CS 663 Home Work Assignment 3

Trasula Umesh Karthikeya | Gnana Mahesh Vetcha | Kajjayam Varun Gupta
22b0913 | 22b0949 | 22b1030

Contents

1 Question 3

1.1 Actual Images

(a) Barbara image

(b) Kodak image

1.2 Images After adding guassian Noise with $\sigma = 5$

(a) Barbara image with gaussian noise of $\sigma = 5$

(b) kodak image with gaussian noise of $\sigma = 5$

1.3   Images After adding guassian Noise with $\sigma = 10$

(a) Barbara image with gaussian noise of $\sigma = 10$

(b) kodak image with gaussian noise of $\sigma = 10$

1.4   Mean Shift filtered images

1.4.1   Barbora

(a) $\sigma_s = 2, \sigma_r = 2, sigma = 5$

(b) $\sigma_s = 15, \sigma_r = 3, sigma = 5$

(c) $\sigma_s = 3, \sigma_r = 15, sigma = 5$

(a) $\sigma_s = 2, \sigma_r = 2, sigma = 10$ (b) $\sigma_s = 15, \sigma_r = 3, sigma = 10$ (c) $\sigma_s = 3, \sigma_r = 15, sigma = 10$

1.4.2 kodak

(a) $\sigma_s = 2, \sigma_r = 2, sigma = 5$ (b) $\sigma_s = 15, \sigma_r = 3, sigma = 5$ (c) $\sigma_s = 3, \sigma_r = 15, sigma = 5$

(a) $\sigma_s = 2, \sigma_r = 2, sigma = 10$ (b) $\sigma_s = 15, \sigma_r = 3, sigma = 10$ (c) $\sigma_s = 3, \sigma_r = 15, sigma = 10$

2 Comments

When we add Gaussian noise to the image the image will get blurred higher the σ of the noise more the blur in the image, To remove the Gaussian noise we are using mean shift filtering

In mean shift filtering two factors will combine to decide the extent of filtering, σ_s defines the size of the window of consideration if σ_s is low then we will only consider a small window so in the case when $\sigma_s = 2$ we can observe that there is a less change after applying mean shift filter as window size is less and when $\sigma_s = 3$ and $\sigma_r = 15$ we will consider significant window size and due to large σ_r almost all the intensities in that window with difference¡15 will become equal so image is becoming a type of deformed and in case of $\sigma_s = 15$ and $\sigma_r = 3$ we will consider large window and small σ_r Image is best looking in this case.