15/05/2024

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

May-June 2024
(B.Tech) Program: Electronics & Telecommunication Engineering
Regular/Examination: TY/ Semester: VI
Course Code:EXC603 Course Name: Image Processing and Machine Vision
Duration: 2.5 Hours Max. Marks: 60

Instructions:
(1)All questions are compulsory.
(2)Draw neat diagrams wherever applicable.
(3)Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	Solve any six questions out of eight:	12		
i)	Explain image resolution. Mention different types.	2	1	U
ii)	Apply thresholding on the given image when T=3 2 0 3 4 7 3 4 5 6 1 2 3 5 2 0 1	2	2	Ap
iii)	The equalized histogram of an image is not perfectly uniform. State whether the statement is true or false and justify your answer	2	2	U
iv)	What are regional descriptors? List them.	2	5	U
v)	What is Hit & Miss transform, Mention its use.	2	3	U
vi)	What are mean filers? List the mean filters used for image restoration	2	4	U
vii)	What is LOG filter? Mention its advantage	2	4	U
viii)	What is unsupervised classification? Mention its application.	2	6	U
Q.2	Solve any four questions out of six.	16		
i)	Explain the concept of sampling and quantization in digital image processing	4	1	U
ii)	Apply averaging filter on the given image assuming zero padding 1 2 3 2 4 2 5 1 1 2 6 3 2 4 6 7	4	2	Ap
iii)	Explain Hit – Miss transform with an example	4	3	Ap

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iv)	With a neat block diagram, explain the image restoration model.	4	4	U
v)	Compare supervised and unsupervised classification with an example. Explain their advantages and disadvantages	4	6	U
vi)	Discuss the Fourier descriptor with an example	4	5	Ap
Q.3	Solve any two questions out of three	16		
i)	Explain the connectivity, adjacency and distance measures between the neighborhood of pixels	8	1	U
ii)	Perform opening and closing on the following image using the structuring element 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 1 1 1 (origin)	8	3	Ap
iii)	What is knowledge representation? Explain different types.	8	6	U
Q.4	Solve any two questions out of three.	16		
i)	Explain all the three methods of boundary description using minimum perimeter polygon technique.	8	5	U
ii)	Explain the different methods of estimating degrading function for image restoration	8	4	U
iii)	For the following image find the i) Gray level slicing with and without back ground r1=2 and r2=5 ii) Contrast stretching when r1==3. R2=5, s1=2, s2=6 4 3 2 1 3 1 2 4 5 1 6 2 2 3 5 6	8	2	Ap

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