



CBCS SCHEME

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18AI742

Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024

Computer Vision

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is Computer Vision? Why is vision so difficult? Provide six real-world examples of computer vision and explain. (10 Marks)
- b. Illustrate with a real-world example for pinhole perspective and explain its behaviour under various effects. (10 Marks)

OR

- 2 a. Explain the 2D transformation with a neat diagram. Explain the 2D transformation with a neat diagram. (10 Marks)
- b. Explain linear approach to camera calibration. (10 Marks)

Module-2

- 3 a. Explain discrete convolution with respect to one dimension and two dimensions. (10 Marks)
- b. Explain Derivative of Gaussian Filters. (10 Marks)

OR

- 4 a. What is Sampling? Explain with respect to one and two dimensions. (10 Marks)
- b. Write and explain the algorithm for Local Texture Representation using filters. (10 Marks)

Module-3

- 5 a. Explain Epipolar Geometry in detail. Explain fundamental matrix and essential matrix. (10 Marks)
- b. Explain Euclidean Structure and Motion from two images. (10 Marks)

OR

- 6 a. Explain Projective Structure and Motion from multiple images. (10 Marks)
- b. Write the algorithm for Tomasi-Kanade Factorization for affine shape from motion and explain. (10 Marks)

Module-4

- 7 a. Which techniques are used for video surveillance of human activities and video analysis? Explain them in detail. (10 Marks)
- b. Describe linear measurements and linear dynamics in detail. (10 Marks)

OR

- 8 a. Give one suitable technique for lines detection. Explain the concept briefly. (10 Marks)
- b. Explain motion segmentation by parameter estimation. (10 Marks)

Module-5

- 9 a. How does the iterative closest-point method help in registering range images? Explain. (10 Marks)
- b. With a neat diagram explaining Koendrink's theorem. (10 Marks)

OR

- 10 a. Write a short note on State of the art of object detection. (10 Marks)
- b. Explain the "Intelligent photo editing" and "Pose estimation" application in detail. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.