**Project 3 – Part 5**

Restoring color images corrupted by Gaussian Noise and by Salt and Pepper Noise

In this part I learnt how to de-noise color images corrupted with Gaussian or Salt and Pepper noise. For problem 10, we applied default average and wiener filters to the 3 RGB channels separately. Basically, applying filters to an RGB image is same as applying to greyscale, except that we have to apply it to the 3 color channels separately. Gaussian filter is hard getting rid of without having blurring as a side effect. Wiener filter has been consistently better than an average filter. The wiener filter is an adaptive filter which uses local statistics and changes filter characteristics to act like a median or averaging filter depending on the pixels its dealing with. This makes it more flexible and hence performs better in cleaning noise in an image affected by gaussian noise compared to average or median filters.

Question 11 explores salt and pepper noise in the intensity domain of a color image converted to YIG. Again, salt and pepper noise can be removed by median filters by applying to the 3 RGB components separately or to the luminous component only if the luminous component is affected by salt and pepper noise. Depending on the intensity of the noise, a 3x3 or a 5x5 median filter is applied.

However, applying gaussian filter to the luminous/intensity dimension causes black and white noise on a colored image and can be effectively removed by applying a 5x5 (lets say) wiener filter on the luminous/intensity dimension.