Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EIE) (2011 Onwards E-IV) (Sem.–7,8)

MACHINE VISION

Subject Code : DE-4.1

M.Code : 58044

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) Define histogram of a digital image.

b) What do you understand by the term 'Perception'?

c) Briefly explain the working of following order statistics filters used for noise removal in digital image: Median filter, max filter.

d) Enumerate any two image trackers.

e) What are the difficulties that knowledge based vision systems have?

f) What are the goals of a Machine Vision?

g) What is the role of Data Management in Machine Vision?

h) Show that the Forward Fourier Transform algorithm can be utilized to compute Inverse Fourier Transfer.

i) What is the ringing effect in digital image processing?

j) Differentiate between the convolution and correlation process of digital image processing.

SECTION-B

2. "*Periodicity cannot be ignored when working in frequency domain for image processing*". Explain with the help of suitable example and neat graphical representation.

3. Evaluate the statement in context of human vision system: "Objects that appear brightly colored in daylight, when seen by moonlight appear as colorless forms".

4. Discuss in detail, the role of Computer Graphics in Machine Vision.

5. Evaluate the following statements.

   a) Although there are areas of overlap, image enhancement is largely a subjective process, while image restoration is an objective process.

   b) A high pass filter can be constructed from two low pass filters or by subtracting the low pass filter from unity.

6. Compare and contrast various image enhancement techniques used for the application of character recognition.

SECTION-C

7. a) Explain the effect of false contouring and checker board on the quality of digital image when number of pixels and number of gray levels in digital image are altered,

   b) Describe Hit-or-Miss transform with the help of suitable example.

8. Explain, the application of Machine Vision in Vehicle License Plate Number Sensing.

9. a) Describe the erosion process used on binary digital image with suitable illustration,

   b) Describe VITREO & PARVO Model based vision systems.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.