AUTUMN END SEMESTER EXAMINATION-2017

7th Semester B.Tech

IMAGE PROCESSING

CS-4043

(Regular-2014 & Back of Previous Admitted Batches)

Time: 3 Hours | Full Marks: 60

Answer any SIX questions including question No.1 which is compulsory.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

1. Answer in brief: [2 × 10]

(a) What do you meant by Gray level?

(b) Explain the basic relationships between pixels.

(c) An image is 2400 pixel wide and 2400 pixel high. The image was scanned at 300dpi. What is the physical size of the image?

(d) Write two application of image segmentation.

(e) Explain the concept of gray level transformation.

(f) How to measure the frequency of the intensity value in an image?

(g) Discuss the work of inverse filtering in image processing.

(h) Explain the frame types in MPEG.

(i) Discuss the importance of color corrections.

(j) Discuss the advantages and disadvantages of Run-Length coding.

2. (a) Explain how image enhancement performed in frequency domain? [4]

(b) Define an Image. Explain the different types of mathematical representation of an image. [4]

3. (a) What is the need of Image transformation? Explain the 2D Discrete Fourier Image Transformation. [4]

(b) Discuss the applications of image processing in different fields. [4]

4. (a) Explain the difference between lossless compression and lossy compression. [4]

(b) How histogram equalization differ from histogram matching? Explain with example. [4]

5. (a) Explain the process of histogram modification for contrast enhancement. [4]

(b) What is Image blurring and how it can be removed. [4]

6. (a) Differentiate between spatial domain enhancement and frequency domain enhancement. [4]

(b) Discus any Noise Reduction technique by frequency domain filtering. [4]

7. (a) What are the difference between image enhancement and image restoration method? [4]

(b) Compress the following 4 x 8, 8-bit image using Huffman coding: [4]

21	21	21	95	169	243	243	243
21	21	21	95	169	243	243	243
21	21	21	95	169	243	243	243
21	21	21	95	169	243	243	243

Also, compute the compression achieved.

8. Write Short notes (any two): [4 × 2]

(a) LZW Coding

(b) MPEG

(c) Color Models

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