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



Ph.D. (Second Semester-Summer) Examinations, April – 2026

23SPPEEC2015 – Computer Vision

(ECE)

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. | Discuss monocular imaging systems and explain how they differ from binocular imaging systems. | 8 |
| b. | Explain the concept of epipolar geometry and its utility in 3D reconstruction from stereo images. | 6 |
| 2. | Define feature extraction and explain its significance in image analysis and object recognition tasks. | 14 |
| 3.a. | Describe corner detection methods and the specific characteristics of corners that make them detectable. | 7 |
| b. | Explain how DLT (Direct Linear Transformation) facilitates accurate 3D reconstruction in stereopsis. | 7 |
| 4. | Analyze the process of 3D reconstruction through techniques like rectification and RANSAC, explaining how they improve accuracy. | 14 |
| 5.a. | Discuss the role of stereo vision in motion parameter estimation for accurate motion analysis. | 7 |
| b. | Analyze the significance of edges and corners as features in image representation. | 7 |
| 6.a. | Compare orthographic and perspective projection specifically regarding how they affect image interpretation. | 7 |
| b. | Describe the application of Hough transforms in recognizing objects within an image. | 7 |
| 7. | Provide an in-depth analysis of motion detection techniques, covering background subtraction, optical flow, and regularization theory. | 14 |
| 8.a. | Why is camera calibration considered essential for accurate image analysis? Detail the camera model. | 7 |
| b. | Discuss the limitations of binary shape analysis when used for image segmentation. | 7 |

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