HOME WORK -1

- **Q1.0**

Filters are created with increasing kernel size and sigma values. The top most row images are from the Gaussian Filter and with increase in kernel size[filter matrix] and sigma value the smoothing of image will increase and there will be less chance of getting sharp edges.

2nd row is the Laplacian of gaussian filter, which is rotationally symmetric.

3rd row after applying gaussian filter again taking convolution across x-axis 1-D filter. It will precisely detect changes in images in x direction. This is kind of sharpening filter.

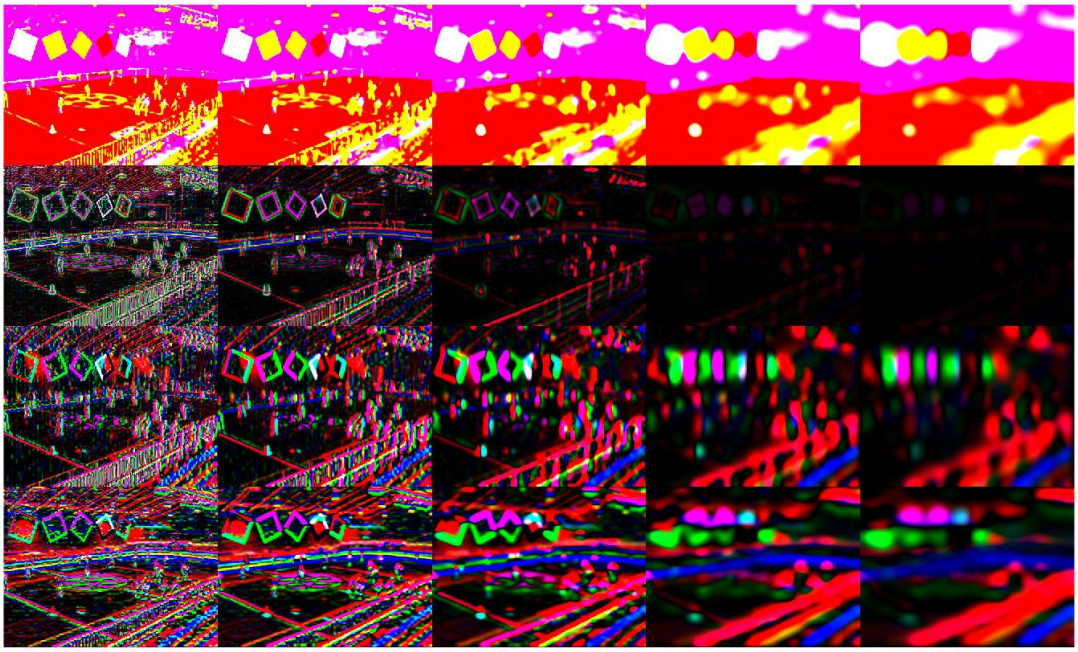
And 4th row is 1-D filtering along y-Axis of the gaussian filter. I will accurately preserve the changes in image in y-direction. This is kind of sharpening filter.

- **Q1.1**

  To handles image padding along the edges I am using reflect across the edge technique.
  imfilter(imgL, filterBank{i},'symmetric');

  Below is collage of image: ../data/**ice_skating**/sun_advbapyfkehgemjf.jpg

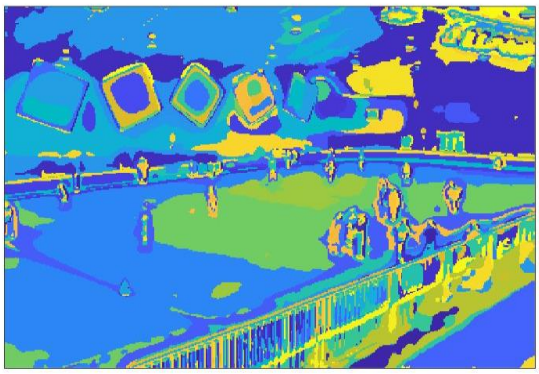
  Note: Code of this is in file collageImage.m in code directory.

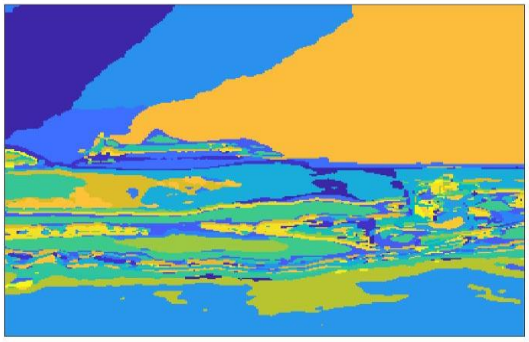


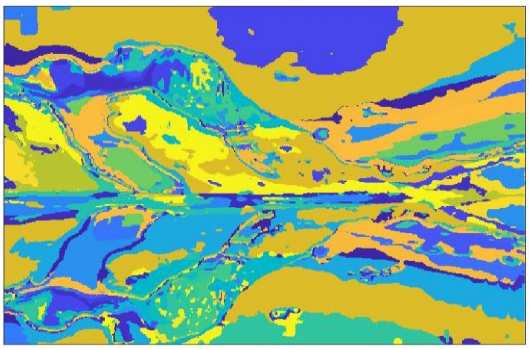
- **Q1.3**

I have chosen images from three difference categories:

