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16EVE/EIE/ELD/ECS422

Fourth Semester M.Tech. Degree Examination, June/July 2018
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. Define adjacency, Euclidean Distance and 4-neighbor. **(06 Marks)**
   b. Explain Image sampling. Obtain the convolution expression for a sampled image in discrete co-ordinates. **(10 Marks)**

OR

2. a. Explain Euler – Poincare characteristic and convex hull. **(06 Marks)**
   b. Explain chamfering algorithm to chamfer a subset S of an image of dimension M×N with respect to a distance metric D. **(10 Marks)**

Module-2

3. a. Explain Gray-scale transformation using brightness thresholding and Histogram Equalization. **(10 Marks)**
   b. Write a note on local preprocessing. **(06 Marks)**

OR

4. a. Explain Geometric transformation using pixel c-ordinate transformations. **(08 Marks)**
   b. With the help of sketches, explain the brightness Interpolation. **(08 Marks)**

Module-3

5. a. Explain thresholding in hierarchical data structures. **(06 Marks)**
   b. Describe edge image thresholding and edge relaxation in image segmentation. **(10 Marks)**

OR

6. a. Explain Region merging and Region splitting. **(10 Marks)**
   b. Write a note on : Watershed segmentation. **(06 Marks)**

Module-4

7. a. Explain Freeman's chain code. **(06 Marks)**
   b. Explain Boundary length, curvature, Bending Energy and signature in shape representation. **(10 Marks)**

OR

8. a. Explain B-spline representation. **(08 Marks)**
   b. Explain Area, Euler's number and Eccentricity. **(08 Marks)**

Module-5

9. a. Explain Basic morphological concepts. **(08 Marks)**
   b. What are the morphological principles, and explain it. **(08 Marks)**

OR

10. a. Explain homotopic transformations. **(06 Marks)**
    b. Explain particles segmentation, marking and watersheds. **(10 Marks)**