

17/12/2015

BE Sem VII - Elex - CBGS - DIP

QP Code : 6142

(3 Hours)

[Total marks : 80]

- N.B.
- (1) Question No. 1 is compulsory.
 - (2) Attempt any three questions from remaining.
 - (3) All questions carry equal marks.
 - (3) Assume suitable data wherever necessary.

Q.1	Answer any four of the following :-																			
	a) Explain the fundamental steps in an Image Processing System.	(5)																		
	b) State the properties of Discrete Cosine Transform.	(5)																		
	c) Differentiate between spatial and tonal resolutions.	(5)																		
	d) Justify " It is difficult to segment poorly illuminated images. "	(5)																		
	e) Justify " Butterworth lowpass filter is preferred to ideal lowpass filter.	(5)																		
Q.2	a) Perform Histogram Equalization on Gray level distribution shown in the table. Draw the histograms of the original and equalized images.	(10)																		
	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Gray Levels</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>No. of Pixels</td> <td>100</td> <td>250</td> <td>100</td> <td>300</td> <td>150</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>	Gray Levels	0	1	2	3	4	5	6	7	No. of Pixels	100	250	100	300	150	0	0	0	
Gray Levels	0	1	2	3	4	5	6	7												
No. of Pixels	100	250	100	300	150	0	0	0												
	b) Discuss advantages of homomorphic filtering. Also explain the steps of homomorphic filtering with the help of a neat block diagram.	(10)																		
Q.3	a) Define segmentation. State different methods based on similarity. Explain any one method with example.	(10)																		
	b) Using Hough's Transform, find line passing through the maximum number of points given below:- (3,4), (0,-4), (1,4), (6,12), (4,1), (1.5,0), (-2,2), (-1,-3), (3,-2)	(10)																		
Q.4	a) Consider an 8 pixel line of Gray scale data {10,11,15,13,15,57,54,51} which has been uniformly quantized with 6 bit accuracy. Construct its 3 bit IGS code. Compute rms error for the decoded IGS code.	(10)																		
	b) Draw and Explain block diagram of JPEG Encoder and Decoder.	(10)																		
Q.5	a) Apply FFT algorithms to the rows and columns of image segments shown and obtain 2D DFT. Show the Butterfly diagrams.	(12)																		
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1	3	2	3																	
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	b) What is Hadamard Transform? Calculate Hadamard Transform of following image.	(08)																		
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Q.6	Write short notes on any three of the following:-	(20)																		
	a) DWT																			
	b) Region Filling																			
	c) Vector Quantization																			
	d) Opening and Closing operations on binary image																			

MD-Con. 11730-15.