

(Following Paper ID and Roll No. to be filled in your Answer Books)

PAPER ID : ME1

Roll No.

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M. TECH. (Sem.II)

THEORY EXAMINATION 2015-16

MACHINE VISION

Time : 3 Hours

Total Marks : 100

SECTION-A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (2×10=20)

- (a) What are the components of machine vision system?
- (b) How to choose the frame grabber?
- (c) Calculate the resolution, if the FOV=9.33mm*7mm, number of pixels to map the smallest feature is 1 pixel and size of the smallest feature is 0.1mm.
- (d) What is meant by pixel rate?
- (e) How to choose the frame grabber.
- (f) What is Image Enhancement?
- (g) Define image Morphology.

- (h) What is image segmentation?
- (i) What are the advantages and disadvantages of laser light used in machine vision?
- (j) What are the uses of IR suppression filters?

SECTION-B

Note: Attempt any 5 questions from this section. (10×5=50)

- 2. What are the categories to built a machine vision system?
- 3. Explain in detail about camera resolution, spatial resolution, measurement accuracy.
- 4. Explain the following briefly on :
 - (i) USB for Machine Vision
 - (ii) IEEE 1394
 - (iii) Gigabit Ethernet (IEEE 802.3z)
- 5. Explain the following briefly on Image segmentation, Feature extraction, Morphology and Template matching.
- 6. Explain in detail about task, specification, and design of diameter inspection of rivets.
- 7. Briefly explain various image enhancement techniques.
- 8. Describe about taps and digital video transmission.
- 9. Explain the process involved in image segmentation technique.

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(2)

SECTION-C

Note : Attempt any 2 questions from this section. (15×2=30)

10. (a) What is machine vision system and write in detail about the components of machine vision system?
- (b) What are the factors used to determine field of view?
11. (a) With Case study explain about the role of machine vision system in automobile industries, food and chemical, packaging industries.
- (b) How maximum contrast helps in machine vision?
12. (a) Elaborate the frequency domain methods in image enhancement
- (b) List the functions of daylight suppression filters.
