

Code No: C9302

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I - Semester Examinations, March/April 2011

IMAGE AND VIDEO PROCESSING  
(SYSTEMS AND SIGNAL PROCESSING)

Time: 3hours

Max. Marks: 60

Answer any five questions  
All questions carry equal marks

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1. a) With the help of detailed block diagram explain the steps involved in digital image processing.  
b) Consider the two image subsets S1, S2 shown below

0	0 0 0 0	0 0 1 1	0
1	0 0 1 0	0 1 0 0	1
1	0 0 1 0	1 1 0 0	0
0	0 1 1 1	0 0 0 0	0
0			1
	0 1 1 1	0 0 1 1	

- For  $v = \{1\}$ , determine whether S1, S2 are 4-connected / 8-connected / m-connected. [12]
2. a) Discuss different discrete wavelet transform techniques.  
b) With suitable example explain the spatial smoothing filtering. [12]
3. a) Explain about the histogram equalization process and derive mathematically.  
b) Write about the selective filtering process. [12]
4. a) Explain the edge linking using 'Linear Hough transform'.  
b) How segmentation is carried out using thresholding? Explain. [12]
5. a) List out and explain various redundancies available in digital image and their role in image compression.  
b) Discuss about bit plane coding with a suitable example. [12]
6. a) Write about various video formation models.  
b) Explain the sampling process of video signals. [12]
7. a) Compare and contrast various motion estimation methods.  
b) Explain the process of region based motion estimation. [12]
8. a) List out the merits and demerits of video compression techniques.  
b) Discuss the method of prediction coding for video signal. [12]

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