/data/ice_skating/sun_advbapyfkehgemjf.jpg
/data/ocean/sun_aoudjmafzqzmgesx.jpg
/data/mountain/sun_ahmajnuemkwwrubr.jpg







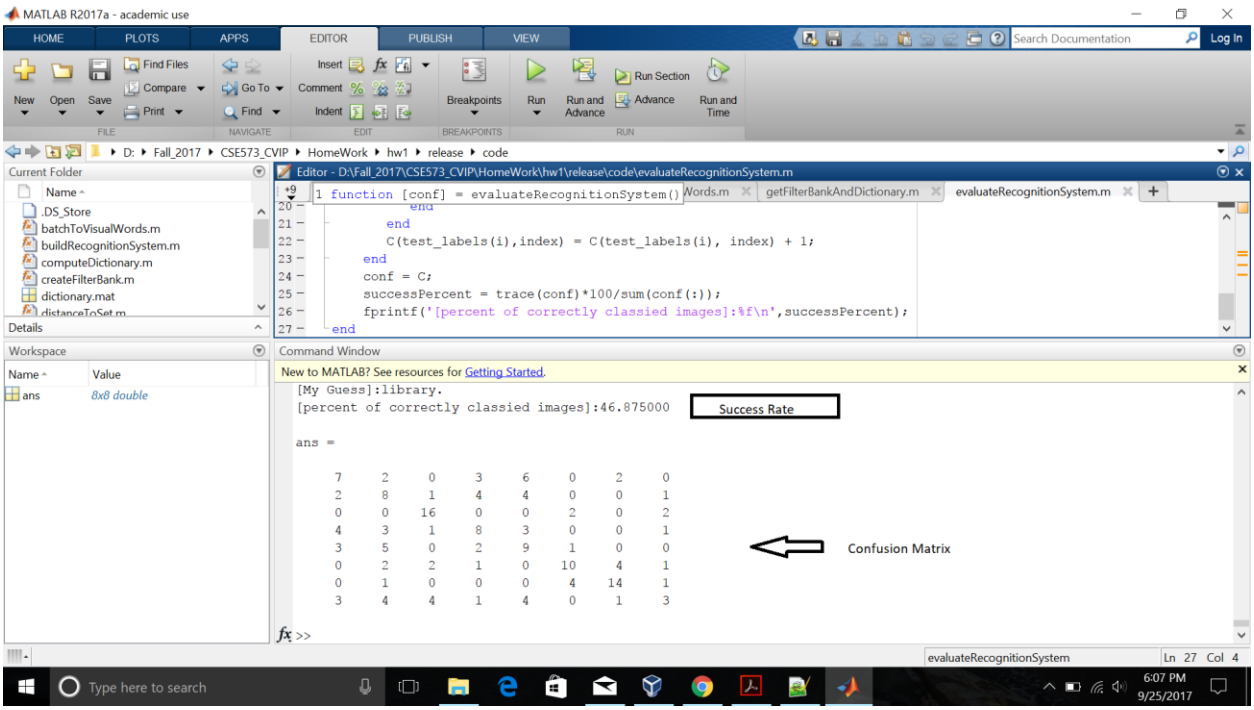
- **Q 2.5**

The confusion matrix and success rate with **alpha = 100 and K = 150**

[percent of correctly classied images]:**46.875000**

Matrix =

7	2	0	3	6	0	2	0
2	8	1	4	4	0	0	1
0	0	16	0	0	2	0	2
4	3	1	8	3	0	0	1
3	5	0	2	9	1	0	0
0	2	2	1	0	10	4	1
0	1	0	0	0	4	14	1
3	4	4	1	4	0	1	3



- **Q 2.6**

  In my result set correct recognition for images are as follow:

Art Gallery	Computer Room	Garden	Ice Skating	Library	Mountain	Ocean	Tennis Court
7	8	16	8	9	10	14	3

  So classes like Art Gallery and Tennis court are difficult to classify.

  I have taken alpha 100 and K to 150, Performance would have been more positive if my values of alpha and K would have been more but that requires lot of computation so bag of word models face scalability challenges.

  It faces difficulty in recognizing view point invariance and scale invariance. Like in case of Tennis court most part of a image is kind of same.

Read Me:

- Code for Q1.1 is in collageImage.m file
- Code for Q1.3 is in testVisualWord.m [For visualizing three visual words]