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Reg. No. : | | | | | | | | | | |

Question Paper Code: 97403

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Seventh Semester

Electronics and Communication Engineering

19UEC703- Image Processing & Machine Learning

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Which surface best obeys the laws of reflection? CO1- U

   (a) Specular Surface (b) Lambertian Surface (c) Normal surface (d) All of the above.

2. A grey level image pixel is represented by _____bit. CO1- U

   (a) One (b) Two (c) Four (d) Eight

3 Canny edge detection algorithm is based on, CO1- U

   (a) Ideal model (b) step edge (c) real model (d) smoothing model

4. For the total number of 1650 test patterns, only the 65 are correctly recognized test patterns, calculate the accuracy rate. CO2- App

   (a) 38.25 (b) 25.38 (c) 46.38 (d) 38.46

5. _____methods are used to group data samples into different classes CO3- U

   (a) Clustering (b) Segmentation (c) Classification (d) Pattern recognition

PART – B (5 x 3= 15 Marks)

6. Differentiate computer vision and computer graphics CO1- U
7. State the concept of image transform. CO1- U
8. What is segmentation? CO1- U
9. Write short notes on Recurrent network. CO1- U
10. Draw a decision tree to implement one simple real time example. CO1- U

PART – C (5 x 16= 80Marks)

11.	(a)	Illustrate the concept of radiometry using thin lens.	CO1- U	(16)
		Or		
	(b)	Derive the expression for the image formation process in various projections.	CO1- U	(8)
12.	(a)	Obtain the Discrete Fourier Transform for the given vectors Input image matrix=[0 0 ;255 255] [2 x 2] matrix. Also analyze how the Fourier transform is used if the image is rotated or translated.	CO2- App	(16)
		Or		
	(b)	Apply contrast stretching to improve the dynamic range of the given image	CO2- App	(16)

3	7	8	2
2	4	3	5
5	0	2	1
4	3	2	1

13.	(a)	What do you understand by dilation and erosion in morphological operation? Explain in detail.	CO1- U	(16)
		Or		
	(b)	Explain in detail how an image is segmented using region splitting and merging algorithm and how the segmented object is represented by chain codes.	CO1- U	(16)
14.	(a)	Explain the various steps in pattern recognition.	CO1- U	(16)
		Or		
	(b)	Explain in details about the different types of classifier.	CO1- U	(16)
15.	(a)	Describe the Major challenges in medical image segmentation	CO1- U	(16)
		Or		
	(b)	Explain in detail about Supervised clustering.	CO1- U	(16)