B. E. (E&Tc) Sem VII   15/7/17

Image Video Processing

Q. P. Code : 788501

(3 Hours)

Total Marks : 80

Instructions:

(1) Question No 1 is Compulsory
(2) Answer any 3 questions from the remaining questions

Q1   Answer any four questions   20
   a. Write a short note on connectivity of pixels.
   b. Discuss the classification of video frames.
   c. Explain dilation and erosion of binary image.
   d. Explain image degradation model.
   e. Quality of picture depends on the number of pixels and grey level that represent the picture. Justify or contradict

Q2   a. A Two dimensional DFT can be obtained using one dimensional DFT algorithms twice, explain with following example.   10

0	1	2	1
1	2	3	2
2	3	4	3
1	2	3	2

   b. Explain image enhancement in frequency domain.   10

Q3   a. For the following image find the contrast stretching,
        $r_2=5$, $r_1=3$, $s_2=6$, $s_1=2$ 10

$f(x, y) =$

4	3	2	1
3	1	2	4
5	1	6	2
2	3	5	6

   b. Explain KL transform.   10

Q4. a. Perform histogram equalization for following image. Plot original and the equalized histogram.   10

4	4	4	4	4
3	4	5	4	3
3	5	5	5	3
3	4	5	4	3
4	4	4	4	4

   b. Discuss the concept of optical flow for motion estimation.   10

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Q5. **a.** Given 5 points use Hough transform to draw a line joining these points.   10
(1, 4) (2, 3) (3, 1) (4, 1) (5, 0)

b. Let V= {0, 1}.compute De, D_4, D_8, Dm using D_4 connectivity distance between two
pixels p & q. Let the pixel coordinates p & q be (3, 0) and (2, 3) respectively for the
image shown. Find distance measures.   10

```
        0   1   2   3
   0  | 0   1   1   1
   1  | 1   0   0   1
   2  | 1   1   1   ①q
   3  | ①   1   1   1
        p
```

    20

Q6. Write short note on
    a. Weiner filter
    b. RGB and HSI color models
    c. Exhaustive block matching algorithms