



NAME: YASIR FAHEEM

ID # 6991

BS COMPUTER SCIENCE

DIGITAL IMAGE PROSESSING

FINAL EXAM

DATE: 25/06/20

Q: NO: 1 (a)

What is Grey Level slicing?

Ans: _____

Grey Level slicing is equivalent to band pass filtering. It manipulates group of intensity levels in an image up to specific range by diminishing rest or by leaving them alone. This transformation is applicable in medical images and satellite images such as x-ray flaws, CT scan.

Two different approaches are adopted for grey level slicing without background:-

It display high values in specific region of an image and low value to other regions by ignoring background.

2) Gray level slicing with background. it display high values in specific region of an image and original grey level to other region by preserving background.

Q: NO: 1 (b)

~~a) what is gray~~

It is possible to get additional details in the Negative of picture.?

Ans: — No it is not possible to get additional details in the negative of the picture.

because the simple operation in image processing is to compute the negative an image. it can be reversing pixel values from black to white, and intensity of output image decrease as intensity of input image increase.

Q: NO: 2

Consider the picture.
What enhancement technique
might be applied to get
this output?

Ans:—

Enhancing this image with
histogram equalization,
contrast adjustment,
contrast adjustment, histogram
equalization, decorrelation stretching.

Contrast image adjustment remaps
the image intensity values to the
full display range of the
data type. An image with good
contrast has sharp difference
between black and white.

To illustrate, the image on
the left has poor contrast, with
intensity values to the middle

portion of the range. The image on the right has higher contrast, with intensity values that fill the entire intensity range. In the high contrast image highlights look brighter and shadows look darker.

Q: NO: 3

Find the following for the points P & Q given on grid

Ans: —

• Euclidean Distance: —

$$P = (6, 1)$$

$$Q = (3, 7)$$

Euclidean Distance between P and Q

$$D_e(P, Q) = [(x-s)^2 + (y-t)^2]^{1/2}$$

$$D_e = [(6-3)^2 + (1-7)^2]^{1/2}$$

$$= (9 + 36)^{1/2}$$

$$= (45)^{1/2}$$

$$= \sqrt{45}$$

• City Block Distance.

D_4 distance (city block distance)

$$D_4(P, Q) = |x-s| + |y-t|$$

$$= |6-3| + |1-7|$$

$$= |3| + |-6|$$

$$= 9$$

• Chessboard Distance (D_8)

$$D_8(p, q) = \max(|x-s|, |y-t|)$$

$$D_8 = \max(|6-3|, |1-7|)$$

$$= \max(|3|, |1-6|)$$

~~2-2-2-2~~

$$D_8 = 6$$

Q. NO: 4

(b)

Match each picture with its possible histogram.

Ans:-

i) Pic a matches Hgm 2.

Pic a: Hgm 2.

ii) Pic b matches Hgm 4

Pic b: Hgm 4

iii) Pic c matches Hgm 3

Pic c: Hgm 3

iv) Pic d matches Hgm 1

Pic d: Hgm 1

Q: NO: 4 (a)

a. What does a Histogram of an image shows? How it useful for processing an image?

Ans: -

Histogram of an image, like other histogram also shows frequency. But an image histogram shows frequency of pixel intensity values. In an image histogram the x axis shows the gray level intensities and the y axis shows the frequency of these intensities.

Histogram has many uses in image processing. The first is the analysis of the image we can predict about an image by just looking at its histogram.

The second use is for bitness purpose.