IV B.Tech II Semester Regular/Supplementary Examinations,May 2010
IMAGE PROCESSING
Computer Science And Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) If the transfer function for degradation is H(u,v)=$-2\sqrt{2\pi}\sigma(u^2+v^2)e^{-2\pi^2\sigma^2(u^2+v^2)}$ then give the resulting expression for the constrained least square filter.

   (b) Explain about different types of Adaptive filters for Restoration.   [16]

2. (a) Write an algorithm for background of neutral networks?

   (b) Explain briefly about an augmented pattern vector?   [8+8]

3. (a) Explain briefly about Quantization?

   (b) Explain about IGS Quantization?   [8+8]

4. (a) Give the conditions (s) under which the D4 distance between two points p & q is equal to the shortest 4- path between these points. Is this path unique. Explain.

   (b) Explain in detail how digital Image is represented.   [16]

5. (a) Explain in detail different methods of implementation of daplacian.

   (b) Show that the magnitude of gradient i.e. $f = \left[\left(\frac{\partial f}{\partial x}\right)^2 + \left(\frac{\partial f}{\partial y}\right)^2\right]^{1/2}$ is isotropic operation.   [16]

6. (a) Define and Explain about prewitt operators?

   (b) Explain about Gradient operators?   [8+8]

7. (a) Assume that the monitor and printer of an imaging system are imperfectly calibrated. An image that looks balanced on the monitor appears yellowish in print. Describe general transformations that might correct the imbalance.

   (b) Explain in detail about color edge detection.   [16]

8. A gray-scale image f(x,y), is corrupted by nonoverlapping noise spikes that can be modeled as small, cylindrical artifacts of radii $R_{min} \leq r \leq R_{max}$ and amplitude $A_{min} \leq a \leq A_{max}$. Develop a morphological filtering approach for cleaning up the image and assume that there is overlapping of, at most, four noise spikes.   [16]

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