



CBCS SCHEME

16/17ECS422

Fourth Semester M.Tech. Degree Examination, June/July 2019 Advances in Image Processing

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain the concept of sampling and quantization in image processing with example. What are the different parameter which will decide the number of storage bits of the image desecrate domain. (08 Marks)
- b. Discuss the principles of various visual perception of the image. (08 Marks)

OR

- 2 a. Define Euclidean distance, city block distance and chessboard distance. (06 Marks)
- b. With the chromaticity diagram, explain the projection of x, y, z colour space into a plane. (06 Marks)
- c. Let p and q are two pixels at coordinate (100, 120) and (130, 160) respectively. Compute:
- i) Euclidean distance
 - ii) Chessboard distance. (04 Marks)

Module-2

- 3 a. With the relevant expression, explain how to determine pixel coordinates using bilinear and affine transformation.
- b. Explain the following with an example : (07 Marks)
- i) Nearest neighborhood interpolation
 - ii) Averaging using a rotating mask
 - iii) Median filtering. (09 Marks)

OR

- 4 a. What are three criteria for optimality of the detector in the canny edge detection? Write an algorithm for canny edge defection. (09 Marks)
- b. With the help of sketches, explain the brightness interpolation. (07 Marks)

Module-3

- 5 a. Write an algorithm of non-maximal suppression directional edge data using a sketch hysteresis approach. (06 Marks)
- b. Explain region merging and region spitting. (10 Marks)

OR

- 6 a. Describe edge relaxation in image segmentation. (08 Marks)
- b. With an example of circle detection, explain the concept of though transform. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, $42+8=50$, will be treated as malpractice.

Module-4

- 7 a. Explain the basic concept of labeling in region identification using the sketches of marks and object identification. (08 Marks)
b. What are boundary length, curvature and bending energy in a simple geometric border representation? (08 Marks)

OR

- 8 a. Explain Area, Euler's number and projection in scalar region descriptors. (10 Marks)
b. What are the advantages of graphical representation of region in region based shape representation. (06 Marks)

Module-5

- 9 a. With sketch and examples, illustrate binary dilation and erosion in complex morphological operations. (08 Marks)
b. What are the morphological principles and explain them. (08 Marks)

OR

- 10 a. Define sequential thinking and sequential thinking. Explain the methods sequential thinking structuring element L and structuring element E. (10 Marks)
b. Explain homotopic transformation. (06 Marks)

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