ELEC 408

HW#1

KAĞAN CENAN

28462

IMAGE FILTERING and HYBRID IMAGES

Before this project, I didn't know a lot about Matlab. Firstly I tried to understand of concept of Matlab and how to use it.

When I opened the starter code of the homework there were 4 .m file in front of me. The first one was my_imfilter which let the programmer make a filtering process which have odd x and y values. As long as the filter sizes are odd the program should work. The second file was test_filtering file which let me check whether my_imfilter works or not. So when I finish my code I checked it in the .m file. The third one was hybrid image file which let me use in the following file to hybrid 2 image. And the last .m file which let me show my works to hybrid both of the classes.

Before starting to code my_imfilter , I tried to understand the concept of that. After the lecture which the teacher show us how to filter images manually , I couldn't get how to do this. Eventually I decided to do the following concept:

Firstly, I made my Padding code with starting zeros array and put the image on it, but I realised that there is already a 'paddarray' function which is already in matlab own function. So I reached the padded image which have 0 values in the border color channel. To reach how much I need to increase the size of image , I checked filtersizes - ½. It is tricky situation. For example if there is 9*9 array, there must be 4 and 4 space left and right side and bottom and top part. Because, for the corner side there must be a space the same size of filter.

Secondly, I flip the filter, because for convolution I need to 180degree flipped filter.

Thirtdly, I made for loops for 3d matrix and dot product for the filter and the the same size subimage which has the same center on the newpadarray. I calculated it on each pixel and sum them and I reached the output of the my_imfilter.

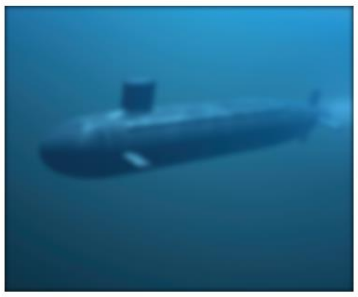
For running proj1.m I just added filters and images . It is already given in the code file. I just only did different: "image2 - my_imfilter(image2, filter)" for high pass filter.

As a result I reached the following images.:

Cut-off frequency = 7

Cut-off frequency = 3

Cutoff frequency = 7



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