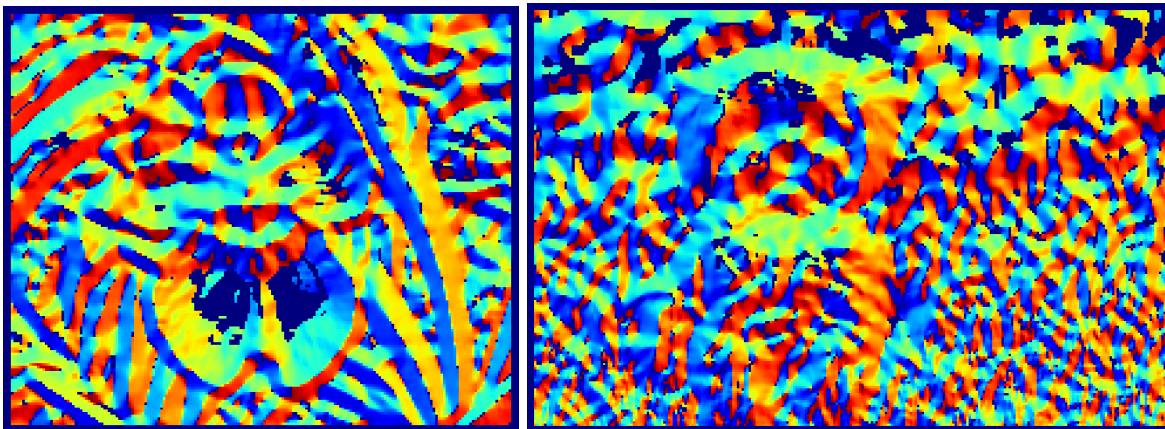

Figure 7: resulting output

Figure 8: visualization of the theta array (before adding $\pi/2$ to it)

Both angle map is commputed with grayscale and parameters as: $\sigma = 4$, thresHigh $= 5$, thresLow $= 1.5$

Part 6

Add random variations to both the colour and the stroke orientation.
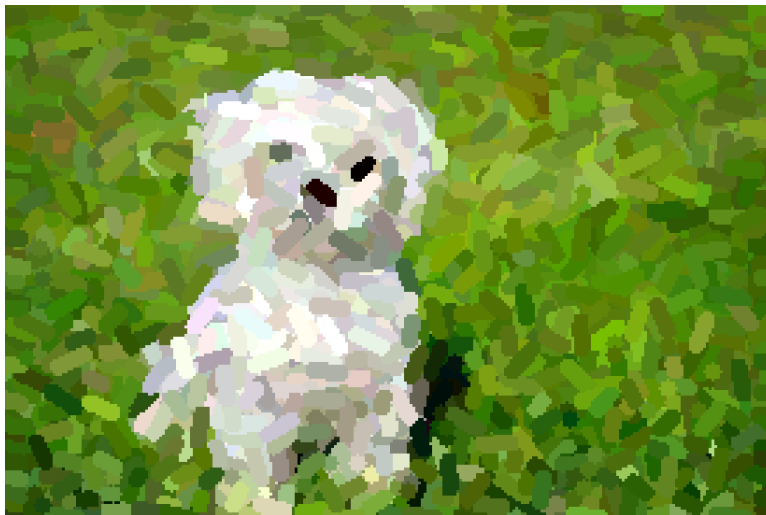

Figure 9: resulting orchid.jpg

Figure 10: resulting dog.jpg

Both image is commputed with parameters: $\sigma = 2$, thresHigh = 30, thresLow = 15