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CS-06

DIGITAL IMAGE PROCESSING

MID TERM ASSIGNMENT

Question #1

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

Ans: $1600 \times 1200 = 1920000$

$$\begin{aligned} \text{color depth} &= 8\text{-bit (256 colors)} \\ \text{size} &= \frac{1920000 \times 1B}{1000000} = 1.92MB \end{aligned}$$

b) If the same image is ~~covered~~ converted to Grey Scale image, what will be the size if we keep the same color depth?

Ans: Three Colours:

grey ~~scale~~ scale
red blue green

$$\frac{1920000}{3} = 640000 = 6400kb = 0.64MB$$

(1)

c) True color system has 24-bit color depth why is it not a good idea to increase color depth beyond that?

Ans: If we increase the color depth the quality will remain same but the size of the image will be increased because of the increasing details etc. If the color depth is 8 bit so size is 1.92mb, 16 bits so the size is 3.84mb, in the colour depth of 24 bits the image will be 5.76mb

Question #2

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

a) Find value of P, where P = Average N8P.
Ans: $98 + 75 + 93 + 86 + 84 + 88 + 89 + 93 = 726$
 $726 \div 8 = 90.75$
average of N8P = 90,

P = 90 (2)

Question # 3

Consider the spatial resolutions given state which resolution works best for:

a) QR Code: For QR code the resolution that will work best is the spatial resolution because every QR code has a resolution e.g. QR code on grocery products are 72×72 or 52×52 which can be easily scanned by an ordinary scanner.

b) Finding 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 high contrast image has the most evenly spaced histogram which shows us the dominant color.

c) finding number of faces in picture.

Ans: 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.

Question # 2

b) find value of Q , where $Q =$ Average of N_8Q .

$$\text{Ans: } 81 + 79 + 80 + 7 + 69 = 316$$

$$316 \div 5 = 63.2$$

$$\text{average of } N_8Q = 63.2$$

$$Q = 63$$

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

(4)

Ans) No, because the value of π is fixed.
P can be anything from 0-255
But the calculated value can
be the closest to the original.

THE END