Digital Image Processing

CS - 06

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BS(CS)

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**Assignment #1**

Q.1. When finding the size of a picture, we have to find the total number of pixels and then check the size of each pixel. For colored images, the pixels store the value of each of Red, Green and Blue color. Keeping this in mind, answer the following:

1. What will be the size of a colored picture having resolution 1600 x 1200 and color depth of 8 bits?

ANSWER:

pixel size =1600x1200

Colour dept= 8 bits

Total no of pixel= 1600x1200

= 1920000 pixels

Total no of bits of data = 1920000x8bit

= 15360000 bits

= 15360000%8

File size in bits = 1920000 bytes

= 1920000%1024 = 1875 kilobytes

= 1875%1024 = 1.8 megabytes

SIZE OF COLOUR PICTURE=1.8MB

1. If the same image is converted to Grey Scale image, what will be the size if we keep the same color depth?

ANSWER:

Total pixel = 1600x1200

= 1920000 pixels

Here, samples at each pixel = 1

And 8 bit data take 1 byte per sample.

Storage required = 1600x1200x1x1

= 1920000 bytes

Q.2. True color system has 24-bit color depth. Why is it not a good idea to increase color depth beyond that?

ANSWER:

The colour space which the human eye perceive has its upper bound at 10 million colour. Any thing beyond that is not really distinguishable to the human eye.

The colour bit depth required per channel is 8 bit for a total of 24 bits .

And 2^24 = 16,777,216 variations.

That variation is much more than the 10 million color the human eye can distinguish but nonetheless the color appear much richer and more vibrant