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MCS–230

MASTER OF COMPUTER APPLICATIONS (MCA-NEW)

Term-End Examination

December, 2024

MCS–230 : DIGITAL IMAGE PROCESSING AND COMPUTER VISION

Time : 3 Hours *Maximum Marks : 100*

Note : *Question No.* ***1*** *is compulsory. Attempt any* ***three*** *questions from the rest.*

1. (a) Differentiate between direct and indirect imaging system. 5

   (b) The dimension of an image is 5×8 inches and the frequency is 500 dots per inch in each direction. Find the number of samples required to preserve the information in the image. 5

   (c) What are the *two* types of image enhancements ? Define them with the help of suitable examples. 5

(d) Compute the discrete cosine transform (DCT) matrix for order 2. 5

(e) Compare between the Continuous Wavelet Transform and Discrete Wavelet Transform. 5

(f) In a RGB image, the R and B components are at mid and the G component is at 1, then which colour would be seen by a person ? 5

(g) What are the basic properties of Linear Discrimination Function ? 5

(h) What are different distance measures used for clustering ? Explain with suitable examples. 5

2. (a) For a sample mobile phone with height and width resolution as 1080×1920 pixels, and the diagonal size of 5.0 inches, calculate pixel density in pixel per inch. 10

(b) What is meant by Laplacian filter ? Using the second derivative, develop a Laplacian mask for image sharpening. 10

3. (a) What is the role of Histogram equalization in image enhancement ? Why this technique yields a flat histogram ? 10

   (b) Discuss the applications of low pass filters. 10

4. (a) Explain the types of noises based on its probability distribution. 10

   (b) Consider the coordinates of warm white (0.45, 0.4) and coordinates of deep blue (0.15, 0.2). Find the percentage of the three colours Red (R), Green (G) and Blue (B) using the information given above. 10

5. (a) Explain single link and complete link clustering with the help of a suitable example. 10

   (b) Explain Frogy's algorithm of clustering with the help of a suitable example. 10

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