Code No: R05321902 **R05** **Set No. 2**

III B.Tech II Semester Examinations,December 2010
DIGITAL IMAGE PROCESSING
Electronics And Computer Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain the following:
   (a) Color transformation
   (b) Spatial processing. [8+8]
2. Explain the following Order-Statistics Filters.
   (a) Max and min filters
   (b) Median filter
   (c) Alpha-trimmed mean filter. [6+5+5]
3. Suggest typical derivative masks for Image enhancement i.e.
   (a) Roberts
   (b) Prewitt
   (c) Sobel. [6+5+5]
4. A 64 × 64 pixel binary image has been coded using 1-D WBS with blocks of four pixels. The WBS code for one line of the image was 0110010000001000010010000000, where a 0 is used to represent a black pixel.
   (a) Create a 1 -D iterative WBS procedure that begins by looking for all white lines (a 64-pixel block) and successively halves nonwhite intervals until four pixel blocks are reached.
   (b) Use your algorithm to code the previously decoded line. It should require fewer bits. [16]
5. The results obtained by a single through an image of some 2D- masks can also be achieved by two passes using 1-D masks. The results of using a 3 × 3 smoothing mask with coefficients 1/9 can also be obtained by passing through an image the mask [1 1 1]. The result of this pass is then followed by a pass of the mask. $\begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$. The final result is then scaled by 1/9.show that the Sobel masks can be implemented by one pass of a differencing mask of the form [-1 0 1] (or it's vertical counterpart) followed By a smoothing mask of the form [1 2 1] (or it's vertical counterpart). [16]
6. Explain the following:

(a) Arithmetic operations on Images

(b) Logical operations on Images. [8+8]

7. Discuss the frequency domain techniques of Image enhancement in detail. [16]

8. (a) Discuss the dynamic range compression property w.r.t 2D-DFT.

(b) State and prove separability property of 2D-DFT. [8+8]

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Code No: R05321902 **R05** **Set No. 4**

III B.Tech II Semester Examinations,December 2010
DIGITAL IMAGE PROCESSING
Electronics And Computer Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Discuss the frequency domain techniques of Image enhancement in detail. [16]

2. The results obtained by a single through an image of some 2D- masks can also be achieved by two passes using 1-D masks. The results of using a 3×3 smoothing mask with coefficients 1/9 can also be obtained by passing through an image the mask [1 1 1]. The result of this pass is then followed by a pass of the mask. $\begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$. The final result is then scaled by 1/9.show that the Sobel masks can be implemented by one pass of a differencing mask of the form [-1 0 1] (or it's vertical counterpart) followed By a smoothing mask of the form [1 2 1] (or it's vertical counterpart). [16]

3. Explain the following:
   (a) Arithmetic operations on Images
   (b) Logical operations on Images. [8+8]

4. Explain the following Order-Statistics Filters.
   (a) Max and min filters
   (b) Median filter
   (c) Alpha-trimmed mean filter. [6+5+5]

5. (a) Discuss the dynamic range compression property w.r.t 2D-DFT.
   (b) State and prove separability property of 2D-DFT. [8+8]

6. A 64×64 pixel binary image has been coded using 1-D WBS with blocks of four pixels. The WBS code for one line of the image was 0110010000001000010010000000, where a 0 is used to represent a black pixel.
   (a) Create a 1 -D iterative WBS procedure that begins by looking for all white lines (a 64-pixel block) and successively halves nonwhite intervals until four pixel blocks are reached.
   (b) Use your algorithm to code the previously decoded line. It should require fewer bits. [16]

7. Suggest typical derivative masks for Image enhancement i.e.
   (a) Roberts

(b) Prewitt

(c) Sobel. [6+5+5]

8. Explain the following:

(a) Color transformation

(b) Spatial processing. [16]

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Code No: R05321902 **R05** **Set No. 1**

III B.Tech II Semester Examinations,December 2010
DIGITAL IMAGE PROCESSING
Electronics And Computer Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Discuss the frequency domain techniques of Image enhancement in detail. [16]
2. Suggest typical derivative masks for Image enhancement i.e.
   (a) Roberts
   (b) Prewitt
   (c) Sobel. [6+5+5]
3. (a) Discuss the dynamic range compression property w.r.t 2D-DFT.
   (b) State and prove separability property of 2D-DFT. [8+8]
4. The results obtained by a single through an image of some 2D- masks can also be achieved by two passes using 1-D masks. The results of using a 3 × 3 smoothing mask with coefficients 1/9 can also be obtained by passing through an image the mask [1 1 1]. The result of this pass is then followed by a pass of the mask. $\begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$. The final result is then scaled by 1/9.show that the Sobel masks can be implemented by one pass of a differencing mask of the form [-1 0 1] (or it's vertical counterpart) followed By a smoothing mask of the form [1 2 1] (or it's vertical counterpart). [16]
5. Explain the following:
   (a) Arithmetic operations on Images
   (b) Logical operations on Images. [8+8]
6. Explain the following:
   (a) Color transformation
   (b) Spatial processing. [16]
7. A 64 × 64 pixel binary image has been coded using 1-D WBS with blocks of four pixels. The WBS code for one line of the image was 0110010000001000010010000000, where a 0 is used to represent a black pixel.
   (a) Create a 1 -D iterative WBS procedure that begins by looking for all white lines (a 64-pixel block) and successively halves nonwhite intervals until four pixel blocks are reached.

(b) Use your algorithm to code the previously decoded line. It should require fewer bits. [16]

8. Explain the following Order-Statistics Filters.

(a) Max and min filters

(b) Median filter

(c) Alpha-trimmed mean filter. [6+5+5]

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Code No: R05321902 **R05** **Set No. 3**

III B.Tech II Semester Examinations,December 2010
DIGITAL IMAGE PROCESSING
Electronics And Computer Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. The results obtained by a single through an image of some 2D- masks can also be achieved by two passes using 1-D masks. The results of using a 3×3 smoothing mask with coefficients 1/9 can also be obtained by passing through an image the mask [1 1 1]. The result of this pass is then followed by a pass of the mask. $\begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$.

   The final result is then scaled by 1/9.show that the Sobel masks can be implemented by one pass of a differencing mask of the form [-1 0 1] (or it's vertical counterpart) followed By a smoothing mask of the form [1 2 1] (or it's vertical counterpart). [16]

2. Suggest typical derivative masks for Image enhancement i.e.
   (a) Roberts
   (b) Prewitt
   (c) Sobel. [6+5+5]

3. (a) Discuss the dynamic range compression property w.r.t 2D-DFT.
   (b) State and prove separability property of 2D-DFT. [8+8]

4. Explain the following:
   (a) Color transformation
   (b) Spatial processing. [8+8]

5. A 64×64 pixel binary image has been coded using 1-D WBS with blocks of four pixels. The WBS code for one line of the image was 0110010000001000010010000000, where a 0 is used to represent a black pixel.
   (a) Create a 1 -D iterative WBS procedure that begins by looking for all white lines (a 64-pixel block) and successively halves nonwhite intervals until four pixel blocks are reached.
   (b) Use your algorithm to code the previously decoded line. It should require fewer bits. [16]

6. Explain the following Order-Statistics Filters.
   (a) Max and min filters
   (b) Median filter

(c) Alpha-trimmed mean filter. [6+5+5]

7. Explain the following:

   (a) Arithmetic operations on Images

   (b) Logical operations on Images. [8+8]

8. Discuss the frequency domain techniques of Image enhancement in detail. [16]

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