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Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET UNIVERSITY)



Ph.D. (Second Semester-Summer/Winter) Examinations, April – 2026
23SPPECS2016/23WPPECS2013/23WPPECA2011 – Computer Vision
(CSE/CSA)

Time: 3 hrs

Maximum: 70 Marks

The figures in the right hand margin indicate marks.

Answer ANY FIVE Questions.**(14 x 5 = 70 Marks) Marks**

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| 1.a. | Explain inverse perspective projection. | 6 |
| b. | Describe the role of hysteresis thresholding in the Canny Edge Detection algorithm. How edge connectivity helps in eliminating noise and preserving true edges. | 8 |
| 2. a. | List all the steps involved in a recognition methodology. Explain each step briefly with suitable examples. | 7 |
| b. | Describe the working of the Hough Transform with an example. Analyse its merits and demerits in detecting geometric shapes in images. | 7 |
| 3.a. | Explain the concept of intensity matching in one-dimensional signals. Describe the methods used and illustrate with a suitable example. | 7 |
| b. | Explain back tracking algorithm with an example | 7 |
| 4. | Write short notes on i) Extremal points ii) boundary descriptors iii) View Class matching | 14 |
| 5.a. | What is image segmentation? Explain mean shift segmentation in detail. | 7 |
| b. | Elaborate the syntactic recognition technique with an example. | 7 |
| 6. | Explain the following region growing algorithm with suitable example.
i) Centroid Linkage ii) Hybrid Linkage iii) Single Linkage. | 14 |
| 7. a. | List the different types of video filters in OpenCV. Explain any three filters with their working and applications. | 7 |
| b. | Explain how the Minimum Mean Squared Error method is used for classification. Illustrate the approach with a suitable example. | 7 |
| 8.a. | Explain the concept of video tracking in detail. Discuss the techniques involved and its applications in computer vision. | 7 |
| b. | What is the problem of dimensionality reduction? Explain how Principal Component Analysis is used to reduce dimensionality with a suitable example. | 7 |

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