

Code :R7420502

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IV B.Tech II Semester(R07) Regular Examinations, April 2011

IMAGE PROCESSING

(Computer Science & Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. With the block diagram explain different steps involved in image processing.
2. (a) Explain following image enhancement techniques.
 - (i) Contrast stretching
 - (ii) Bit plane slicing.(b) Discuss the following spatial filtering techniques.
 - (i) High pass filtering
 - (ii) High boost filtering
3. (a) Discuss the algebraic approach of constrained restoration.
(b) Explain the concept of inverse filtering and what the limitations of it.
4. Discuss in detail the concept of Full-color image processing.
5. (a) How image redundancies can be eliminated.
(b) Explain the need for channel encoder and decoder.
6. Explain the concepts of Dilation and Erosion with the help of examples.
7. (a) What are the applications of image segmentation.
(b) Explain about edge detection.
8. Explain about:
 - (a) Patterns
 - (b) Pattern classes

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1. (a) Explain image formation model.
(b) Explain the fundamentals steps involved in digital image processing.
2. (a) Define grey level transformation.
(b) Discuss image smoothing and sharpening techniques.
3. (a) Distinguish image enhancement & Restoration.
(b) State and prove following properties of 2D DFT
 - (i) Rotation
 - (ii) Frequency translation
4. (a) Different Pseudo-color image processing and full color image processing
(b) What is the need for color model conversion.
5. (a) What is the need for image compression.
(b) Discuss the transform domain compression with the help of block diagram.
6. Discuss the concepts of opening and closing operations using illustrations.
7. (a) Explain the concept of edge linking and boundary detection.
(b) Explain the different thresholding operations used in image segmentation.
8. Explain about image recognition using decision theoretic methods.

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1. (a) What is non uniform sampling and how it is different from uniform sampling?
(b) Explain basic relationships between pixels.
2. (a) Discuss about image enhancement using histogram processing
(b) Sketch and explain histogram of Dark image, Bright image, Low contrast image and High contrast image.
3. (a) Explain the need for image restoration.
(b) Explain about Wiener filtering.
(c) State and prove conjugate symmetry property of 2D DFT.
4. Discuss in detail about color fundamentals.
5. (a) Explain about objective and subjective image Fidelity Criterion
(b) How psycho visual redundancy is different from other redundancies.
6. (a) What is the need for morphological image processing.
(b) Explain about Hit/Miss transform.
7. (a) Explain about region based segmentation.
(b) Discuss about edge formulation and its detection.
8. Discuss the role of neural networks in object recognition.

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1. (a) Discuss the different components of image processing system.
(b) List the applications of image processing.
2. Discuss following techniques for image enhancement.
 - (a) Image negatives
 - (b) Image subtraction
 - (c) Derivative filters
3. (a) Explain about inverse filtering.
(b) State and prove following properties of 2D DFT.
 - i. Periodicity
 - ii. Spatial translation.
4. With the help of block diagram explain about Full-color image processing.
5. (a) Discuss the loss less predictive coding with the help of block diagram.
(b) Discuss about image compression standards.
6. Discuss following morphological algorithms
 - (a) Convex Hull
 - (b) Skeletons.
 - (c) Thinning.
7. Explain the detection of discontinuities in detail.
8. Explain about following structural methods of object recognition.
 - (a) Syntactic methods
 - (b) String matching
