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Name : Taimoor Shah ID 13829

Digital Image Processing

Question 1:

a) What will be the size of a colored picture having resolution 1600×1200 with color depth of 8 bits.

Ans:

$$1600 \times 1200 = 1920000$$

color depth = 8-bit (256 Colours)

$$\text{Size} = \frac{1920000 \times 8}{1000000}$$

$$= 1.92 \text{ MB}$$

b) If the same image is converted to gray scale image, what will be size. if keep the same color depth.

Three Colours:

gray scale

red Blue green

$$\frac{1920000}{3} = 640000 = 640 \text{ K}$$

$$= 0.64$$

Ques: Page 2

Q) True Color System has 24-bit Colour depth. Why is it not a good idea to increase colour depth beyond that?

Ans: If we increase the colour depth the quality will remain same but increased because of the increasing detail etc. If the colour depth is 8 bit so size is 1.92 mb, 16 bits so the size is 5.84 mb, in the colour depth of 24 bits the image will be 5.7 mb.

Question 2

When removing noise from images, the pixels values that are distributed are fixed by replacing them with values calculated using the surrounding pixels. In the given pixel grid, the pixel P & Q are such distributed pixel.

(a) Find value of P , where $P = \text{Average}$
N&P

Ans: $98 + 75 + 93 + 86 + 84 + 88 + 89 + 93$
 $= 726$

$= \frac{726}{8} = 90.75$

average of N&P = 90.

$P = 90$

(b) Find value of Q , where $Q =$
Average of N&Q.

Ans: $81 + 79 + 80 + 7 + 69 = 316$

$\frac{316}{5} = 63.2$

Average of N&Q = 63.2

$Q = 63$

(c) Do you think that after the insertion of
calculated values, the pixel grid is in
its original form? Explain.

Ans: No, because the value of pixel P can be
anything from 0-255 but the calculated
value can be the closest to the original.

Question 3: Consider the Spatial resolution given state which resolution works best for?

Ans: QR Code: For QR Code the resolution that will work best is the Spatial resolution. because every QR Code on grocery product are 72×72 or 32×32 which can be easily scanned by an ordinary scanner.

(b) Find the dominant color of an image?

Ans: For finding the dominant color of an image we use image representation because the histogram of an image shows us the distribution of grey levels in the image, The highest contrast image has the most evenly spaced histogram which shows us the dominant color.

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© Find number of faces in picture.

For finding the number of faces in a picture we use Spatial resolution because the higher the resolution the picture will be more clearer and we can easily spot the number of faces in a picture.

Thank you.