INSTITUTE OF TECHNOLOGY OF CAMBODIA

DEPARTMENT OF INFORMATION AND COMMUNICATION ENGINEERING

I5-GIC (B)

Image Processing

Discussion05

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1. In order to calculate total size of a video per second, we have to know:

➢ Resolution of an image (R): Width x Height

➢ Number of frame per second (Nf): How many frames we need per second

➢ Number of bits (Nb): How many bits we need to use, e.g., 8 bits = 1 byte, 24 bits = 3 bytes.

▪ We can get a formula of total size of a video per second (Vs) by:

➢ Vs = R . Nf . Nb (bytes)

▪ If we want to calculate total size of a video per n second (Vns) by:

➢ Vns = R . Nf . Nb . n = Vs . n (bytes)

2. Give an example of calculating total size of a video in 80 minutes? You can choose your own values.

➢ Resolution of an image (R) is 640x480.

➢ Number of frame per second (Nf) is 30f/s.

➢ Number of bits (Nb) is 24 bits color.

▪First, we calculate total size of a video per second (Vs):

➢ Vs = R . Nf . Nb = 640x480x30x3 = 27648000 bytes

▪Then we calculate total size of a video in 1h30mn (Vns) by:

➢ n = 80mn = 80x60 = 4800 seconds

➢ Vns = R . Nf . Nb . n = Vs . n = 27648000x4800 = 132704.10^5 bytes

3. Explain the concept of lossless compression?

➢ Information source or input data: is a sequence of symbols from an alphabet.

➢ Encoder or compression: is a sequence of code words.

➢ Storage or network: is place to store encode data in local or network.

➢ Decoder or decompression: is a sequence of alphabet.

➢ Recovered data: is a sequence of symbols from an alphabet which is exactly the same as input data.

4. Entropy is the number of bits needed to encode a media source which is lower bounded. Example: P(A) = ½, P(B) = ¼ , P(C) = ¼

5. Find the entropy of the word "helloeverybodyblablabla"?

➢ H = 3.08 bit