

## Question Paper



### MANIPAL UNIVERSITY

SCHOOL OF INFORMATION SCIENCES (SOIS)  
SECOND SEMESTER MASTER OF ENGINEERING- ME (MEDICAL SOFTWARE)  
DEGREE EXAMINATION- APRIL / MAY 2017

Thursday, 20, 2017  
Time : 10:00 AM - 1:00 PM

#### Advanced Image Processing [MMS 610]

Marks: 100

Duration: 180 mins.

#### Answer all the questions.

- 1) Explain the motion detection and background subtraction approaches for finding objects in an image. (10)  
(10 marks)
- 2) Explain the morphological operators namely closing and opening. With the help of an example, describe how they are useful in image processing. (10)  
(6+4 marks)
- 3) Explain any one technique in detail for obtaining clusters to extract objects from an image. (10)  
(10 marks)
- 4) What are the THREE basic data redundancies in a digital image? Briefly explain how each of them can be eliminated. (4+6 marks) (10)
- 5) Describe Huffman coding with the help of an example. (10 marks) (10)
- 6) Explain how systolic array processors can be used for real time image processing with the help of an example. (10 marks) (10)
- 7) Describe two descriptors each for the following. (10)  
(i) Shape description  
(ii) Boundary description  
(5+5 marks)
- 8) Write short notes on the following. (10)  
(i) Neural networks  
(ii) Linear Discriminant Classifier  
(5+5 marks)
- 9) Draw Pattern Recognition system block diagram and describe the various steps involved in the pattern recognition task. (10)  
(4+6 marks)

10) Explain Image processing, Image annotation and Image enhancement in a PACS system. (10 marks)