The capacity of the fourier transformation

Technology, Information Technology

The paper " The Capacity of the Fourier Transformation" is a wonderful example of an assignment on information technology. Exercise1: A: This experiment portrays a set of images 8 images) under filter width 1000 and noise value of 2. Image 3 and image 4 reflect high square wave and noise as seen in image 5 that reflects the high frequency of about 100 k. However, after applying filter breadth of 1000 and noise in image 7 some details got lost as seen in image 8 that has an irregular edge. The exercise finds that this filter is inappropriate since it led to the loss of important details.

B:

This set includes images (9-16) under a noise value of 5. 2 and filters breadth 1000. In comparing this experiment with experiment A, images (11 and 12) have high noise values than the images (3 and 4). This filtering removes some noise values and significant details in images 15 and 16 as seen in image 16 that has irregular edges. This filtering is unsuitable under high noise values since it leads to the loss of significant details.

Exercise 2:

A:

In this section, the images (21 to 24) portray their findings under the Noise – amp= 10. 7 and filter width 1. 0. Clearly, the filtered square wave image lacks details, reflects poor quality, undefined edge, and has noise. The rise in noise value and a decrease in filter breadth leads to images of poor quality and irregular edge due to the increased noise in the vertical and horizontal order.

B:

These images (24 to 27) portray their results under Noise – amp of 5 and

filter breadth value of 1. 0. At a noise value of 10. 7, image 25 has a better noise square wave and noise value than image 22. Image 27 has poor quality filtered square wave, high noise, irregular edge, and lacks details. However, under the same noise value, image 27 has a better quality of filtered square wave than image 24. Although the resultant noise under this filtering is better than the noise amplitude value, it delivers poor quality of the image.

C:

These images (25 to 30) portray their results under Noise – amp of 1 and filter breadth value of 10. 5. At a noise value of five, image 28 has a better noise square wave and noise value than image 25. Under these values, the filtered square wave of image 30 is better than that of image 27 although where it defines poor quality, some noise, and a clear edge. Clearly, under Noise – amp of one and filter width value of 10. 5, the filtered square wave image shows improvements in quality, edge, and noise while compared to filtering under high noise amplitude value and low filter breadth value.

D:

The images (32 to 34) portray their results under Noise – amp of 0 and filter width value of 1. 0. Under these conditions, image 32 has good quality noise square wave, good details, and lacks any noise. Additionally, image 34 has better quality filtered square wave that includes more details, no noise, and regular edge. Clearly, low values of noise amplitude and filter breadth lead to good image quality that includes clear edges and lack of noise in horizontal and vertical order.

Conclusion:

- The analysis portrays the capacity of the Fourier transformation to

influence the noisy image.

-The Fourier transformation has the potential to remove the noise in vertical and horizontal order leading to the production of images with good quality, more details, sharp edges, and no noise.

- Low values of filter breadth and noise amplitude are more appropriate than high values of filter width and noise amplitude.

- Low values of filter breadth and noise amplitude produce high images.