Paper ID [CS502]

MAY 2008

(Please fill this Paper ID in OMR Sheet)

M.Tech. (Sem. - 2nd)

DIGITAL IMAGE PROCESSING (CS - 502)

Time : 03 Hours   Maximum Marks : 100

Instruction to Candidates:

1) Attempt any **Five** questions.

2) **All** questions carry equal marks.

Q1) (a) Explain in detail the components of a image processing system with the help of a block diagram.

(b) Define the terms convolution and correlation and discuss their significance in the context of digital image processing.

Q2) (a) What do you mean by interactive restoration? Discuss in detail the mathematical foundations used in interactive restoration approach.

(b) Explain in detail the various spatial filtering approaches for image enhancement.

Q3) What is noise? How does it effects the efficiency of a image segmentation algorithm. Name various types of techniques used for filtering noise in images. And explain in detail the homomorphic filtering approach.

Q4) What is color image processing. Explain in detail the concepts underlying full color image processing.

Q5) Define the term image coding and its need? Name various image coding techniques and compare and contrast the transform coding from predictive coding technique.

Q6) (a) What are the types of redundancies available in an image? Discuss with suitable examples.

(b) What is thresholding. Describe in brief the various thresholding methods for image segmentation. Also discuss the method to obtain the optimum threshold.

Q7) (a) What is wavelet? How it is useful in image processing. Discuss in detail the wavelet transformation method with the help of block diagram.

(b) Sketch and explain the gradient of the image shown below.
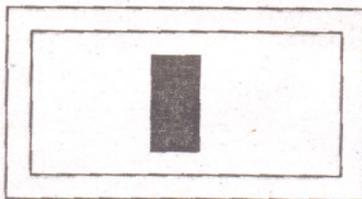
Q8) (a) What is the use of image description and representation methods? Explain with the help of an example the run length and tree approaches for region representation.

(b) Define the terms pattern recognition, pattern classifiers and discuss in detail the differences between parametric and non-parametric classifiers.

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