DIGITAL IMAGE PROCESSING

ASSIGNMENT 2

Name : Anupama Rajkumar; **Student Id**: 415252

1. When should the median filter be applied to an image and when the moving average filters?

Ans: When image is affected by Gaussian noise, moving average filter performs better than median filter. On the other hand, if the image is affected by shot noise, median filter is better than moving average filter.

2. Explain your answer to question 1

Ans: Moving average filter: Moving average filter takes average of neighboring pixels and uses the value for denoising. A single pixel value with a very unrepresentative value can significantly affect the average of the pixel value. This causes the image to get blurry. Average filter is a low pass filter and reduces the spatial intensity present in an image

Median filter: Median filter is better at preserving edges than moving average filter. Since in median filter, the neighboring pixel values are sorted and median is calculated, and it allows high spatial frequency detail to pass

3. Is there a general better choice than the moving average filter?

Ans: Bilateral filtering is better choice than average filter

4. Explain your answer to question 3.

Ans: Bilateral filtering is better choice than average filter because bilateral filtering performs edge preserving smoothing. On the other hand bilateral filtering computes the weighted average of pixel values in the neighborhood, in which the weights decrease with the distance from the neighborhood center. Near pixels have similar values and it is appropriate to average them together